1 HISTONE DEACETYLASE SUBSTRATES IN THE REGULATION OF PATHOLOGICAL CARDIAC REMODELING

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Purpose of Study: Studies have shown histone deacetylases (HDACs) govern critical aspects of pathological cardiac hypertrophic growth, such that molecular inhibitors of HDACs are protective. Other studies uncovered autophagy as an obligatory cellular process in disease pathogenesis and point to HDAC1/2 isoforms as required effectors. Prior work from our group demonstrated that steady-state levels of autophagic flux are directly proportional to hypertrophic growth, and HDAC inhibitors (HDACi) simultaneously suppress both cardiac hypertrophy and autophagic flux. These data highlight a new pharmaceutical strategy based on HDAC to slow the progression of cardiac failure by targeting the pathological hypertrophic growth response. To pursue this, it is critical to identify reversibly acetylated protein substrates active in cardiac hypertrophy.

Methods Used: We employed an unbiased, discovery-based proteomics strategy based on neonatal rat ventricular myocytes (NRVM) in culture exposed to phenylephrine (PE) + trichostatin A (TSA). Cells from 4 treatment groups (PE v vehicle x TSA v vehicle) were analyzed by isoelectric focusing (IEF) and mass spectrometry.

Summary of Results: We observed an overall marked increase in the abundances of acetylated proteins with the administration of TSA. TSA also increased levels of acetylated peptides (immuno-precipitated by anti-acetylated lysine antibody) in NRVM IEF fractions. We found the largest fraction of proteins identified by mass spectrometry were histones, highly abundant proteins in eukaryotic cells. Differential extraction of histones was next performed and verified by Western blot analysis. Then, mass spectrometry analyses uncovered unique peptide signatures in the PE+TSA group as compared to PE-Veh controls.

Conclusions: We have uncovered a unique pattern of protein acetylation triggered by HDACi in growth signal-exposed NRVM. In the future, proteins lysates from histone-depleted NRVMs will be trypsin digested, immuno-precipitated using antibodies directed against acetyl-lysine peptides, and then analyzed by mass spectrometry. Using this strategy, we will localize and identify the specific proteins, and HDAC-dependent targets, that are uniquely involved in the pathological cardiac growth response.

2 SALVAGING MYOCARDIUM IN RATS WITH ALDOSTERONISM USING NEBIVOLOL, A BETA BLOCKER WITH MULTIPLE ANTIANTIOXIDANT PROPERTIES

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Purpose of Study: Nonischemic cardiomyocyte necrosis with consequent myocardial scarring first appears at wk 4 aldosterone/salt treatment (ALDOST). Its pathogenesis involves cytosolic free [Ca2+]i, and mitochondrial [Ca2+]m, overloading coupled to reactive oxygen species generation that overwhelms antioxidant defenses related to an intrinsically coupled rise in [Zn2+], and [Zn2+]m (Kamalov G, et al. 2010;298:H385). Herein we hypothesized that a further rise in cardiomyocyte [Zn2+]m will salvage myocardium. Toward this end, we used cotreatment with nebivolol (Nb), a β blocker with β2 agonist properties acting as an eNOS-derived NO donor to release inactive Zn2+ bound to metallothionein.

Methods Used: Cardiomyocytes and their subsarcomemal (SSM) mitochondria were harvested from rats at 4 wks ALDOST alone or with Nb cotreatment (10 mg/kg/day by gavage). We monitored: cytosolic free [Ca2+]i and [Zn2+], together with [Ca2+]m, and H2O2 production; opening potential of SSM permeability transition pore (mPTP), an event preceding necrosis; 8-isoprostane, a biomarker of lipid peroxidation, in SSM and cardiac tissue; scarring, a footprint of necrosis, by collagen volume fraction (CVF) of coronaal heart sections stained with picrosirius red, a fibrillar collagen-specific marker.

Summary of Results: Compared to untreated, age-sex-matched controls, we found a wk ALDOST (p<0.05): increased [Ca2+]i, and [Zn2+]m; [Ca2+]m and H2O2 production, and 8-isoprostane in SSM and heart tissue; enhanced mPTP opening potential; and a 2-fold rise in CVF of the right and left ventricles. Cotreatment with Nb (p<0.05): augmented [Zn2+]m, above ALDOST alone and attenuated the rise in [Ca2+]i and [Ca2+]m, abrogated the rise in H2O2 production and 8-isoprostane levels in SSM and tissue; reduced mPTP opening; and prevented scarring.

Conclusions: In rats receiving ALDOST, cotreatment with Nb prevents oxidative stress, lipid peroxidation and nonischemic cardiomyocyte necrosis with scarring by raising cardiomyocyte [Zn2+], while attenuating [Ca2+]i and [Ca2+]m. These multiple antioxidant properties of Nb holds promise as a cardioprotective agent in chronic stressor states such as hypertension.

3 CONTRIBUTION OF TOBACCO SMOKE CONSTITUENT ACROLEIN TO CIRCULATING ENDOTHELIAL PROGENITOR CELL LEVELS IN HUMANS


Purpose of Study: Endothelial progenitor cells (EPCs) are responsible for vascular repair and angiogenesis. Decreased EPC levels are associated with increased cardiovascular disease (CVD) risk and endothelial dysfunction. Animal studies have shown that exposure to acrolein suppresses EPC levels. Acrolein is a major constituent of tobacco smoke and traffic exhaust and is also formed endogenously during lipid oxidation and inflammation. Secondhand smoke exposure and chronic smoking suppress EPC levels. Nevertheless, the acrolein contribution in tobacco smoke-induced CVD risk in humans has not been assessed. Therefore, we undertook a cross-sectional analysis of CVD risk and its association with acrolein exposure among a population receiving CVD care.

Methods Used: Major urinary metabolites of acrolein (hydroxypropylmercapturic acid (HPMA)) and nicotine (cotinine) were measured by GC/MS and ELISA, respectively. Circulating EPCs were assessed by flow cytometry. Mixed effects modeling techniques examined whether HPMA levels influence EPC levels; and whether this relationship was modified by smoking exposure, after adjusting for demographics and alcohol consumption. The stepwise procedure was used to determine the final multi-variable model for reporting.

Summary of Results: We found an inverse association between HPMA and EPC levels (r=−0.18, p=0.003). There was an interaction effect between HPMA and cotinine (p=0.018), suggesting that the relationship between HPMA and EPC levels may be mediated by tobacco smoke exposure. HPMA and cotinine were significantly correlated (p=0.0001). HPMA in non-smokers were inversely associated with EPC levels (p=0.021). In smokers, cotinine levels significantly predict EPC levels, while HPMA fails to reach significance in the multi-variable model.

Conclusions: These findings suggest that cotinine and HPMA are closely linked; but cotinine is a stronger predictor of EPC levels. For smokers, HPMA does not correlate with EPC levels. We conclude that endogenous acrolein and acrolein from tobacco smoke suppress EPC levels in humans with CVD risk.
CHAGAS CARDIOMYOPATHY IN NEW ORLEANS: A CASE SERIES

Burak J, Tiwari S, Chakrabarti C, Sander G Tulane University Hospital, New Orleans, LA.

Case Report: Background: Chagas’ cardiomyopathy is characterized by a chronic inflammatory process involving all cardiac chambers as well as the conduction system. The pathogenesis may involve several mechanisms with recent evidence suggesting the importance of parasite persistence in the development and progression of Chagas’ cardiomyopathy.

Cases: A 40 year old male native of Guatemala was admitted with symptoms suggestive of unstable angina. His EKG showed sinus rhythm with a right atrial abnormality. The echocardiogram revealed an ejection fraction of 35% with mid-inferolateral hypokinesia, though the coronary angiography showed patent vasculature. His hospital course was complicated by development of transient left anterior fascicular block and a self-limited episode of accelerated idioventricular rhythm. His Chagas’ titer was significant for elevated levels of IgG to Trypanosoma cruzi with non-reactive IgM levels.

Our second patient was a 62 year female native of Honduras who had been residing in New Orleans for over 20 years. She also presented with chest pain with an initial EKG demonstrating nonspecific T wave changes. Her echo cardiogram revealed an ejection fraction of 50% with posterolateral and anterolateral wall hypokinesia. Laboratory evaluation was significant for a peak troponin of 1.8 without any evidence of obstructive coronary disease on angiography. Due to risk factors and presentation, a Chagas’ titer was sent and showed reactive IgG antibodies to T. cruzi.

Discussion: Approximately one-third of all patients with indeterminate Chagas disease will develop a chronic disease state with either chagasic heart disease or gastrointestinal syndromes, but rarely both. Although endemic to South America, all of the requirements for autochthonous Chagas disease transmission exist today in Louisiana. These include competent reduviid vectors for T. cruzi, wild and domestic animal reservoirs, susceptible human hosts residing in temporary shelters, and an increasing human reservoir of potentially infected immigrants from endemic regions. Louisiana physicians should be aware of the potential for local Chagas disease transmission by native reduvids.

Adult Clinical Case Symposium
1:00 PM Thursday, February 9, 2012

“A PAIN IN MY PUBIS”
Gruber M, Engel L, Martinez JM LSU-Health Sciences Center, New Orleans, LA.

Case Report: A 22 year old Hispanic female without previous medical issues, presented to the Emergency Department complaining of vaginal pain for 1 day. The pain came on suddenly at rest and was described as 10/10 sharp pain “coming from her bone” internally in her vagina. Her past history was pertinent for having 1 child from an uncomplicated vaginal delivery approximately 1 year prior. She denied any vaginal discharge, dysuria, pyuria, bleeding, abdominal pain, fever, chills or trauma. Her last sexual activity was approximately 6 months prior and she had no dyspareunia. Her last menstrual period was four weeks prior to presentation. Her physical exam demonstrated a soft, nontender abdomen and normal gait. Gynecological exam revealed a normal BUN/Creatinine. Serology for Strongyloides and Toxocara were both negative. Serum IgE was 173 IU/mL. Troponin, vitamin B12, and tryptase levels were normal. P- and c-ANCA were negative. ESR and CRP were normal. CT of the chest, abdomen, and pelvis was negative. No significant changes were noted on repeat spirometry or echocardiogram at 4 weeks post PTCA. Molecular studies to assess for HES variants including T and B cell receptor gene rearrangements were negative, as was FIP1L1-PDGFRα/CHIC2 deletion. The decision was made to observe the patient as he was asymptomatic and exhibited no signs of end organ damage. Repeat CBC 2 weeks post procedure revealed an eosinophil count of 2,500/mm3. At 4 weeks post procedure, eosinophil level normalized to 200/mm3. Eosinophil count was repeated 6 weeks post procedure and remained normal at 200/mm3.

Conclusions: PTCA may be associated with benign hypereosinophilia. It should be considered in the differential of hypereosinophilic. Conservative management alone may be adequate.

CANNABINOID HYPEREMESIS SYNDROME: A CONSIDERATION IN PATIENTS WITH REFRACTORY EMESIS
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Case Report: A 19 year old male with repeated episodes of vomiting and abdominal pain was admitted to hospital. He had multiple ED visits and hospital admissions because of these complaints and was treated for gastritis. Detailed assessment of the patient revealed that he was using 7-8 grams of marijuana per day for 7 years. He was compelled to take hot showers for symptomatic relief. He underwent extensive work up including CT scan of the abdomen, upper GI series and Meckel’s scan which did not reveal any abnormality. The patient’s history, clinical signs and symptoms and work up fulfilled the criteria devised by Sontineni et al for the diagnosis of Cannabinoid hyperemesis syndrome (CHS). He was managed with hot water baths, IV fluids and antiemetics. His condition improved in 2-3 days and he was discharged home with counseling for cessation of marijuana smoking. On 3 and 9 months follow up, patient was symptom free as he was abstaining from marijuana. CHS is a recently described syndrome with characteristics of cyclical vomiting, abdominal pain with no clear cause, polydipsia and physical exam alone, however plain radiographs may aid the diagnosis by demonstrating widening of the pubic symphysis, bone resorption or remodeling of the pubic symphysis, or osteopenia at the pubic ramus. Management is initially conservative including rest, ice, NSAIDS and physical rehabilitation. Patients who fail conservative therapy may require glucocorticoid injections of the pubic symphysis or surgical curettage of the symphysis.
repeated compulsive hot water bathing to seek symptomatic relief associated with chronic cannabinoid use. This syndrome was first reported in a clinical series of ten patients in Australia in 2004. However, data about this syndrome in patients from the United States is very limited. The underlying mechanisms causing symptoms of CHS are not well understood. Proposed mechanisms of CHS include toxicity due to marijuana’s long half life, fat solubility, delayed gastric emptying and thermoregulatory and autonomic dis-equilibrium via the limbic system. Symptomatic relief with hot showers results from modulation of the hypothalamic-pituitary-adrenal axis by endocannabinoids and redistribution of blood flow from the gut to the skin due to cutaneous vasodilatation. Given the highest prevalence of cannabis use among other illicit drugs in United States and paucity of literature and awareness among physicians, it is clinically very important to recognize CHS as knowing the association among chronic cannabis abuse, cyclic vomiting and hot water bathing would avoid unnecessary testing and lead physicians to the right diagnosis.

8
AN OMINOUS HEADACHE: CEREBRAL VENOUS THROMBOSIS IN A NORMAL YOUNG MAN
DeLeon E, Ahmed J, Smalligan RD
Case Report: A 23 yo Hispanic male with no past medical history presented with a headache of a week’s duration accompanied by nausea and vomiting. He described it as left sided, 8/10 in severity, constant, throbbing, aggravated by light, with no alleviating factors. He went to his local ER several times and was given antibiotics for sinusitis. He then developed blurred vision and was transferred to our service. On admission he was afibrile, BP 124/86, HR 88; RR 18 and O2 sat 100% on room air. Physical exam revealed bilateral papilledema and flame hemorrhages, and decreased acuity to whisper and bone conduction greater than air conduction on the left. Labs (CBC, chemistry panel, PT/INR, LFTs) were normal. CT of the brain w/o contrast showed left sided transverse and sigmoid venous sinus thrombosis. MRI and MR venogram confirmed the presence of a thrombus. Complement level, ANA, ANCA, protein C, protein S, factor V leiden, antithrombin III, anticoagulant, lupus anticoagulant and prothrombin G20210A mutation results were normal. Neurosurgery, neurlogy, otolaryngology and ophthalmology were consulted. The patient was started on heparin and warfarin, and his symptoms improved. When he reached a therapeutic INR he was discharged home with close follow-up by his PCP and neurologist.

9
NOT ALL BRAIN MEDICINE CLEARS THE MIND: A CASE OF VALPROATE INDUCED NON-HEPATIC ENCEPHALOPATHY
Mahnood T, Khandheria B, Chua M Texas Tech University Health Sciences Center, Amarillo, TX.
Case Report: A 21 year old male with history of epilepsy on valproate for better seizure control. He did not have liver disease or known in-born error of metabolism, history of alcohol, illicit drugs or tobacco abuse. Physical examination revealed: Afibrile, stable vital signs, confused, supple neck, symmetric reflexes, no spasticity and no asterixis. Labs showed slightly elevated valproate level of 106.3mcg/ml and ammonia level of 282 mcml/L. The rest of the labs including serum chemistry, liver function test, urine toxicology, serum alcohol and CBC were normal. CT scan of his head was normal. A diagnosis of valproate induced non-hepatic hyperammonemic encephalopathy (VNHE) was made and the patient was treated with supportive care including lactulose and replacing valproate with lamotrigene. Ammonia level subsequently dropped with complete resolution of his encephalopathy.

10
THYROTOXIC PERIODIC PARALYSIS IN AN AFRICAN AMERICAN MALE
Jafi SH, Wehmeier K University of Florida, Jacksonville, FL.
Case Report: Recurrent muscle paralysis that lasts from hours to days is a rare manifestation of thyrotoxicosis. Thyrotoxic periodic paralysis (TPP) has been associated with hyperthyroidism from a variety of etiologies. This is most common in Asian males and is very rare in African Americans. The change in potassium ion distribution rather than body concentration contributes to the manifestations and management.

11
PITFALL DELAYING THE DIAGNOSIS OF CARDIOVASCULAR IMPLANTABLE ELECTRONIC DEVICE-RELATED ENDOCARDITIS IN THE INTENSIVE CARE UNIT PATIENT
Nantsupawat T, Perez-Verdia A, Nugent K Texas Tech University Health Sciences Center, Lubbock, TX.
Case Report: The diagnosis of cardiovascular implantable electronic device(CIED)-related endocarditis can be challenging. At present, there are no well-established clinical criteria to help us decide when to perform a
transesophageal echocardiogram (TEE). A 66-year-old man with a history of Wegener’s granulomatosis treated with prednisone and ischemic cardiomyopathy with an implantable cardioverter-defibrillator (ICD) was admitted to the intensive care unit with pulmonary infiltrates, thrombocytopenia, and acute kidney injury with microscopic hematuria and pyuria. Six weeks prior he had his ICD pulse-generator replaced. At the time of presentation he had no fever, leukocytosis, or signs of ICD pocket infection. On the third day, blood and bronchoalveolar lavage cultures revealed Staphylococcus aureus; urine culture was positive for Escherichia coli. Repeated blood culture on day 6 and day 8 persistently grew Staphylococcus aureus. A transthoracic echocardiogram done on day 8 failed to show vegetations. TEE was done later on day 12 and revealed vegetation on the atrial lead. On day 13 ICD system extraction was performed revealing gross pus in the device pocket. Because of poor clinical condition, his family decided to withdraw care and the patient expired on day 17.

**Discussion:**

Symptomatic spontaneous renal bleeding is a rare condition, especially in patients with tuberous sclerosis or Bourneville disease who underwent successful life-saving renal artery embolization. A 20-year-old female diagnosed with tuberous sclerosis since 6 months of age after working up for seizure. She presented with acute severe flank pain throbbing in character and hematuria. Physical findings revealed a pulse of 143, BP 93/46, RR 24, O2 sat 92% on 2 liter oxygen, facial angiofibroma, and right flank tenderness. Hemoglobin of 9.2, hematocrit 24 and BUN/creatinine of 18 mg/dL and 6.5 mg/dL. A CT scan showed heterogeneous appearance of both kidneys, consistent with presence of multiple bilateral angiomyolipomas. There was a large mass/ hematoma extending from the upper pole of the right kidney, measuring 9.4 cm in greatest dimension. She subsequently underwent right renal angiography which revealed multiple bleeding subsegmental vessels which were embolized. Her symptoms improved and she was subsequently discharged.

Wunderlich’s syndrome is defined as spontaneous renal bleeding of non-traumatic origin confined to the subcapsular and perirenal space. In a review by McDougall et al showed that the most common etiology is tumor (57%) and among tumors 24% are benign, mainly angiomyolipomas. Other causes are vascular disease (18%) and infectious disease (10%). In our patient the cause of the Wunderlich’s syndrome is renal angiomyolipomas, as part of Wegener’s granulomatosis treated with prednisone and ischemic cardiomyopathy with an implantable cardioverter-defibrillator (ICD). The clinical condition of the patient dictates the type of specific therapeutic intervention. Conservative management is an option if self-limiting and patient is responsive to fluid resuscitation. Selective arterial embolization is another option if patient or surgery for patients who are clinically unstable (hemorrhagic shock). It is important to recognize this syndrome, especially in patient with Tuberous Sclerosis due to its association with angiomyolipoma, due to its potentially fatal outcome since embolization and/or surgery maybe lifesaving.
most common organisms causing pyomyositis are MRSA and Group A Streptococcus. Often there is underlying malignancy, trauma, or concurrent infection that leads to a diagnosis of pyomyositis, but the clinician should also suspect it in other, less common circumstances.

Case: A 58-year-old Caucasian female with COPD presented with a 2-month history of fevers, subsequently followed by a 2-week history of progressive right hip pain, weight loss, and night sweats. On presentation, she was initially noted to have a temperature of 103°F, and after being admitted to the hospital and repeating the same examination, an MRI was obtained the next day, and was noted to have a multi-loculated fluid collection around an unknown metallic fragment in the hamstring compartment suggestive of pyomyositis. Incision and drainage were performed, and the foreign body was removed with cultures obtained during surgery showing Escherichia Coli. She was treated with doxycycline initially, followed by erythromycin on return of cultures. On further history, she revealed that 30 years prior to her presentation, she recalled mowing her yard and feeling as if she had been bitten in the site where the foreign body was eventually located, but had felt it was so trivial that she had never been evaluated for it.

Discussion: Pyomyositis is typically associated with immunodeficiency, trauma, injection drug use, concurrent infection, and malnutrition. These often occur from hematogenous spread of other infections, and are most commonly associated with MRSA or Group A Streptococcus. However, this case presents a 58-year-old female with an exceptionally remote history of trauma to her right lower extremity. She had no evidence of concurrent infection, and had no states of immunosuppression. For a patient with right hip pain and fever, Pyomyositis should be considered and evaluated with CT or MRI.

16 ASYMMETRIC ARTHRITIS IN A PATIENT WITH HIDRADENITIS SUPPURATIVA

Landa CO, Giddings S, Edwards L. University of Florida College of Medicine, Jacksonville, FL.

Case Report: A 47-year-old African American male with a past medical history of Hidradenitis Suppurativa (HS) and rheumatoid arthritis and former resident of Massachusetts, presented to the ED with pain and swelling of left wrist, elbows, and ankle. The patient described initial monoarticular knee pain and swelling followed by migration to the opposite knee and left wrist. Three days after the onset of the symptoms the patient noticed redness of his left eye and increased drainage of areas involved by HS. Physical exam revealed severe HS involvement of axillae, gluteal folds, genitalia, and inguinal region. There was no erythema, effusions, nor associated warmth of the involved joints. The left eye revealed conjunctivitis conjunctivitis without discharge. Laboratory findings included elevated erythrocyte sedimentation rate and C-reactive protein; rheumatoid factor was weakly positive with a titer of 1:8 and anti-CCP was negative. ANA, HLA-B27, HIV, and Lyme titers were negative. Radiograph of the left foot demonstrated degenerative calcaneal spurping with periostal reaction of the proximal phalanges. The radiograph of the left wrist and hand showed diffuse periarticular soft tissue swelling. The patient was treated with empiric antibiotics and NSAIDs. The patient had an uncomplicated hospital course and was discharged on a tapering dose of oral prednisone.

Reactive arthritis associated with HS is unusual. The association was first described in 1982 at which time only 10 cases had been reported in the literature. Most patients afflicted are in their third and fourth decade of life and are of African American descent. Patients usually have episodic oligoarthritis that most commonly affect the lower extremities. The clinical picture may mimic rheumatoid arthritis, spondyloarthropathy, or infectious arthritis. Radiographic findings may include erosions and periosteal reactions of the affected joints and synovial fluid analysis has been reported to be sterile, non-inflammatory fluid. Treatment includes NSAIDs as acceptable first line agents and variable outcomes have been reported with prednisone and methotrexate. It is important for clinicians to consider this rare associated illness in patients suffering from HS.

18 PANCREATITIS SANS LAB

Lunby C, Smalligan R, Islam M, Meshram S, Walker W. Texas Tech University Health Sciences Center, Amarillo, TX.

Case Report: A 32 yo man with NIDDM s/p renal transplant presented with LUQ pain. Patient is noncompliant with medications but does take his sirolimus and mycophenolic acid for transplant immunosuppression. Physical exam showed normal vital signs except for mild hypertension and tachycardia along with epigastric and LQD tenderness. Initial lab values: amylase 108; lipase 28; TG 33,555; HDL 26; cholesterol 1044; HbA1C 8.2.

Initial abdominal CT showed free fluid, slight fat stranding but no solid organ abnormalities or acute inflammation. Three days later CT showed edema and fluid surrounding the tail of the pancreas. Patient was treated for acute pancreatitis. Amylase and lipase remained normal. TG decreased to 897.

DISCUSSION: Acute pancreatitis is common. The American Gastroenterological Association bases the diagnosis on clinical features and elevated amylase or lipase. CT of the abdomen with contrast can provide confirmation. CT findings range from pancreatic enlargement to peripancreatic stranding, fluid collections, and necrosis. Early CT can underestimate pancreatic necrosis. Our case was unusual in that the amylase and lipase levels remained normal. High TG levels are known to interfere with the reading of amylase resulting in falsely low results. In fact, in patients with pancreatitis due to high TG, over 50% will have low to normal values on admission. Extremely high TG levels may be due to familial hypertriglyceridemia (HTG), mixed hyperlipidemia, or drug induced (sirolimus can cause “Eight-and-a-half syndrome” caused by acute pancreatic infarction. Less elevated levels are seen in diabetes, obesity, alcoholism, and hypothyroidism. This was a case of a diagnostic dilemma due to the patient’s complex medical problems in addition to normal lipase and amylase levels and an initially nondiagnostic CT. Pancreatitis due to high TG (> 1000) often occurs in obese patients with poorly controlled DM, in alcoholics, and in those with drug or diet induced HTG. This case reminds internists of the importance of their clinical exam and suspicion of pancreatitis in the appropriate patient and of the limitations of both imaging and biochemical markers. The presence of normal amylase & lipase should not rule out pancreatitis. Similarly, an initially normal CT should prompt a repeat study after 72 hours if there is high clinical suspicion.
parasthesia of the right upper and lower extremity. The patient had experienced similar symptoms 6 months ago and subsequently underwent angiography, which revealed a right ophthalmic artery aneurysm (ROAA), identified on CT. However, milder episodes of symptoms persisted along with deterioration of recent memory.

Her PAST MEDICAL HISTORY is significant for brittle diabetes, hypothyroidism, peripheral neuropathy, depression and questionable history of Alzheimer’s disease. FAMILY HISTORY is significant for Diabetes Mellitus and Hemochromatosis.

SOCIAL HISTORY is positive for smoking half a pack a day for 30+ years.

HOME MEDICATIONS include Plavix 75 mg PO QD, Lantus 50 units AM and 25 units PM, Novolog SQ (SSI), Levothyroxine 50 mg PO daily, Galaprep 600 mg PO TID, Aricept 10 mg PO daily, Effoxor 150 mg QID.

Physical exam showed intact CN II-XII, with clear speech. Normal power, tone, reflexes, proprioception, sensation to light touch and gait were noted. Patient, however, experienced an element of short term memory impairment. Rest of the physical exam was unremarkable.

Labs: Glucose 400 mg/dl. HbA1C 10.1%.

On admission, due to concern of hypoglycemia, her Glargine dose was lowered to 40 units AM and 15 units PM. Her PM Glargine was subsequently discontinued and AM dose reduced to 20 units due to 2 episodes of nocturnal hypoglycemia. A modified low dose Aspart was added. Symptoms and glycemic control improved and CTA done before discharge was stable with no evidence of aneurysm.

The symptoms were attributed to the aneurysm, one would expect involvement of the contralateral side of the body since the lesion is above the site of pyramidal and corticospinal tract deuscessus. The close relationship of the ROAA with CN II in the optic canal, and CN III, IV, V1, V2 and VI within the cavernous sinus, would also manifest as progressive visual loss, along with ophthalmoplegia, ophthalmalic, and maxillary sensory loss (Kupersmith et al), and not just intermittent blurriness of vision. Thus, the etiology of symptoms is consistent with Sornogis phenomenon and not the aneurysm. Regardless of the pathophysiology of this phenomenon, this case illustrates the importance of a proper H&P.

20 WHAT’S LURKING UNDER THE VEIN?
Karim A, Ahmed J, Chua M Texas Tech Health Science Center, Amarillo, TX

Case Report: Several reports of bacteremia due to Bacillus sp. mostly in immunocompromised patients have been published in the literature. We are reporting a case of Bacillus sp. sepsis and thrombophlebitis in an IV drug abuser patient who was immunocompetent.

51-year-old male with history of IV drug abuse admitted for altered mental status after receiving IV lorazepam for methamphetamine overdose. He was afibrile, drowsy but arousable. He had IV track marks on both his arms and a tender indurated cord like vein on his right forearm along the cephalic vein. There was neither skin erythema nor fluctuation on the affected site. His labs showed elevated WBC of 26,800, Neutrophil 92.6% with bands of 24. The rest of the lab works including HIV were unremarkable.

Septic work up was done and he was started on empiric broad spectrum antibiotics. Blood cultures grew Bacillus sp., transthoracic echocardiogram did not reveal vegetations and venous doppler of right upper limb reveals non occlusive thrombus in right cephalic vein. He was diagnosed with Bacillus sp. thrombophlebitis and sepsis. His antibiotics were escalated to IV ceftriaxone. His serial blood cultures showed persistent bacteremia up to 72 hours, subsequently his WBC drops to normal range and he was discharged on IV ceftriaxone for 2 weeks.

Bacillus species are aerobic gram-positive, spore-bearing rods usually found in decaying organic matter, dust, soil, and water; and some are part of the human gut and skin flora. The isolation of Bacillus species from blood cultures is clinically significant in 5%-10% of cases, except for B. anthracis, rarely cause serious human infections. Bacillus species can cause sepsis in certain clinical situations such as cancer, neutropenia, leukemia, receiving chemotherapy or indwelling central venous catheter, but are not usually pathogenic to immunocompetent individuals. Since Bacillus species are common laboratory contaminants, isolation of the organisms in cultures of blood does not indicate infection unless they are detected in multiple sets. Our patient was considered to have true bacteremia, as the Bacillus sp. grew from multiple sets of blood culture bottles. No occlusive thrombus in the right cephalic vein was believed to be the reservoir.

21 A FEBRILE NEONATE’S WARNING AGAINST PREMATURE CLOSURE
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Case Report: Well-accepted guidelines dictate the management of febrile neonates <28 days old and include assessment for infection and initiation of empiric antibiotics. While bacterial infection must be ruled out, a broad differential must be entertained as a range of pathophysiologic mechanisms can lead to clinical deterioration in this population.

A previously healthy term three-week-old female presented to her pediatrician’s office for evaluation of newly developed fever, fussiness, and poor feeding. She was noted to be febrile (101.8°F) and hypoxic (85% on room air). She was emergently transferred to our hospital. Initial exam was notable for an irritable but consolable infant with tachypnea and impaired perfusion. A non-specific II/VI systolic murmur was auscultated and peripheral pulses were diminished. Oxygen saturation improved to 95% on 2L O2 via nasal cannula. A sepsis evaluation was performed and empiric antibiotics were started. A chest radiograph revealed an enlarged heart and increased pulmonary vascular markings. Given the patient’s exam, initial hypoxia, and radiograph findings, an echocardiogram was requested and revealed features of Shone’s complex, including a hypoplastic aortic arch, small aortic and mitral valves, and coarctation of the aorta. Other notable findings included a patent ductus arteriosus with bidirectional flow, multiple muscular ventricular septal defects, and impaired left ventricular systolic function. The patient was started on prostaglandins and admitted. The day after admission the patient’s blood cultures grew group B streptococcus.

Following a treatment course of ampicillin, she underwent an extended end-to-end repair of her coarctation and pulmonary artery banding.

Maintaining a broad differential diagnosis and assessing for co-morbid conditions when evaluating febrile neonates is essential. Presentation of children with previously undiagnosed ductal-dependent lesions is variable and depends in large part on the quantity of ductal-dependent flow. While fever is not a common symptom in infants presenting with ductal-dependent lesions, it may accompany inflammatory processes that lead to clinical deterioration secondary to imbalance in oxygen delivery and consumption.
had received IV antibiotics during delivery. The patient completed therapy and was discharged home without complications. Another infection is important because of the high index of suspicion required to diagnose it. One study showed that 3% of infants less than 3 months old with an ANC of <1000 had bacteremia. Fever, tachycardia, and neutropenia should raise suspicion for possible bacteremia, even in the well-appearing 3-month-old. In addition, this case shows the importance of the gram stain in diagnosing meningitis when CSF indices are normal and the importance of the peri-natal history. Occult sepsis and meningitis should be considered in the differential diagnosis of the infant older than 2 months, especially in the face of neutropenia and persistent tachycardia.


23 ACUTE ONSET OF VENTRICULAR TACHYCARDIA IN A CHILD WITH HEMOLYTIC UREMIC SYNDROME (HUS)
Wunder SE, Yang S, Singh D, Akingbala O, Frieberg E, El-Dahr S, Yosypiv IV Tulane University School of Medicine, New Orleans, LA.

Purpose of Study: Discuss a case of ventricular tachycardia in a child with HUS.

Methods Used: A 3 year old boy with developmental delay presented to his PCP after several days of bloody diarrhea and apparent dehydration. The illness started shortly after the patient visited the zoo, where he reportedly consumed some animal excrement handed to him by a primate in a petting area. He was transferred to a local hospital where laboratory results revealed microangiopathic hemolytic anemia, thrombocytopenia (platelet count of 16/mm3) and acute kidney injury (AKI). A stool culture was obtained and the working diagnosis of typical HUS was made.

Summary of Results: The patient was transferred to the PICU at our institution for further management. Upon admission, the patient required emergent initiation of renal replacement therapy (RRT) for profound azotemia, metabolic acidosis and anuria. Renal ultrasonography revealed the presence of two echocardiographic lesions of normal size with loss of corticomedullary differentiation. Further hospital course was complicated by development of hypotension that required administration of vasopressors. Five days into his hospital stay, he developed isolated premature ventricular contractions followed by a wide-complex ventricular tachycardia (VT) with a heart rate of 200 beats per minute. VT was aborted by two doses of intravenous (iv) amiodarone followed by continuous iv infusion of esmolol. Echocardiogram demonstrated normal chamber sizes, anatomy and ventricular function. Stool culture revealed E. Coli 0157:H7. Subsequent gradual improvement in urine output and renal function allowed discontinuation of RRT 6 days thereafter. Serum creatinine normalized at 4 weeks after disease onset. Of interest, C3 complement levels were decreased during disease onset (62 mg/dL) and normalized (152 mg/dL) at 4 weeks after disease onset.

Conclusions: This case illustrates the importance of hygiene during contact with animals, highlights the need to maintain a high index of suspicion for occult infection, systemic lupus erythematosus, cryoglobulinemia, cryopyrinopathies and urticarial vasculitis. Complete blood count with differential, erythrocyte sedimentation rate and c-reactive protein are indicated in patients with chronic urticaria without an identifiable cause or symptoms to suggest an etiology.

Case series have revealed a higher frequency of antithyroid antibodies in patients with chronic urticaria (3-6%). Lanigan et al. also demonstrated that patients with autoimmune thyroid disease were more likely to have chronic urticaria when compared to non-immune thyroid disease and normal controls. Although chronic urticaria is rare in pediatric populations, an association with anti-thyroid antibodies has been demonstrated. Therefore, laboratory evaluation for chronic urticaria in children and adults should include thyroid stimulating hormones.


24 NOT JUST CHRONIC SINUSITIS: A CASE OF WEGENER'S GRANULOMATOSIS
McMalon NS, Cooper M, Iorembet F, English R Louisiana State University Health Sciences Center, New Orleans, LA.

Case Report: A 15 year old previously healthy African American female presented with a 3 month history of sinus pain and congestion, headache, and fever. She was previously treated with multiple courses of oral antibiotics and steroids by an outside otolaryngologist with only transient improvement in her symptoms. A CT scan confirmed pansinusitis without evidence of abscess or other anatomic abnormality. Her symptoms persisted despite another change in antibiotics and she was referred to our facility for chronic sinusitis unresponsive to outpatient management. Upon arrival, further history revealed a five pound weight loss, polynarthalgia, daily fevers, fatigue, and progressive hoarseness. Work-up revealed positive ANA (very low titer of <1:40) and cANCA (with very high anti-PR3 antibody titer), anemia, proteinuria and hematuria. A kidney biopsy showed necrotizing crescentic glomerulonephritis while a chest CT showed widespread granulomatous lesions. These findings were consistent with the diagnosis of granulomatosis with polyangiitis (Wegener's Granulomatosis), abbreviated as GPA. Induction therapy was initiated with a high dose steroid pulses and intravenous cyclophosphamide with the patient showing marked improvement in her clinical condition.

This case represents a presumed common pediatric problem that resulted in a rare diagnosis in this unlikely patient demographic. GPA more commonly affects older, Caucasian individuals who typically present with a long pro-drome of constitutional symptoms prior to specific organ involvement. Recognition of an atypical course of sinusitis in adolescents should lead to testing for vasculitides, as prompt diagnosis and treatment leads to better outcomes in these devastating disease processes.

25 AN ITCH THAT CAN’T BE SCRATCHED
Fox V, Hartig J University of Alabama at Birmingham, Birmingham, AL.

Case Report: An eighteen month old Hispanic female without significant past medical history presented with 8 weeks of a pruritic, raised, erythema-tous rash. The rash never remained in one spot for more than 3 hours. No other systemic symptoms were present. On exam, weight was 75th percentile, height was 50th percentile and growth trajectory was unchanged. Vital signs were within normal limits. TSH was <0.03 and TSI levels were elevated at 97, consistent with Graves’ hyperthyroidism. Despite treatment with methimazole, the urticarial rash persisted. At follow-up approximately nine months later, the rash had improved.

Chronic urticaria is defined as the presence of urticaria on most days of the week for six weeks or longer. It is more common in adults but also occurs in children. Most cases are idiopathic, however, important illness can manifest with chronic urticaria as the only symptom, as presented here. The differential diagnosis includes occult infection, systemic lupus erythematosus, cryoglobulinemia, cryopyrinopathies and urticarial vasculitis. Complete blood count with differential, erythrocyte sedimentation rate and c-reactive protein are indicated in patients with chronic urticaria without an identifiable cause or symptoms to suggest an etiology.

IS THAT A THRILL I FEEL? DURAL ARTERIOVENOUS FISTULA PRESENTING AT A FIVE YEAR HEALTH SUPERVISION VISIT
LeJeune G, Thomas E2, Kiel E1, Bocchini J1 Louisana State University Health Science Center-Shreveport, Shreveport, LA and 2Louisiana State University Health Science Center-Shreveport, Shreveport, LA.

Case Report: A 5 year old African American female presented to the outpatient clinic for a Health supervision visit. Past medical history was unremarkable. Upon physical exam the patient was noted to have a thrill located in the right posterior occipital neck area. Cardiovascular exam revealed regular heart rate and rhythm, with normal S1 and S2 heart sounds. No murmurs, gallop, or abnormal heart sounds were appreciated. Carotid auscultation was negative for bruits. Capillary refill was < 2 seconds. The remaining exam was unremarkable. Patient denied any headache, seizures, change in vision, or neurological deficits. The above physical exam findings prompted a head and neck MRA revealing an apparent arteriovenous fistula on the right side involving mainly the posterior system and ascending vertebral vein with multiple connections between both vertebral arteries. Also noted was a connection to the right posterior cerebral artery that presented
dilated with apparent nodule. Our patient was then referred to the Neurosurgery department and underwent embolization of the vertebral arteriovenous fistulas.

Arteriovenous malformations, the most concerning of the 4 subtypes of cerebral vascular malformations, are seen in 0.1% of the general population. Age is the major determining factor in deciding surgical treatment; therefore, in our patient endovascular embolization was mandatory to prevent future complications. This case demonstrates the importance of performing a complete and accurate physical exam on every patient.

27 SULFONYLUREA INGESTION: AN UNUSUAL CAUSE OF HYPOGLYCEMIA
Goslings S 1, Kaulfers A 2
USA, Mobile, AL and 2USA, Mobile, AL.
Case Report: INTRODUCTION
Severe hypoglycemia in otherwise healthy toddlers is usually due to ketotic hypoglycemia, so most pediatricians do not obtain the proper tests to evaluate for other causes. We describe the case of a boy who presented with persistent hypoglycemia despite several dextrose infusions, making ketotic hypoglycemia unlikely.

CASE REPORT
A 2 year old previously healthy male was referred to our PICU with altered mental status. He had 24 hours of polydipsia, then progressive somnolence. When his mom tried to arouse him from his nap, he was noted to be diaphoretic, unresponsive, and drooling. On arrival, he was noted to have a blood glucose of 13 mg/dL. He received multiple bosules of D50, but the glucose remained below 40 mg/dL. Further questioning revealed that the child’s diabetic grandmother had visited the previous day. She was on multiple unknown medications, none of which were felt to be missing. A routine urinalysis was negative and urine ketones were negative. His insulin level was 19 uIU/mL and C-peptide level was also elevated at 2.2 ng/ml, consistent with a sulfonylurea ingestion. The child required IV fluids with dextrose for over 24 hours to keep his blood glucose levels stable. A sulfonylurea panel later confirmed glipizide ingestion.

DISCUSSION
Because most pediatric sulfonylurea ingestions are unreported and the onset of hypoglycemia can be delayed by as much as 18 hours, getting to the proper diagnosis can be difficult. The best way to differentiate between a sulfonylurea ingestion and ketotic hypoglycemia is to obtain insulin & C-peptide levels at the time of hypoglycemia, prior to dextrose infusion. Due to the declining use of sulfonylureas by adults, the ingestion of such drugs may not be high on our list of differentials for a toddler presenting with hypoglycemia. However, in 2009, there were 922 unintentional sulfonylurea ingestions by children under the age of six. Hence we feel a high index of suspicion is still needed to make this diagnosis and treat it appropriately, especially in children who have persistent hypoglycemia despite appropriate treatment.

28 INTRAVENTRICULAR HEMORRHAGE AND DEHYDRATION: A CASE REPORT
Rutledge C, Winkler M University of Alabama School of Medicine, Birmingham, AL.
Case Report: A 27 day old term male infant presented to an outside emergency department with failure to thrive, dehydration, lethargy and profound acute renal failure. Mom brought him to the emergency department due to a decreased number of wet diapers and decreased oral intake. Initial evaluation there revealed a child in shock with 4-5 second capillary refill requiring 60ml/kg of resuscitation to restore normal circulation and vital signs. Initial labs revealed a metabolic acidosis and severe renal failure. He was referred to our facility for further management. Renal function and all electrolyte abnormalities improved during his hospitalization. A head ultrasound was performed to further evaluate the etiology of his failure to thrive and revealed bilateral grade III intraventricular hemorrhages with lateral and third ventricular dilatation. A venous magnetic resonance image (MRV) of the brain was then obtained and revealed very limited flow within the ventral half of the superior sagittal sinus consistent with a cerebral venous sinus thrombosis (CVST). Intraventricular hemorrhage (IVH) is a rare diagnosis in term neonates, occurring in only 3.5% of healthy term neonates (compared to approximately 50% of preterm infants born at less than 30 weeks gestation). Differential diagnosis includes obstetrical complications, perinatal complications, bleeding disorders, CVST, arteriovenous malformation and medications. In one study of 29 infants approximately 90% of term infants were found to either have confirmed diagnosis of or suspicion for CVST as the cause of IVH. The cause of a CVST in most term neonates is not known, however is frequently associated with dehydration.

Intraventricular hemorrhage is a rare occurrence in the full term neonate. It is important to consider cerebral venous sinus thrombosis as a possible cause and obtain cranial ultrasound with dopplers and possibly MRV of the brain for further evaluation, especially in the setting of dehydration.

29 ERYTHEMA MULTIFORME PRESENTING AS KAWASAKI DISEASE
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LSU Health Sciences Center, New Orleans, LA; 2LSU Health Sciences Center, New Orleans, LA and 3LSU Health Sciences Center, New Orleans, LA.
Case Report: A 10yo previously healthy female presented with a history of fever, malaise, and dry cough for approximately one week. A three day history of facial edema and conjunctivitis was accompanied by a diffusely pruritic, papular rash on her face and trunk, now spreading to her palms and soles, with new-onset oral excoriations. Initial treatment of symptoms prior to onset of rash included Dextromethorphan and Ibuprofen, both of which the patient had previously tolerated without incident. Physical exam revealed vaginal and oral ulcerations, significant exudative conjunctivitis, and diffuse maculopapular crusting lesions. Laboratory evaluation showed a leukocytosis with elevated ESR and CRP and a chest X-ray showed bilateral interstitial infiltrates indicative of lower respiratory viral infection. With five diagnostic criteria met for Kawasaki disease, the patient was admitted and IVIG with aspirin therapy was initiated. Echocardiogram at that time was within normal limits. Despite treatment, the patient continued to have fever, conjunctivitis, and increasing oral lesions. Her rash progressed to become violaceous and targetoid with central clearing and a presumptive diagnosis of Erythema Multiforme (EM) Major was made. Given her history of cough prior to onset of the rash, Mycoplasma was assumed to be a likely cause and a course of Azithromycin was initiated empirically. Biopsy confirmed necrotic keratinocytes and dermal papillary edema consistent with EM and serology later confirmed positivity for Mycoplasma IgM antibodies. Management included ophthalmologic monitoring for keratitis and ulcerations, pain management for the oral lesions, and topical antimicrobials to prevent mucosal superinfection. After several days of supportive care, the patient was discharged home to complete her antibiotic course with no further issues.

Discussion: Erythema Multiforme Major is an acute immune-mediated process with cutaneous target-like lesions and mucosal involvement. Infection is the cause in up to 90% of cases and the clinical course is often self-limited with treatment based on the degree of mucosal membrane involvement and the necessity for pain management.

30 NOT ALL THAT IS YELLOW IS MELLOW
Barbour W, Woodrum D, Borasino S, Jackson K, Monroe K UAB, Birmingham, AL.
Case Report: Healthy pediatric patients are known for their ability to compensate during serious illness making the diagnosis of myocarditis very difficult. Early signs and symptoms are non-specific. Most children typically present in fulminant CHF making recognition and diagnosis of the disease early in presentation paramount to improving prognosis. Because of its wide variation in presentation in the pediatric population signs and symptoms may mask a potentially fatal illness.

Case Presentation: 15-year-old male was transferred to our ED for jaundice, vomiting and dehydration. He initially presented to a community ER with 2 days of non-bloody diarrhea, bilious emesis and fever to 104°F. Upon arrival vital signs were within normal limits and pertinent physical exam findings were clear sclera, 2/6 systolic murmur, yellow/ashy colored skin and diffuse abdominal tenderness with moderate dehydration. Soon after arrival he deteriorated, developing heart block, hypotension and mental status change eventually requiring intubation and pressor support. He was admitted to the ICU and placed on external cardiac pacing ultimately requiring ECMO. The working diagnosis was myocarditis, eventually confirmed by myocardial
biopsy. He survived and was finally sent home on several cardiac medications and bed rest with close follow up.

Myocarditis is an inflammatory disorder of the myocardium that can lead to impaired cardiac function and death. The etiology of illness is typically viral in nature although autoimmune disorders, bacterial infections and medications have also been implicated as a cause. Diagnosis is based on clinical findings as well as results from chest x-ray, EKG and echocardiography, confirmed with biopsy. The initial management is supportive with advancement depending on severity of illness. The final treatment option is cardiac transplantation.

Conclusion: It is important to understand that the presentation of myocarditis can be non-specific. Symptoms may vary depending on the etiology or severity of myocarditis. It should always be the goal of the clinician to remain objective when evaluating a patient with non-specific symptoms to avoid distraction from non-emergent physical exam findings. A high index of suspicion along with early recognition will improve a patient’s prognosis and outcome.

31 FIRST REPORTED PULMONARY INFECTION WITH MYCOBACTERIUM AVIUM INTRACELLULARE (MAI) IN A CHILD WITH PRIMARY CILIARY DYSKINESIA (PCD)

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Case Report: MAI is ubiquitous and typically pathogenic only in patients with immunosuppression or lung disease. We describe the first reported case of pulmonary MAI in a child with PCD. A 15 y/o male was diagnosed with PCD (absence of outer dynein arms on biopsy) at age 11, now presenting with intermittent febrile episodes, rigors and myalgias at least four times/week for >12 months. After each episode, he returns to baseline. He reports weight loss but denies fatigue, worsening cough or sputum change. He received courses of doxycycline, clarithromycin and levofloxacin. Physical exam showed no evidence of infection; immunology studies, HIV and tuberculosis tests were normal. Sputum for acid-fast bacilli (AFB) smear/culture was obtained. A literature search was performed to identify cases of non-tuberculous mycobacteria (NTBM) associated with PCD. His AFB smear was negative but sputum grew MAI on culture. A repeat smear and culture were positive and the organism was sensitive to clarithromycin and ciprofloxacin. He received azithromycin, ethambutol and rifampin for three months, and remains on azithromycin and ethambutol. Repeat AFB smears and cultures are negative, and he reports less frequent fevers. One cross-sectional study evaluated 44 adults and 15 children (<18 y/o) with confirmed PCD with sputum cultures. Eight adults (MAI=4) but no children grew NTBM. Children with PCD and pulmonary NTBM have not been reported. Possible explanations include: an inability of children to produce adequate sputum; colonization may not occur until later in the disease; and nonspecific symptoms of PCD may leave children undiagnosed. NTBM infection should be considered in any symptomatic child with PCD and mycobacterial studies should be obtained. A delayed diagnosis can lead to rounds of improper therapy, contributing to resistance. High index of suspicion, timely diagnosis and targeted therapy will prevent resistance and improve the clinical course.

32 LÄNGERHANS CELL HISTIOCYTOSIS WITH GASTROINTESTINAL INVOLVEMENT IN A CHILD PRESENTING WITH CHRONIC OTITIS MEDIA AND BLOODY DIARRHEA

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Case Report: Gastrointestinal (GI) tract involvement in Langerhans Cell Histiocytosis (LCH) is rare. We report a case of a 17 month old female who presented with chronic otitis media and bloody diarrhea who was initially diagnosed with a milk protein allergy and chronic suppurative otitis media. She was later diagnosed with LCH with GI tract involvement when her GI symptoms were unresponsive to administration of an amino-acid based formula, and the otitis media was unermitting, despite treatment with multiple antibiotic courses. LCH most commonly affects the bone and the skin and can present with aural discharge and seborrheic-like dermatitis, respectively. In the patient did have a seborrheic dermatitis on the scalp that was positive for LCH when biopsied. GI tract involvement in LCH presents with chronic diarrhoea. Although GI tract involvement in LCH is rare, it carries a poor prognosis in children and we suggest that it be considered in the differential diagnosis of infants with intractable diarrhea presenting in the face of other symptoms of LCH such as chronic otitis media and dermatitis.

33 LYSINURIC PROTEIN INTOLERANCE: NOT YOUR USUAL CASE OF NAUSEA AND VOMITING

Patel RM1, Singh N1, Ramji F2, Adler J1, Yu Z1, Wierenga K1 Oklahoma University Health Sciences Center; Oklahoma City, OK; 1Oklahoma University; Oklahoma City; OK and 2Oklahoma University; Oklahoma City. OK.

Case Report: Lysinuric Protein Intolerance (LPI)’s low incidence and distinct presentation make this illness difficult to diagnose. We report a case of a 7 year-old Asian female presented to us with recurrent episodes of nausea and vomiting. Prior episodes included hyperammonemia and altered mental status (AMS). Throughout childhood, she developed growth retardation and protein aversion. Two years ago, she received extensive work up which showed hepatic dysfunction. She was diagnosed with autoimmune hepatitis and started on steroid treatment. However, her symptoms persisted requiring another liver biopsy with findings inconsistent with autoimmune hepatitis. Metabolic studies ruled out main urea cycle defects.

During this hospitalization, she presented with nausea, vomiting, and abdominal pain. Physical exam revealed a cæphatic child with intact mental status, abdominal tenderness, and splenomegaly. Laboratory findings showed hyperammonemia. Plasma levels of lysine, arginine and ornithine were low and urinary excretion of lysine was high. Pedigree revealed parents to be first cousins. Based on biochemical and clinical findings, she was diagnosed with LPI.

LPI is a rare autosomal recessive inborn error of metabolism, which results from a defective dibasic amino acid transporter in the gastrointestinal tract, renal tubule, and hepatocytes. This results in low plasma lysine, arginine and ornithine which eventually causes inactivation of the urea cycle. This presents clinically as a multi-system illness with symptoms including: nausea, AMS, osteopenia, hepatomegaly, and hypocarnitemia.

Treatment aims to normalize lysine and urea cycle intermediates by providing low-protein diet, supplemented with citrulline and carnitine. Citrulline, unlike ornithine and arginine, is absorbed well in the gut, hence it is the preferred supplement for replenishment of the urea cycle in LPI. Our patient was started on a protein restricted diet, supplemented with citrulline and carnitine, which resulted in cessation of her admitting symptoms.

34 VENO-ARTERIAL EXTRACORPOREAL MEMBRANE OXYGENATION IN AN ADOLESCENT WITH A MEDIASTINAL MASS

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Case Report: Extracorporeal membrane oxygenation (ECMO) is a form of cardiopulmonary bypass used to support patients with respiratory or cardiac failure. Although the ECMO circuit changes pharmacokinetic parameters of medications, little information is known regarding proper dosing, especially of chemotherapeutic agents. We describe a case of a 14 year old girl deployed on ECMO secondary to a non-Hodgkin’s lymphoma mediastinal mass. This was a retrospective chart review of a single case in an 18 bed Pediatric Intensive Care Unit (PICU) in a free standing children’s hospital. Each author’s Institutional Review Board deemed this project exempt.

A previously healthy 14 year old female presented with a three month history of progressive respiratory distress. Computed tomography (CT) scan revealed a large mediastinal mass and large pleural effusion, and she was diagnosed with non-Hodgkin’s lymphoma. Her illness progressed to cardiopulmonary failure requiring full ECMO support on day 1 of admission. The patient started high-dose steroids, vincristine, and doxorubicin while on ECMO for the lymphoma. On day 7, ECMO support was successfully weaned, however she remained critically ill with multi-organ system failure. On Day 17 of admission, hours after receiving a second dose of daunorubicin...
and vincristine, the patient acutely decompensated and a second course of ECMO was initiated. On day 27, papillary changes were noted, and CT scan showed a large inoperable intracranial hemorrhage and support was withdrawn.

This case describes two rounds of ECMO support in an adolescent girl with non-Hodgkin’s lymphoma mediastinal mass. Vincristine and daunorubicin were used during ECMO as the anti-neoplastic agents. Based on the pharmacokinetic properties of vincristine and daunorubicin and the known changes that occur during ECMO, the vincristine dose was increased by 25% over the standard protocol dose. Little information is available for medication use during ECMO, especially chemotherapeutic agents. Additional studies are needed to optimize care for these subsets of critically ill patients.

35
UNUSUAL CAUSE OF ABDOMINAL ABSCESS IN CHILD WITH VP SHUNT

Jackson A, Gosi S, Macariola D East Tennessee State University, Johnson City, TN.

Case Report: A 6-year-old white female with a ventriculo-peritoneal (VP) shunt due to hydrocephalus presented with right lower quadrant abdominal pain & fever for 2 days. There was no vomiting, diarrhea or headache. Past medical history was significant for prematurity and shunt revision at 4 years of age. She had no history of ingestion of improperly cooked food & had no animal exposure. Her review of systems was unremarkable except for fever & abdominal pain. PE findings were pertinent for right lower quadrant tenderness without signs of acute abdomen with the rest of the PE findings being unremarkable. Lab tests: WBC 25,100/mm3 with differential count of 74% neutrophils, 18% lymphocytes & 8% monocytes, liver enzymes & urinalysis were unremarkable. No bacteria were isolated from her blood culture. Her shunt series & head CT were unremarkable but a phleghmon was demonstrated in her right lower quadrant by abdominal ultrasound and CT scan. She was initially treated with vancomycin & gentamicin. Aecal abscess was drained on exploratory laparotomy while multiple mesenteric lymphadenitis adjacent to the terminal ileum were also observed. Because of the extent of the infection right hemo-colectomy and appendectomy with ileocolic anastomosis were performed. Y. enterocolitica susceptible to meropenem & trimethoprim-sulfamethoxazole were isolated from the purulent material obtained from the cecal abscess. Abscess formation was confirmed in the histopathology report. Her antibiotic treatment was changed to meropenem and trimethoprim-sulfamethoxazole. She had fully recovered on follow up.

Discussion: In children with a VP shunt who develop abdominal complications, around 18% are due to intra-abdominal abscess. Often, an abdominal abscess presents with abdominal pain & fever regardless of bacterial etiology. What makes this unique is the fact that a Y. enterocolitica abscess had developed on a child with a VP shunt without the usual risk factors of Y. enterocolitica infection. Clinicians should, therefore, have a high index of suspicion for this pathogen each time a child with a VP shunt develops an intra-abdominal abscess as depicted in our case.

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DIABETES, CARDIOVASCULAR DISEASE, ORTHOSTATIC HYPOTENSION AND ALPHA-1-AGONISTS

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Case Report: With improved care, patients with diabetes and coronary artery disease (CAD) have been surviving longer and developing dysautonomia and orthostatic hypotension. Alpha-1-agonists have traditionally been avoided in patients with CAD for fear that vasoconstriction will increase myocardial oxygen demand and precipitate angina. In this case, miodidine was used safely and successfully to treat orthostatic hypotension in a revascularized patient with CAD.

A 61-year-old man presented with lightheadedness and syncope. He had a history of CAD with CABBG 12 years prior, ischemic cardiomyopathy (ejection fraction 35%), atrial fibrillation, kidney disease, diabetes, hypertension and hyperlipidemia. While in clinic, the patient had witnessed syncope with loss of consciousness. His blood pressure (bp) was 97/63 mm Hg and heart rate (hr) was 95 beats per minute (bpm). The patient was transferred to the emergency department. An electrocardiogram (ECG) revealed atrial fibrillation with a ventricular rate of 92 bpm. His international normalized ratio was 2.1 and creatinine was 1.92 mg/dL. Electrolytes, complete blood count and cardiac biomarkers were normal. A head CT scan was negative and the patient was discharged.

2 days later he presented with the complaint of 2 more syncopal episodes. He denied prodromal symptoms, chest pain, shortness of breath or paroxysmal nocturnal dyspnea. In clinic his bp was 130/90 mm Hg and 108 bpm while supine, 96/60 mm Hg and 110 bpm while sitting and 90/70 mm Hg and 120 bpm while standing. His jugular venous pressure was not elevated and lungs were clear to auscultation. His heart was tachycardic with an irregularly irregular rhythm. His S1 had a varying intensity and his S2 was normal. There was no palpable edema. An ECG showed atrial fibrillation with a ventricular rate of 105 bpm. For orthostatic hypotension, the patient was prescribed midodrine 2.5 milligrams every four hours (at 7am, 11am, 3pm and 7pm).

4 weeks later the patient returned to clinic feeling well with no further syncopal episodes or lightheadedness. His blood pressure was 111/62 mm Hg without orthostatic changes and his heart rate was 71 bpm.

37
CARBON MONOXIDE POISONING PRESENTING AS MYOCARDIAL INFARCTION

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Purpose of Study: A 63-year-old commercial shrimper worked from 6 am to 1 am, then slept on the boat. He awoke one hour later with dull, non-radiating chest pain and nausea. He associated it with the heavy work and went back to sleep. He awoke about 4 hours later feeling weak and dizzy and he had burning in his chest. His wife, who was in the same cabin, had no chest pain but profound weakness. They were helicoptered to the nearest medical facility where his first carboxyhemoglobin level, drawn 7 hours after exposure, was 18.2 %. The carbon monoxide (CO) poisoning resulted from the intake duct of the boat’s air conditioner (AC) being too close to the exhaust of the generator used to power the AC. After one hour of 100% O2 therapy his carboxyhemoglobin was 8%. He was transferred for hyperbaric treatment (2.4 atm of 100% O2 for 90 min), after which he felt better.

Methods Used: His initial ECG showed normal sinus rhythm with left ventricular hypertrophy. His first set of cardiac markers were positive with a troponin I level of 1.24 ng/ml, which later peaked at 6.9. Coronary arteriography revealed a 70% distal left main stenosis, a 50% left circumflex stenosis, and a 70% proximal right stenosis. He had 3 coronary artery bypass grafts placed and was discharged home.

Summary of Results: Cardiovascular manifestations of CO poisoning, less well known than the neurologic problems, consist of arrhythmias, ischemia/infarction and may lead to death. Ischemia/infarction can occur without coronary disease, but occurs more readily with it. There are three mechanism of cardiac injury. CO has 200 to 250 times the affinity for hemoglobin that oxygen does and thus replaces oxygen and forms carboxyhemoglobin. CO also displaces the oxygen dissociation curve to the left thereby reducing oxygen delivery. In addition, CO binds to the cytochrome-c oxidase of the mitochondria and disrupts the electron transport chain.

Conclusions: CO poisoning is a dangerous, and many times lethal, disease. After CO exposure, any cardiac symptoms or abnormality, be it of the ECG, echocardiogram, or cardiac biomarkers, should trigger a full workup to determine the carboxyhemoglobin level and exclude underlying cardiac disease. CO poisoning was our patient’s stress test, and his failing it led to the discovery of severe coronary disease and a bypass operation to repair it.

38
CASE REPORT: KAWASAKI DISEASE AND POSSIBLE RISK OF PERIPHERAL ARTERIAL DISEASE

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Case Report: Kawasaki disease (KD) is an acute febrile illness in childhood that can cause unknown etiology acute vasculitis. KD is seen worldwide, but the incidence is higher in Asia. In the United States, estimates of the incidence of KD range from 9 to 19 per 100,000. In the acute phase, the main concern is coronary artery aneurysm (CAA). Long-term prognosis of KD is uncertain.
A 28-year-old white male non-smoker with hypertension was diagnosed with KD when he was 6 months of age. As a 12-year-old, he developed typical anginal chest pain and coronary artery angiography revealed multiple CAD. He underwent aorto-coronary-bypass (ACB). He developed claudication which progressively worsened over the past 2 years. Ankle brachial index was abnormal. Magnetic resonance angiography of the abdomen demonstrated significant stenosis at the origin of the left common iliac artery. Abdominal aortic angiogram with bilateral lower extremity runoff showed common iliac artery pseudoaneurysms with 90% stenoses bilaterally. He had aorto-bifemoral bypass surgery and femoral endarterectomies. The pathological specimen showed atherosclerotic changes. Laboratory results were unremarkable except C-reactive protein (CRP) was elevated at 11.6 mg/dL.

We present a typical case of KD, complicated by CAA and subsequent ACB. He then developed severe PAD. Atherosclerosis is a disease of large and medium-sized arteries. Pathophysiology remains uncertain but is believed due to interaction between the endothelial cells, smooth muscle cells, leucocytes, platelets and cellular elements. This patient has hypertension and high CRP as risks. However, compared with previous data most atherosclerosis becomes clinically apparent in patients aged 40 years or older. We think that KD is a disease of systemic inflammation, which may cause chronic inflammation of large-sized vessels, elevated CRP and, as in this patient, early severe atherosclerosis. We believe that KD causes chronic inflammation of medium and large-sized vessels and results in PAD.

39 HYPOMAGNESEMA OF UNCERTAIN ETIOLOGY IN A 58-YEAR-OLD WOMAN WITH DEPRESSION AND ANXIETY DISORDER: A CASE OF THE CHICKEN OR EGG
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Case Report: Purpose: Marked hypomagnesemia (1.5 mg/dL), together with normal serum K⁺ (4.7 mmol/L), Ca²⁺ (8.9 mg/dL) and renal function (serum creatinine 1.2 mg/dL), were found in a 58-year-old woman on routine outpatient evaluation. She had known hypertonstension, controlled with amlopidine, metoprolol, benazepril and spironolactone, and depression with anxiety disorder, treated by her psychiatrist with risperidone, doxepin and citalopram. She denied nephrolithiasis, cramping or tetany. The causality of her hypomagnesemia was unknown. The question was: was this hypomagnesemia due to renal wasting induced by her antidepressant medications or an inherited renal tubular defect with consequent hypomagnesemia responsible for her depression?

Methods Used: Urinary fractional Mg²⁺ excretion was calculated from a random urine specimen. Serum Na⁺, 139, Cl⁻, 105, and HCO₃⁻27 while blood urea nitrogen 22 mg/dL. The patient remained on these medications when the urine sample was collected as she refused to discontinue same given her concern for a recurrence of depression.

Summary of Results: Urinary fractional Mg²⁺ excretion was increased at 4.3% (normal <2.0%). The increase in Mg²⁺ excretion excluded gastrointestinal losses or dietary Mg²⁺ deficiency, where fractional excretion would have been reduced. On supplemental Mg²⁺ oxide (400 mg po bid), together with continued spironolactone (50 mg po daily), her serum Mg²⁺ rose initially to 1.7 and more recently to 1.8 mg/dL. QTc interval on her ECG remained normal (<440 ms) indicating no delay in myocardial repolarization and arrhythmias were not seen. These findings implicate renal Mg²⁺ wasting due to either: a) inhibition of Na⁺ reabsorption in segments of the nephron where Mg²⁺ transport follows passively; or b) a primary genetic defect in Mg²⁺ tubular reabsorption.

Conclusions: Marked hypomagnesemia, without associated hypokalemia or hypocalcemia, was found in a 58-year-old woman with depression and anxiety disorder, treated with antidepressants and in whom there was increased urinary Mg²⁺ excretion. Was this a case of antidepressant-induced renal Mg²⁺ wasting or hypomagnesemia-induced depression due to an inherited renal tubular defect with Mg²⁺ wasting?

40 HEMOLYSIS AFTER MITRAL VALVE REPAIR
Lathia V, Jain N LSU-Health Sciences Center, New Orleans, LA.

Case Report: A 39 year old white male presented to Emergency room complaining of two weeks of feeling weak and dizzy. The patient was well with a history of mitral valve prolapse until one year prior when he became symptomatic from severe mitral regurgitation necessitating surgical repair.

He underwent mitral valve repair which included mitral valve chordal shortening using polytetrafluoroethylen (PTFE) sutures followed by placement of a 3.2 mm Carpentier-Edwards ring. Complications were noted after recovering from the mitral valve repair, he reported the onset of dark urine. Symptomatic anemia was documented, necessitating multiple blood transfusions. Gastrointestinal and genitourinary evaluation for anemia including colonoscopy and cystoscopy failed to reveal an etiology for his anemia. There was no family history of anemia or bleeding disorder. He did not smoke or drink alcohol. On examination, patient's vital signs were within normal limits. Cardiac examination revealed a loud apical systolic murmur. Lab work was significant for hemoglobin of 8.6 g/dl, hematocrit of 25.4%, an elevated LDH of 1200 mg/dl and undetectable haptoglobin level. An indirect Coombs test was negative. A transthoracic echocardiogram and subsequent transesophageal echocardiogram demonstrated severe mitral valve regurgitation with normal left ventricular function. An abdominal aortic angiogram with bilateral lower extremity runoff showed severe atherosclerotic changes of the iliac vessels. There was no aortic dissection. Ankle brachial index remained normal (0.98). Due to his history of mitral valve repair, he reported the onset of dark urine. The urine sample was collected as she refused to discontinue same given her concern for a recurrence of depression.

Conclusions: Marked hypomagnesemia, without associated hypokalemia or hypocalcemia, was found in a 58-year-old woman with depression and anxiety disorder, treated with antidepressants and in whom there was increased urinary Mg²⁺ excretion. Was this a case of antidepressant-induced renal Mg²⁺ wasting or hypomagnesemia-induced depression due to an inherited renal tubular defect with Mg²⁺ wasting?
Case Report: Brugada syndrome is a genetic disorder characterized by a mutation in the sodium channel SCN5A gene; individuals carrying this gene have a higher risk of sudden cardiac death. ECG patterns similar to Brugada syndrome have been observed in the presence of certain drugs, including sodium channel blocking Class I antiarrhythmic drugs, selective serotonin reuptake inhibitors (SSRI), tricyclic antidepressants (TCA), and other antidepressants. Here we present a case of induced Brugada pattern due to quetiapine overdose.

Sixty-one year old male came to the emergency room following a suicide attempt by overdose of quetiapine and zolpidem. He had recently started quetiapine after stopping citalopram. On presentation he was awake, but confused and agitated. He was hemodynamically stable, diaphoretic, had pinpoint pupils, flushed appearance and tremors in all extremities. ECG on presentation showed ST-segment elevation in V1, V2 and V3 consistent with Brugada pattern. Troponin and electrolytes were within normal ranges. He was admitted to the intensive care unit and quetiapine and zolpidem were held. Serial ECGs demonstrated eventual normalization of ST segments QT interval. He was transferred to mental health for medication adjustments, but had no arrhythmias during the hospitalization.

Brugada pattern on ECG can be induced by several factors including medications mentioned above as well as lithium, cocaine, bupivacaine, propofol, verapamil, beta blockers, and nitrates. Here we present the first reported case, to our knowledge, of Brugada pattern induced by quetiapine. Optimal management for patients who have transient Brugada pattern induced by medications is not clear, although most seem to have a good prognosis. While genetic defects such as those associated with the SCN5A gene can be unmasked by certain agents, the arrhythmic risk associated with mutations having low penetrance is not currently known. In selected cases with syncope or palpitations consistent with a cardiac arrhythmia, further electrophysiologic evaluation may be beneficial. Based on the occurrence of Brugada pattern with quetiapine and other antidepressant medications, screening with baseline and periodic ECGs is warranted.

Joint Plenary Poster Session
Adolescent Medicine and Pediatrics
5:00 PM Thursday, February 9, 2012

43 MATERNAL RISK FOR CHILD PHYSICAL ABUSE: CHILDOOD TRAUMA, STRESS, AND MENTAL HEALTH
Banan M, Mackey S, Tylavsky F, Connor P University of Tennessee Health Science Center, Memphis, TN.

Purpose of Study: Early detection and intervention is key to child abuse prevention. Thus, identifying factors related to increased risk of child abuse is important. This study examines psychosocial variables predicting child abuse potential. Of particular interest is the differential impact childhood trauma may have on maternal risk for child physical abuse.

Methods Used: The present work is a sub-study of the Conditions Affecting Neurocognitive Development and Learning in Early Childhood birth cohort study which enrolls healthy pregnant women in Shelby County, Tennessee between 16 and 28 weeks gestation and follows them for 4 years. Questionnaires used for the purposes of this study include: Child Abuse Potential Inventory; Brief Symptom Inventory; Conflict Tactics Scale 2 - Short Form; Parenting Stress Index; Traumatic Life Events Questionnaire; Social Support Questionnaire; and Nursing Child Assessment Satellite Training Teaching Scales. Bivariate correlations were conducted to identify potential predictors of CAPI scores. A multiple regression was conducted to determine the unique contribution of each predictor on CAPI scores.

Summary of Results: 273 participants with complete data on all measures were selected for the present study. All predictors were correlated with CAPI scores and were used in the multiple regression. In the final model, predictors accounted for 64% of variance in CAPI scores. Predictors with significant unique contribution to CAPI scores were: parental stress (β = -0.41, p = 0.00); family income (β = -0.23, p = 0.00); maternal mental health (β = -0.23, p = 0.00); and maternal childhood abuse history (β = 0.13, p = 0.01). Factors that were no longer significant predictors of CAPI scores in the presence of other variables were: maternal age; other types of maternal trauma; maternal intimate partner violence victimization; satisfaction with social support; and maternal-infant attachment.

Conclusions: When assessing risk for child abuse, clinicians should pay particular attention to maternal history of childhood trauma, maternal mental health, and family stress including that arising from insufficient income and parenting. Furthermore, prevention and intervention efforts that address these areas may be particularly effective in the prevention of child maltreatment.
overweight and obese children. We feel that this is important because a reduction in BMI could potentially lead to a reduction in weight related comorbidities and an increase in overall quality of life.

Methods Used: The program consisted of a 12 week weight management program. Each 2 hour session consisted of a physical activity, nutrition, and behavioral modification lesson or activity taught by a professional. Height and weight of the participants and willing family members was measured at each of the 12 visits. In addition, participants filled out the initial and follow up "lifestyle evaluation" form in order to track lifestyle changes.

Summary of Results: Five families participated in the 12 week program. The goal was for the children to maintain or lose weight. At the time of this submission, the program is in progress but we expect that the children will be successful. We also expect that the children and families will have significant changes on their post- lifestyle evaluation forms.

Conclusions: New Orleans is a city known for its great food and laid back lifestyle, so it is no surprise that we rank higher than the national average in childhood obesity. Along with the rise in childhood obesity, there has been a large increase in the incidence and prevalence of obesity-related medical conditions that were once considered adult diseases. By using a multipronged approach, we feel that our program was successful in teaching families healthy lifestyle choices that will improve their children's health in the future.

The number of families participating was small but the program can be replicated in the future. Also the program could be implemented at schools where the impact might be greater because of the larger number of children participating.

47
THE USE OF INTRAMUSCULAR EPINEPHRINE FOR PEDIATRIC STATUS ASTHMATICUS
Caperell K1, Pitetti R2 1University of Louisville, Louisville, KY and 2University of Pittsburgh, Pittsburgh, PA.

Purpose of Study: To review one center's experience with IM epinephrine for asthma exacerbation and to use it as a proxy measure of physician assessment of asthma severity.

Methods Used: A retrospective review of all patients who presented to the Children’s Hospital of Pittsburgh ED with an asthma exacerbation requiring IM epinephrine, 683 were admitted to the floor, 74 were admitted to the ICU, group that received IM epinephrine, 3 were admitted to the floor, 14 were discharged. Of those, 20 (1%) received IM epinephrine and 1975 did not. There were no differences in age, gender, ICU days, or total hospital days between those who received epinephrine and those who did not.

Summary of Results: There were 1995 visits for asthma exacerbation. Of those, 20 (1%) received IM epinephrine and 1975 did not. There were no differences in demographic characteristics between these two groups. In the group that received IM epinephrine, 3 were admitted to the floor, 14 were admitted to the ICU, and 3 were discharged. Of the 1975 who did not receive IM epinephrine, 683 were admitted to the floor, 74 were admitted to the ICU, seven were unknown, and 1211 were discharged. 39% of subjects required hospital admission. Subjects who received IM epinephrine were more likely to be admitted to the hospital (OR 9.06, 95% CI 2.65 - 31.01) and to the ICU (OR 56.69, 95% CI 22.31 - 159.70). For patients who went to the ICU, a separate review was conducted and characteristics were summarized and compared.

Conclusions: IM epinephrine was rarely used during the study period, even in children who were admitted to the ICU. However, subjects that received IM epinephrine tended to be sicker as evidenced by their higher ICU and overall admission rates. This may indicate an understanding by the treating physician of the severity of illness in these children. In contrast, there were 74 patients in the study who required ICU admission and never received IM epinephrine. While this represented only 4% of the children with asthma exacerbation, it may represent a lack of recognition of the severity of symptoms by the treating physician in this group of patients.

48
14-MONTH-OLD WITH CYSTIC FIBROSIS AND RESPIRATORY DISTRESS
Caperell K1, Pitetti R2 1University of Louisville, Louisville, KY and 2University of Pittsburgh, Pittsburgh, PA.

Case Report: A 14-month-old girl known to have cystic fibrosis presented with two days of cough. The patient had developed worsening oral intake and three episodes of non-bloody, non-hilious emesis. This prompted a visit to a community hospital emergency department. She had no fever or difficulty breathing. She did have rhinorrhea and decreased urine output.

The patient's medical history was significant for cystic fibrosis, constipation, and failure-to-thrive.

At the community hospital, the patient had a temperature of 38.1°C Celsius, with otherwise normal vital signs. On exam, she had increased work of breathing. A chest x-ray was obtained and read as pneumonia. She was given a dose of ceftriaxone and transferred to our emergency department.

In our emergency department, her blood oxygen saturation was 88% in room air which increased to 100% on 30% oxygen via face mask. She was in moderate respiratory distress. On physical examination, she had mild nasal congestion and clear breath sounds. Her abdomen was soft and non-tender.

Her chest x-ray was repeated and revealed a large diaphragmatic hernia (Figure). Remarkably, the patient had a normal x-ray at our institution just five months prior to presentation.

The treatment of CDH is surgical and this patient went to the OR emergently. Her bowel was viable and the defect repaired. On post op day 2 she was tolerating clear liquids and was discharged to home on day 4.

49
SEVERE METABOLIC ACIDOSIS AND ACUTE KIDNEY INJURY IN A CHILD WITH METHYLMALONIC ACIDEMIA (MMA) REQUIREING CONTINUOUS RENAL REPLACEMENT THERAPY
Cejas DM, Singh D, Andersson H, Akingbola O, Frieberg E, Yosypiv IV Tulane University, River Ridge, LA.

Case Report: A 6 year-old female with known methylmalonyl-CoA mutase deficiency type Mut(0) and chronic kidney disease (CKD) stage 4 presented with altered mental status and shock. Comorbid conditions included hypertension, anemia, severe growth failure and developmental restriction. Home medications included levocarnitine, sodium bicarbonate, amiodarone, iron, hydroxyethylamin and darbepoetin. On admission, patients weight was 13.7 kg (Ht Z score -6.5), blood pressure 66/34 (MAP of 46) mmHg, respiratory rate 63/min, heart rate 133/min. ARDS required intubation followed by mechanical ventilation (MVT). Laboratory investigations revealed serum creatinine (Cr) 3.2 mg/dL, BUN 123 mg/dL, bicarbonate 4, CI 73, lactate acid 6.6 and MMA 322 (normal <0.04) mmol/L. Serum estimated anion gap was 65 and mosmolality 320 mosm/kg. Arterial blood gas: pH 6.9, p CO2 16, bicarbonate 3.7, base excess -26.0. Intravenous sodium bicarbonate and volume expansion were initiated to manage high anion gap metabolic acidosis (MA). Development of oliguria, anasarca, resistant to intravenous infusion of diuretics, and progressive uremia (peak BUN of 123 mg/dL) necessitated subsequent initiation of renal replacement therapy (RRT) with
continuous veno-venous hemodiafiltration (CVVHDF). Intensive therapy led to correction of MA and subsequent discontinuation of RRT and MVT. MMA is a rare autosomal recessive inborn error of metabolism (1 in 80,000 births) characterized by recurrent episodes of severe MA, developmental and growth restriction, and progression to end-stage kidney disease (ESKD) most commonly due to chronic interstitial nephritis. Given low muscle mass of patients with MMA, direct measurement of GFR is required to accurately assess kidney function. Neither kidney or liver transplantation alone or combined liver-kidney transplantation (LKT) can cure the biochemical phenotype due to production of MMA by the skeletal muscle beds. Combined LKT, preceeded by pre-transplant hemodilysis to clear MMA, is a therapy of choice that should be considered early in disease course to restore methylmalonyl-CoA mutase enzyme levels in the liver and kidney, and improve quality of life.

50
USING WRITTEN COMMUNICATION OF DAILY OBJECTIVES TO IMPROVE PATIENT SATISFACTION DURING THEIR STAY AT CHILDREN’S HOSPITAL OF OKLAHOMA

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Purpose of Study: Patient satisfaction is an important indicator of good patient care. Assuring that patients understand the daily plan during hospitalization improves communication and satisfaction. Objective: To determine if providing written daily objectives to pediatric patients during their inpatient hospitalization would improve patient satisfaction.

Methods Used: A Quality Improvement intervention was conducted at Children’s hospital between 3/3/2011-3/26/2011 in an attempt to improve patient satisfaction through better doctor patient communication. During the study period families were assigned to the control group or the intervention group based on their day of admission. The control group received communication in a traditional oral format while the intervention group received the traditional oral communication coupled with a written summary of the day’s objectives on the dry erase board in each patient room. An anonymous written survey was distributed to parents or guardians on their day of discharge. The Survey had a total of 9 questions and the responses were based on a 5 point Likert type scale. Analyses were appropriate to the study design.

Summary of Results: Total of 55 parents were surveyed. Parents in the intervention group understood goals for discharge throughout the hospital stay better as compared to control (p=0.00013), were more likely to feel that they were told about the plan (p=0.018) and that the plan for their child was explained to them every day(p=0.003). Overall parents in case group were more satisfied during the hospital stay as compared to the control group (p = 0.002).

Conclusions: Several studies have demonstrated that good communication between parent and pediatrician is the key for improved satisfaction. This is especially important for inpatient hospital care. A simple intervention like writing the daily plans on board can help improve parent satisfaction and improve standard of care. Based on these results, we recommend using written communication of daily objectives as routine practice.

51
BEHAVIORAL AND MENTAL HEALTH ISSUES IN PRIMARY CARE PEDIATRICS

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1University of Louisville, Louisville, KY and 2University of Louisville, Louisville, KY.

Purpose of Study: The study describes the experiences, barriers, and issues experienced by pediatricians in Kentucky with providing behavioral/mental health services (B-MH) in primary care settings. This data will serve as a foundation for the development of improved interdisciplinary models of service delivery.

Methods Used: Members of the Kentucky Chapter of the AAP were asked to complete a survey. Seventy physicians responded. Descriptive data is presented related to the frequency of presentation of children in their practices with specific behavioral health disorders, pediatricians’ comfort in diagnosing and treating such disorders for various age groups, and their comfort in managing and prescribing specific classes of psychiatric medications. Lastly, we explored their perceptions of communication with mental health specialists and their views on specific models of delivery of mental health services.

Summary of Results: Of the ten B-MH diagnoses identified, more than 90% of the respondents said that they saw at least one patient a month with that diagnosis. Only eating disorders was encountered at a lesser rate. Additionally, physicians’ comfort (very or somewhat comfortable) with diagnosing and treating the disorders ranged from 42%-100% and 22%-99%, respectively. Pediatricians also varied in their comfort levels when examined by patient age group rather than diagnosis and in the management of specific classifications of drugs. Major barriers to providing optimal care for children with B-MH problems were inaccessibility of mental health professionals for consultation and referral, lack of communication between providers, and knowledge of available resources. Lastly, respondents were more likely to favor consultation and co location models over an integration model of care delivery.

Conclusions: Overall, we found that pediatricians are dealing with significant numbers of patients with behavioral and mental health problems for which they may not have been adequately trained. Needs in terms of communication and collaboration with interdisciplinary mental health specialists were identified. It is clear that new models of delivery are needed to meet the needs of children in Kentucky and to facilitate efficient and effective behavioral health care in primary care settings.

52
MITOCHONDRIAL ENCEPHALOPATHY LACTIC ACIDOSIS AND STROKE SYNDROME MASQUERADING AS A HEADACHE

Jenks C, Branch B Louisiana State University Health Science Center; Shreveport, Shreveport, LA.

Case Report: 16 year old Caucasian female with a past medical history of migraine headaches, seizures, closed head injury complicated by subdural hematoma, was seen by multiple physicians for a complaint of headache which was persistent and unrelenting. A complete blood count and basic metabolic panel were within normal limits. Physical Exam revealed homonymous hemianopsia, strength was 5/5 on the right, 4/5 on the left, normal deep tendon reflexes, intact sensation, and spontaneous spams of the abdominal musculature. A cat scan of the head showed bilateral calcifications of the basal ganglia (see image).
Creatine kinase 6735 U/L, serum lactate acid 4.6 mmol/L, cerebral spinal fluid showed a lactate acid of 9.6 mmol/L. A muscle biopsy confirmed the diagnosis. Mitochondrial myopathy, lactic acidosis and stroke syndrome (METLAS) is a rare disorder which is associated with hemiparesis, seizures, headaches, vomiting, hearing loss, and muscle weakness. Mutations of the MT-TL1 (mitochondrially encoded tRNA leucine 1) gene cause more than 80 percent of all cases of METLAS. Theres no known treatment for METLAS syndrome, but there are some anecdotal treatments using riboflavin creatine monohydrate, coenzyme Q, lipoic acid, L-arginine, resveratrol (SRT-501), and succinate. It is important for the clinician to work up previous diagnoses especially if the symptom is changing or unresponsive to conventional treatment.

53 ENCEPHALITIS PRESENTING WITH STROKE LIKE SYMPTOMS IN THE PEDIATRIC EMERGENCY DEPARTMENT

Loomba A 1, Gran K 1 2 University of South Alabama, Mobile, AL and 3University of Alabama at Birmingham, Birmingham, AL.

Case Report: Stroke is a rarity in the pediatric population. Intracranial infections may cause Acute Ischemic Stroke via local inflammation or thrombosis. A child presented to our Emergency Department (ED) with stroke-like symptoms without any evidence of an infectious process. After general supportive measures and basic diagnostic studies, pediatric neurology was consulted. An extensive workup later showed her symptoms were related to encephalitis from a monophasic infectious process, with possible tick born etiology. A 10-year-old Caucasian female presented to the ED with one day history of headache, nausea, vomiting and progressive slurring of speech and tick bite one week ago. She had no fever and the review of the systems was negative. Family history was positive for migraines and stroke but negative for hypercoagulable disorders, sickle cell or multiple sclerosis. In the ED, she appeared comfortable and her vitals were stable. Her examination was significant for an expressive aphasia which worsened as the day progressed and the patient was empirically treated with antibiotics. Repeat MRI showed improvement. Prior to discharge her headache and slurred speech had resolved with minimal facial droop. She was discharged on aspirin and doxycycline. On follow-up her left sided weakness and facial palsy had also resolved completely.

54 EBV: THE OTHER GREAT IMITATOR, A CASE OF GENITAL ULCERS

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Case Report: Genital ulcers are typically associated with sexually transmitted diseases. However, the presence of these ulcers in children and adolescents who are sexually abstinent can be perplexing. We present a case of genital ulcers as a presenting symptom of EBV mononucleosis.

A 13-year-old previously healthy female presented with complaints of a painful genital ulcer for five days. The ulcer was initially described as two pimple-like lesions that progressively coalesced to become one large painful ulcer over the course of two days. Despite evaluation by several physicians, the etiology of the ulcer was still unclear. Moreover, even with antibiotics, narcotic pain medications, and lidocaine rinses, the lesion continued to progressively worsen and eventually developed a necrotic center. Our patient's physical exam was significant for a 2 cm x 2 cm right labia minora lesion with a necrotic center, surrounding mild erythema, and right labial swelling. Initial lab tests were unremarkable except for an AST 269 (ref: 7-40) and ALT 17 (ref: 10-45). Blood work was negative for HIV, RPR, acute CMV infection, and HSV-antibodies. Viral culture and direct fluorescent antibodies of the lesion was negative for herpes simplex virus. Bacterial culture grew multiple organisms, likely contamination. Mononucleosis was posited for EBV and confirmatory EBV titers were consistent with acute EBV infection. According to a literature review by Halvorsen et al. in 2006 there are 26 reported cases of genital ulcers secondary to EBV. The majority of these 26 cases presented with genital ulcers in addition to prodromal symptoms. Our patient presented without the typical prodromal mononucleosis symptoms but had elevated liver enzymes, which prompted further workup. The purpose of this case is to emphasize the importance of keeping a broad differential diagnosis when faced with an adolescent female presenting with genital ulcers.

55 MOTHERS, FATHERS, AND HUMAN PAPILLOMAVIRUS VACCINE: HOW DO THEY MIX?

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Purpose of Study: HPV vaccine is now licensed for males and fathers' attitudes toward HPV vaccine may be of importance. Here we sought to compare mothers and fathers with at least one adolescent son, focusing on awareness and knowledge of HPV disease and attitudes regarding HPV vaccine.

Methods Used: We recruited parents with at least one son aged 9-21 years from a university-based pediatric clinic to complete our survey. We used bivariate and multivariate logistic regression. Multivariate models adjusted for parent age, marital status, education, race, and ethnicity.

Summary of Results: All parents completing the survey (n=247) were unsure if their son received HPV vaccine or reported their son was not vaccinated. Mothers had better knowledge of HPV disease, better awareness of quadrivalent HPV vaccine, and greater odds of believing that penile and oropharyngeal cancers would affect sons’ lives compared to fathers. Mothers were more likely to agree all adolescent girls should be vaccinated (AOR 2.05, 95% CI 1.02, 4.12), and claim they would make decisions regarding HPV vaccination for sons (AOR 3.79, 95% CI 1.86, 7.72). Mothers’ and fathers’ did not differ significantly regarding likelihood of sons receiving HPV vaccine in the next year, or in beliefs about vaccinating all adolescent boys. Among parents reporting sons would likely be vaccinated, factors likely to influence mothers’ decisions to vaccinate included belief that a spouse wants the vaccine for sons (AOR 2.50, 95% CI 1.25, 4.98), a doctor’s recommendation (AOR 2.77, 95% CI 1.24, 6.17), and if HPV vaccine is given at the same time as other vaccines (AOR 2.75, 95% CI 1.39, 5.45). None of the factors we explored were likely to influence fathers’ decisions to vaccinate. Parents reporting sons were likely to get HPV vaccine had greater odds of supporting a school requirement for HPV vaccine for girls and believing HPV vaccine should be mandatory for boys if mandatory for girls.

Conclusions: Male vaccination rates remain poor. Mothers reporting sons are likely to get HPV vaccine may be influenced by a spouse’s attitudes towards HPV vaccine. Among fathers reporting sons are likely to be vaccinated influential factors are not well defined. Fathers’ attitudes toward HPV vaccine are worthy of further investigation as they may ultimately influence mothers’ decisions to vaccinate sons.

56 PREVALENCE OF ENDOTHELIAL DYSFUNCTION IN OVERWEIGHT AND OBESAL ADOLESCENTS

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Purpose of Study: To assess the effect of BMI on endothelial function among adolescents.

Methods Used: Thirty-four subjects were enrolled in the study. Informed consents were obtained and the protocol was approved by the local TTUHSC Institution Review Board. A non-invasive measurement of endothelial function was determined for each subject using an Endo-Pat 2000 device, which measures the reactive hyperemia index (RHI). The subject was asked to lie in a supine position, and a conventional sphygmomanometer blood pressure (BP) cuff was placed on the non-dominant arm above the antecubital fossa to occlude the brachial artery for measurement of RHI. The dominant arm was used to measure the subject's baseline activity. Endo-PAT probes were positioned on the index fingers of both hands and inflated. Fingers and pressure tubing were secured while the subject had his/her hands placed in a comfortable position on the provided hand rests. Signal strength was adjusted...
and observed for 1-2 minutes before starting the test. The baseline was recorded for 5 minutes. The BP cuff was then inflated to a pressure that was 40 mm Hg above the subject's diastolic pressure to stop the blood flow to the hand. The BP cuff was then deflated and post-occlusion activity was recorded for 10 minutes. The Endo-PAT software was used to calculate the RHI using measurements taken one minute after release from occlusion.

**Summary of Results:** BMI was calculated by recording the subject’s weight and height. Among the 34 subjects enrolled 12 had a BMI ≥ 25 and 22 had a BMI < 25. Of the 12 subjects with a BMI ≥ 25, 67% of them had endothelial dysfunction (RHI < 1.45) whereas only 36% of subjects with a BMI < 25 had endothelial dysfunction.

**Conclusions:** There was a higher incidence of endothelial dysfunction among the adolescents with a BMI ≥ 25. Awareness of overweight/obesity as a risk factor for the development of endothelial dysfunction should be raised among pediatric primary care providers. Endothelial dysfunction, detected early, can significantly reduce the risk of developing cardiovascular diseases.

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**Obesity Prevalence in Children entering an Emergency Foster Shelter in Oklahoma**

Shropshire DL, Hale J, Weedn A, Gillaspy S. University of Oklahoma Health Sciences Center, Oklahoma City, OK.

**Purpose of Study:** Children who are in foster care experience higher rates of chronic disease than children not in foster care. The goal of this study was to determine the prevalence rates of obese and overweight children entering foster care. The objectives were to provide a baseline of measured prevalence rates for childhood overweight and obesity in children entering foster care, identify potential differences between maltreatment type and prevalence of overweight and obesity, and compare prevalence rates of overweight and obesity among children entering foster care with national estimates.

**Methods Used:** Participants were 339 children age 2-17 admitted to an emergency foster shelter between March 2010 and October 2010. Children included in the analysis had been newly placed in state custody within 3 days of their initial health screen. Information obtained from records included the child's age, sex, race/ethnicity, reason for placement into custody, and measured height and weight. Reason for placement was classified into three main categories: neglect, physical abuse, and sexual abuse. Body mass index (BMI) was calculated from each child's admission height, weight, sex, and age. BMI percentiles were then calculated in SAS using the CDC's program based on the 2000 gender-specific BMI-for-age growth charts.

**Summary of Results:** Overall prevalence of overweight and obesity was 35% and 19%, respectively, among children entering foster care. Among children who were allegedly neglected, 76/205 (37%) were overweight and 43/205 (21%) were obese. For those who were alleged victims of physical abuse, 27/83 (33%) were overweight and 13/83 (16%) were obese. For sexual abuse, 12/34 (35%) were overweight, while 5/34 (15%) were obese.

**Conclusions:** Preliminary data indicate higher rates of overweight and obesity among children entering state custody across all placement categories compared to NHANES, but most notably among neglected children. The small number of charts limited analysis; additional case review is planned to further compare custody type, age, and race with other population data on childhood obesity.

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**Human Papilloma Virus Vaccination Acceptance and Compliance in Inner-City Indigent Male and Female Adolescents**

Thiagarajan A, Macariola D, Derrick M. East Tennessee State University, Johnson City, TN.

**Purpose of Study:** A 5-year-old Caucasian female with recurrent fevers presented with oral blisters for 5 days making her unable to eat & drink. Past medical history was significant for recurrent febrile illnesses for 2 years every 4-6 weeks. Each febrile illness lasted 3 days without associated symptoms and was relieved by ibuprofen. Immunizations were up to date. No ill contacts. Physical Exam showed vesicles in her mouth, face, perianal area and crusty lesions in her lips with dryness of her oral mucosa. Lab tests revealed an elevated WBC count with predominant neutrophils, elevated ESR and thrombocytosis suggestive of infection. Cold agglutinin and EBV titers, anti-cyclical citrullinated peptide and anti-double stranded DNA antibodies were negative. Suspecting herpes, she was given IV acyclovir, however, oral herpes viral culture was negative. After 24 hours of hospitalization she was discharged and oral & perianal blisters resolved. She subsequently tolerated oral feedings and was discharged by the third day of her hospital stay. Immunoglobulin D levels drawn a month apart were elevated at 549 mg/L and 585 mg/L respectively while her IgA level was elevated at 1083 mg/L. Febrile illness is a common complaint which leads parents to seek medical attention. The most common cause of fever in children is infection followed by autoimmune disease, malignancy and other causes such as auto-inflammatory syndromes. Auto-inflammatory syndromes should be suspected if the febrile symptoms are cyclical and recent. Hyperimmunoglobulin D syndrome (HIDS), an autosomal recessive disorder due to a mutation in the mevalonate kinase gene, is one such syndrome. The direct relationship between the enzyme deficiency, increased levels of IgD and episodic fevers has yet to be determined. The first febrile episode usually occurs at <1 year of age and lasts 3 to 7 days. Episodic symptoms may be accompanied by cervical lymphadenopathy, vomiting, abdominal pain, aphthous ulcers, rashes, arthralgia or arthritis and hepatosplenomegaly. Serum IgD levels are usually elevated and accompanied occasionally by elevated IgA levels. Elevated acute phase reactants and leucocytosis may also be noted. An increased awareness and understanding of such a periodic fever syndrome and its presentation can aid in correctly diagnosing affected febrile children.

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**Medication Adherence Among Adolescents in Pediatric Renal Clinic**

Varma AS, Rosicker R, Noor T, Chernasamudram S, Vashyljeva T. University of TX and Texas Tech University Health Sciences Center, Amarillo, TX.

**Purpose of Study:** Non adherence to a prescribed treatment regimen significantly increases mortality and morbidity in patients with chronic renal diseases. Adolescent age in particular, is challenging because of the competing demands in their lives, unique developmental changes and transition into adulthood. The study will help us identify patient-perceived factors that impact adherence to medications.
POST-TRANSPLANT DIABETES MELLITUS (PTDM) IN PEDIATRIC RENAL TRANSPLANT RECIPIENT

Younger MA, Kiernan M, Weimer S, Yosypiv IV
Tulane School of Medicine, New Orleans, LA.

Case Report: PTDM is an adverse effect of immunosuppressive therapy which predisposes an individual to hypertension and renal graft loss. Following kidney transplant, 11 year-old boy with end-stage kidney disease due to posterior urethral valves was maintained on tacrolimus (TAC), mycophenolate mofetil (MMF) and steroids. Despite normal graft function (serum creatinine of 0.8 mg/dL), he gained significant weight and developed hypertension (systolic blood pressure of 145 mmHg). He also developed loud snoring, enlarged tonsils and mild pulmonary hypertension. A multi-disciplinary approach which included social services, dietician, specialty tertiary care linked to patient’s general pediatrician was initiated to address about medication compliance was given to the subjects who were taking more than 6.5). Because 87.8% of children with renal graft receive TAC, MMF and prednisone and lisinopril. However therapy was ineffective partly due to non-compliance . Two months later the patient was readmitted with pulmonary embolism with severe nephrosis which was treated with anticoagulation. Cyclosporine A (CsA) was started at 5mg/kg/d and the patient was discharged on cyclosporine, prednisone, lisinopril and aspirin. The patient remained in complete remission since then and three years later, 24 hours protein was less than 0.5 g/dl, Sera creatinine 1 mg/dl.

Conclusions: We conclude that CsA therapy is effective not only for inducing remission, but for maintaining the long-term preservation of renal function in IMN. Published literature about the role of CsA in the treatment of IMN is mostly anecdotal and scanty. Gueremos et al demonstrated better remission with cyclosporine than with cytotoxic agents in IMN (Am J Neph 2007) and Cattran et al in a smaller series (Kidney Int 2001) showed that CsA was effective and safe in IMN. Large scale well planned randomized clinical trials and head to head comparative studies are needed to establish the therapeutic potential of cyclosporine in IMN.

Joint Plenary Poster Session
Allergy, Immunology, and Rheumatology

5:00 PM
Thursday, February 9, 2012

A CASE OF SEVERE TOPHACEOUS GOUT-CENTURIES OLD AFFLICTION MEETS ITS MATCH. JANIE BRUCE MD, VIKAJ MAJITHIA MD;DIVISION OF RHEUMATOLOGY, DEPARTMENT OF MEDICINE,VA MEDICAL CENTER AND UNIVERSITY OF MISSISSIPPI MEDICAL CENTER, JACKSON,MS
Bruce J 1, Majithia V 1,2 University of Mississippi, Jackson, MS and VA Medical Center, Jackson, MS.

Case Report: Introduction: Gouty arthritis is caused by deposition of monosodium urate and inflammatory response to it. Hyperuricemia is the hallmark of chronic tophaceous disease and usually a result of undersecretion of uric acid. Overproduction of uric acid is a rare cause of hyperuricemia and should be suspected in early onset or severe disease. Case Presentation: A 42 year-old white male presented to our clinic seeking treatment for gout. He was first diagnosed with gout in 1995, when he presented with recurrent knee swelling associated with intra-articular urate crystals. He had hyperuricemia, treated with allopurinol, but his disease remained refractory and he developed polyarticular flare-ups and tophi. Allopurinol was discontinued due to hypersensitivity syndrome, which manifested as hepatitis, after which he was treated with probenecid and colchicine. He remained symptomatic with mild disease flare-ups but developed numerous large tophi limiting his joint mobility. He had no history of kidney disease or family history of gout. His examination revealed multiple tophi in his pinna, left sternoclavicular joint, bilateral MCP joints,PIP joints, and MTP joints, elbows and knees. The tophi in his knees were so severe he could not straighten his legs and as a result he required a walker to ambulate. Pertinent labs: uric acid of 10.4 and creatinine of 0.87. Febuxostat 40 mg daily was started with probenecid and his colchicine was increased to 0.6 mg twice daily to avoid acute flares. Six weeks later, he had no recurrence of acute tophi.

Joint Plenary Poster Session
Adult Case Study

5:00 PM
Thursday, February 9, 2012

CYCLOSPORINE A IN THE TREATMENT OF MEMBRANOUS NEPHROPATHY-CASE REPORT WITH LITERATURE REVIEW
Elsonjak AA, Prabhakar S Texas Tech, Lubbock, TX.

Methods Used: The subjects diagnosed with chronic kidney disease or hypertension were identified from the nephrology clinic. A questionnaire about medication compliance was given to the subjects who were taking more than two medications for longer than three months. The protocol was reviewed and approved by the Institutional Review Board, TTUHSC.

Summary of Results: Twenty patients were enrolled in the study including eleven boys and nine girls. The average age of the subjects was 14 years. The children admitted that they skipped medications on an average of 3 days a week. Twenty five percent of patients forgot to take medicines during weekend. The least favorite medication was prednisone followed by calcium carbonate, tacrolimus and iron. Classmates’ opinions bothered 30% of the patients. 40% were upset that they had to take medication daily. Phosphate binders, such as calcium carbonate, which needs to be taken with meals, might be easily observed during social events and school lunches. 50% of the subjects said a pill box and better tasting medication would help in compliance.

5% said better tasting medicine would help, 10% said a pill box would help and 35% said a combination of alarm, pill box and better tasting medicines would help them take their medication regularly. The suggestions given to improve compliance were alarm clocks, change pills to shots, smaller pills, reminder magnets, and adjusted time (take during meal).

Conclusions: Adolescent compliance with medications remains a serious problem. Structured environment, psychological help, pill alarms (incorporated into newer electronic devices, such as cell phones, ipods, video games and TV) and improvement on pharmacological preparations could lead to better adherence to medication in this age group.

Case Report: Background Idiopathic membranous nephropathy (IMN) is the most common causes of nephrotic syndrome in adults. The disease shows a benign or indolent course in the majority of patients, with spontaneous remissions occurring in up to 30% of cases. Despite high rate of spontaneous remission, 30-40% of patients progress to end-stage renal failure within 5-15 years. The treatment of IMN is challenging and suboptimal.

Case report: A 20 year-old Hispanic female was transferred to our UMC for higher level of care. The patient presented with progressive shortness of breath, weight gain and edema of lower extremities for two months prior to presentation. Evaluation showed that she was hypoxic and had generalized anasarca B/L pleural effusion, with a normal blood pressure. Initial investigations showed WBC 27k, hemoglobin 9.3gm/dL, BUN 65k, Cr 6.5mg/dl, ALT 260, AST 203. Positive hepatitis, HbsAg and HbcAb. A 24 hours urine protein was 14.5 gms. The kidney biopsy showed stage IV membranous glomerulopathy. The patient treated with IV Cyclophosphamide (pulsed at 1 mg/kg/day for 3 days followed by oral) ,lasix, high dose oral prednisone and lisonipril. However therapy was ineffective partly due to non-compliance . Two months later the patient was readmitted with pulmonary embolism with severe nephrosis which was treated with anticoagulation. Cyclosporine A (CsA) was started at 5mg/kg/d and the patient was discharged on cyclosporine, prednisone, lisonipril and aspirin. The patient remained in complete remission since then and three years later, 24 hours protein was less than 0.5 g/dl, Sera creatinine 1 mg/dl.

Conclusions: We conclude that CsA therapy is effective not only for inducing remission, but for maintaining the long-term preservation of renal function in IMN. Published literature about the role of CsA in the treatment of IMN is mostly anecdotal and scanty. Gueremos et al demonstrated better remission with cyclosporine than with cytotoxic agents in IMN (Am J Nephrol 2007) and Cattran et al in a smaller series (Kidney Int 2001) showed that CsA was effective and safe in IMN. Large scale well planned randomized clinical trials and head to head comparative studies are needed to establish the therapeutic potential of cyclosporine in IMN.
episodes or change in tophi but had only a modest decrease of his uric acid to 9.2 so febuxostat was increased to 80 mg daily. A work-up for genetic cause has been initiated and is pending.

Discussion: Uncontrolled tophaceous gout is a debilitating disorder leading to limitations on activities of daily living. A genetic cause and metabolic defect should be suspected in atypical presentation. There were limited choices for uric acid lowering therapy in a patient where allopurinol is ineffective or contraindicated. Availability of febuxostat and pegylated bovine uricase is helping to manage this serious illness in 21st century.

Conclusions: Some immediate hypersensitivity reactions to radiocontrast media may involve an IgE-mediated mechanism. While the vast majority of adverse reactions are likely non-IgE mediated, there is a subset of patients with IgE to radiocontrast media. For patients with a history of immediate reactions who have failed traditional pretreatment protocols, prick and intradermal skin testing may prove valuable in identifying true IgE-mediated hypersensitivity to radiocontrast media.

BULLOUS REACTIONS TO BEDBUG BITES REFLECT CUTANEOUS VASCULITIS

deShazo R1, Feldlaufer MF2, Mihm MC3, Goddard J4 "University of MS Med Center, Jackson, MS; 2US Dept of Ag, Beltsville, MD; 3Harvard, Boston, MA and 4 MS State University, Mississippi State, MS.

Purpose of Study: Bedbug bites may cause mild or severe cutaneous reactions. Anaphylaxis has been reported. Little is known about the most severe cutaneous reactions, bullous (complex) reactions.

Methods Used: We photographed bullous reactions to observed bites at 30 minutes, 6, 12, 24, 36, 48 & 72 hrs, 1, 2, 3 & 4 wks and biopsied reactions at 30 minutes, 6, 12, & 24 hrs. We also reviewed internet postings and the medical literature on bullous reactions following bites.

Summary of Results: Bullous reactions to bedbugs are not rare, 6% of photos on the internet of bites were bullous. In our subject, bites were associated with a progression of cutaneous responses at bite sites from immediate, puritic, edematous lesions to a late-in-time macule which became bullous reactions by 24 hrs. Bullous lesions eventually lysed, but took weeks to heal. Histopathologic evaluation of bullous reactions showed a polymorphous picture with histologic evidence of an urticarial-like reaction early on that rapidly developed into a hybrid leukocytoclastic vasculitis. This vasculitis was initially neutrophilic but developed into a destructive, necrotizing, eosinophil-rich vasculitis with prominent infiltration of CD68+ histiocytes and collagen necrobiosis. This is similar to the dermal vasculitis in patients with Churg Strauss vasculitis.

Conclusions: Historically, bedbug bite reactions have been considered to be of minor medical significance. However, the findings presented demonstrate that the not uncommon bullous reactions to bed bug bites reflect the presence of a local, highly destructive, cutaneous vasculitis. Therefore, efforts to prevent further bites and monitor for evidence of systemic vasculitis should be made in patients with bullous reactions to bites.

EVIDENCE FOR AN IgE-MEDIATED MECHANISM IN RADIOCONTRAST MEDIA HYPERSENSITIVITY

Dhanani K1, Wild L2, Montelibano L1,2 "Ochsner Medical Center, New Orleans, LA and 2 Tulane Medical Center, New Orleans, LA.

Purpose of Study: Immediate hypersensitivity reactions to radiocontrast media have traditionally been regarded as non-allergic in the medical literature. Therefore immediate-type hypersensitivity skin testing has been considered an inappropriate tool in evaluation of these patients. The majority of patients with adverse reactions are likely experiencing a non-IgE mediated mechanism. In recent years, however, there has been more evidence to support a possible IgE-mediated mechanism in a small subset of patients. We report a patient with multiple previous immediate reactions to radiocontrast media in spite of pretreatment with steroids and antihistamines. The failure of traditional pre-treatment protocols to prevent immediate-type reactions raised our suspicion of a true IgE-mediated reaction. He had positive intradermal skin testing to three different radiocontrast media.

Methods Used: A 55 year old male with multiple documented immediate reactions to different radiocontrast media was skin prick tested to undiluted ioversol (Optiray), iohexol (Omnipaque), and iodixanol (Visipaque). This was followed by intradermal skin testing with ioversol, iohexol, and iodixanol at a 1:10 dilution (in saline). The same prick and intradermal skin testing was performed on a control as well to confirm that the concentrations used were non-irritating.

Summary of Results: Skin prick testing to ioversol, iohexol, and iodixanol was negative in the patient. Intradermal skin testing was strongly positive for all three radiocontrast media in the patient. The control had negative results to all radiocontrast media on prick and intradermal skin testing.

DISCUSSION

Historically, bedbug bite reactions have been considered to be non-IgE mediated, bullous (complex) reactions.

Methods Used: We photographed bullous reactions to observed bites at 30 minutes, 6, 12, 24, 36, 48 & 72 hrs, 1, 2, 3 & 4 wks and biopsied reactions at 30 minutes, 6, 12, & 24 hrs. We also reviewed internet postings and the medical literature on bullous reactions following bites.

Summary of Results: Bullous reactions to bedbugs are not rare, 6% of photos on the internet of bites were bullous. In our subject, bites were associated with a progression of cutaneous responses at bite sites from immediate, puritic, edematous lesions to a late-in-time macule which became bullous reactions by 24 hrs. Bullous lesions eventually lysed, but took weeks to heal. Histopathologic evaluation of bullous reactions showed a polymorphous picture with histologic evidence of an urticarial-like reaction early on that rapidly developed into a hybrid leukocytoclastic vasculitis. This vasculitis was initially neutrophilic but developed into a destructive, necrotizing, eosinophil-rich vasculitis with prominent infiltration of CD68+ histiocytes and collagen necrobiosis. This is similar to the dermal vasculitis in patients with Churg Strauss vasculitis.

Conclusions: Historically, bedbug bite reactions have been considered to be of minor medical significance. However, the findings presented demonstrate that the not uncommon bullous reactions to bed bug bites reflect the presence of a local, highly destructive, cutaneous vasculitis. Therefore, efforts to prevent further bites and monitor for evidence of systemic vasculitis should be made in patients with bullous reactions to bites.

REACTIVE PANNICULITIS AND TENOSYNOVISITS

Green A, Majithia V "University of Mississippi Medical Center, Flowood, MS.

Case Report: A 53-year-old female presented after blunt trauma to extremities and superficial abrasions. After 48 hours she developed fever, chills, wrist/forearm swelling, and a coalescing macular/pustular eruption on her knees. She was first treated with steroids and clindamycin. New lesions then appeared diffusely on body and wrist/forearm swelling worsened. 1-week later, her chemistries and cultures were negative. Upon evaluation in rheumatology clinic, 2 weeks later, she was found to have tenosynovitis/arthritides (confirmed by ultrasound) and panniculitis. Her clinical, laboratory and radiographic evaluation was negative for IBD, vasculitis, infection, connective
tissue diseases and other possible etiologies. Skin biopsies revealed fat necrosis/panniculitis and granulomatous dermatitis. A 2-week course of doxycycline and a 6-week course of prednisone led to resolution of rash and tenosynovitis/arthritis.

Case Report: A 56-year-old African American female presented to clinic for evaluation of several month history of fatigue, constipation, depression, dyspnea and an episode of syncpe. She had experienced a 70-lb weight loss, several non-healing leg ulcers and nodules on her wrists/ankles for last 4 years. Her systemic examination was non-diagnostic. The laboratory testing was only significant for severe hypercalcemia (18.9 mg/dl). She was admitted to inpatient service for further work-up and treatment. The elevated calcium was successfully treated with IV fluids, and IV pamidronate. Radiographs and CT scans showed widespread bilateral lung opacities with numerous nodules/significant areas of consolidation, nodular liver contour and hepatosplenomegaly with multiple low density lesions. Work-up for hyperparathyroidism, malignancy including multiple myeloma and other causes remained unrevealing. ACE level was high (213 ug/L) and biopsies of the skin ulcers, nodules, liver, and lung revealed granulomatous inflammation and non-caseating granulomas. A diagnosis of sarcoidosis was made and she was treated with prednisone 1 mg/kg/day with an excellent clinical/radiographic response. 125-dihydroxy vitamin D level was elevated (140 ng/ml) during this admission. Although significant hypercalcemia can be seen in up to 5% of cases of sarcoidosis, this case is unique, as severe hypercalcemia (>15) as its initial presentation has previously not been described. In this patient, active sarcoidosis complicated by vitamin D replacement therapy contributed to an extreme elevation of calcium ultimately leading to the correct diagnosis.

Case Report: A 39 year old African-American male without past medical history presented to the Emergency Room with a 2 month history of diffuse, pruritic rash to his extremities and mild right scrotal swelling. He denied fevers, recent illnesses, cough, dyspnea, genitourinary complaints, but admitted to weight loss over the last year, occasional constipation and right ankle arthralgias. His physical exam was notable for hyperpigmented nodules to his extremities and a nontender, right scrotal mass. Initial labs were unremarkable. Testicular ultrasound revealed a small epididymal cyst. Pre-op screening for cyst removal noted a normal EKG, but abnormal chest x-ray suspicious for tuberculosis illustrated by a diffuse reticulonodular, milky pattern with mediastinal lymphadenopathy. A chest CT confirmed these results. Following three negative acid-fast-bacilli smears and cultures, bronchoscopy and skin biopsies were performed noting non-necrotizing granulomas. All infectious and vasculitis work up was negative, aside from a positive ANA, 1:80. A slit lamp exam was normal. Epididymal cyst removal as an outpatient confirmed the diagnosis of sarcoidosis by revealing non-caseating granulomas similar to the previous biopsies. The patient was started on low dose prednisone.

Discussion: Sarcoidosis is a granulomatous disease of unknown etiology that affects people worldwide. Clinical manifestations of sarcoidosis coincide with organ involvement, but also include vague symptoms such as fatigue, fever, and weight loss. Sarcoidosis most often affects the lung and manifests as cough, dyspnea, or chest pain. Sarcoidosis is often found incidentally on CXR (50%) prior to symptom onset. Extrapulmonary sarcoidosis includes cutaneous lesions (25%), painless scrotal masses (0.2-5%), uveitis (20%) and neurological (5%) sequelae. Sarcoidosis is a diagnosis of exclusion and is confirmed by the presence of non-caseating granulomas in the tissue. Treatment for sarcoidosis is mostly symptomatic in nature and is reserved for those who have extrapulmonary sarcoidosis involving critical organs. Corticosteroid therapy is the mainstay of treatment.
Hemophagocytic lymphohistiocytosis (HLH) commonly presents as persistent, unexplained fever, cytopenia, hepatic dysfunction, hepatosplenomegaly, hypofibrinogenemia, and/or hypertriglyceridemia accompanied by hemophagocytosis in the tissues. Primary HLH is more common in pediatric populations, while secondary HLH is more common in adults. Causes and presentations vary and mortality remains high. We present three recent cases.

**Patient #1:**
58 y/o WF developed fever, transaminitis, pancytopenia and abdominal pain. Relevant labs: low fibrinogen; elevated ferritin, ESR/CRP. Infectious and autoimmune workup was non-diagnostic. Bone marrow biopsy showed increased CD163+ histiocytic cells and soluble IL2 receptor level. She improved initially with treatment, but later expired.

**Patient #2:**
55 y/o AAF admitted with fever, fatigue, nausea/vomiting, altered mental status, prior rash attributed to dilantin. She met criteria for Still’s disease, but developed pancytopenia despite corticosteroids. Bone marrow biopsy showed hemophagocytes. She was started on HLH-94 protocol and was stable initially, but subsequently expired.

**Patient #3:**
60 y/o WM admitted with fever, productive cough, maculopapular rash, acute kidney injury and 10 pound weight loss. Biopsy suggested drug rash which improved after allopurinol, levaquin, zofran discontinued, but he remained febrile. Per lab work and bone marrow biopsy, he fulfilled the criteria for HLH and improved with HLH-94 protocol.

**Follow-up:**
All patients met criteria for HLH and were treated with HLH-94 protocol. Patient #1 died after 6 months and patient #2 died 3 days after discharge in stable condition. Patient #3 responded well and is still undergoing treatment at 4-month follow up.

**Discussion:**
Hemophagocytic lymphohistiocytosis (HLH) is a rare disorder due to cytokine dysfunction and uncontrolled accumulation of activated T-lymphocytes and histiocytes in many organs. Initial signs and symptoms can mimic common infections or fever of unknown origin. HLH should be strongly suspected in patients who meet the criteria with no other explanation for their symptoms and treatment started immediately considering the high mortality in untreated patients.
Case Report: A 24-year-old African American woman with no significant past medical history presented to multiple outside facilities with a complaint of lower extremity edema, diffuse abdominal pain, and nausea/vomiting for one week. The patient denied any rashes, photosensitivity, arthralgias, fevers or chills, diarrhea, or recent travel and was not sexually active. On admission, the patient had a low grade temperature of 100.5°F, was tachycardic with a pulse rate of 128, and hypertensive with a blood pressure of 152/106 with normal oxygen saturations. On physical exam, the patient appeared ill with pale conjunctiva, tachycardic with a Grade III/VI mid-systolic murmur heard best at the left lower sternal border and a mild friction rub on cardiac exam. Pertinent labs on admission included an Hb of 6.2 g/dL/19.4 %, Cr 7.4 mg/dL, Bicarb 18mmol/L, anion gap 19, and urinalysis showed red blood cells too numerous to count, 500mg/dL proteinuria, and 5-10 hyaline casts. CXR showed an enlarged cardiac silhouette and subsequent 2D echo showed a large pericardial effusion without evidence of tamponade. The patient was presumptively diagnosed with Systemic Lupus Erythematosus (SLE) and was later found to be ANA positive and anti-DS DNA positive and on admission was treated with high dose steroids, cyclophosphamide and rituximab, and hemodialysis. During her complicated hospital course, the patient also began having generalized tonic-clonic seizures and well as vision changes and MRI/MRA of her brain was consistent with lupus cerebritis.

Discussion: Systemic Lupus Erythematosus is a chronic inflammatory disease that most commonly affects women in their 20’s and 30’s and can have multi-system involvement; cutaneous, gastrointestinal, hematologic, musculoskeletal, neurologic, psychiatric, pulmonary, renal, and reproductive system manifestations. The clinical presentation may include constitutional symptoms or symptoms based on organ system involved. Frequent symptoms/signs are arthritis/arthralgias, fatigue, weight loss, and rashes (including the characteristic malar rash or discoid lesions). SLE should be considered in patients with a myriad of findings that cannot be explained otherwise.

RED MAN SYNDROME DUE TO DUAL EXPOSURE TO CIPROFLOXACIN AND RADIO CONTRAST AGENT - DOUBLE EXPOSURE MAY BE THE PRECIPITATING FACTOR

Panikkath R, Jenkins L. Texas Tech University Health Sciences Center. Lubbock, TX.

Case Report: Introduction

Red man syndrome typically consists of a pruritic erythematous rash that usually involves the face, neck, and upper torso. Unlike the IgE mediated anaphylactic reaction, red man syndrome is an anaphylactoid reaction, in which degranulation of mast cells and basophils occurs independent of IgE or complement. This results in massive amounts of histamine release. This syndrome is classically reported in association with vancomycin. It has been reported rarely with other antibiotics like ciprofloxacin. This syndrome might be exaggerated in patients receiving a second agent which also releases histamine, such as contrast dye.

Methods

This is a case report of a patient with who developed red man syndrome with double exposure to ciprofloxacin and radiocontrast dye.

Results

This pleasant 57 year old white lady had undergone aortic valve replacement and percutaneous transmitral commissurotomy earlier. She presented with symptomatic mitral restenosis and aortic stenosis (due to patient-prosthetic mismatch). She was admitted for coronary angiography and subsequent double valve replacement. She had symptomatic urinary tract infection, for which she was empirically started on ciprofloxacin. On the second dose of ciprofloxacin, she complained of mild erythematous rash. She underwent coronary angiogram the same day, after which she immediately started developing diffuse pruritic erythema all over her body. She did not develop any angioedema or bronchospasm. Ciprofloxacin was discontinued and she was treated with antihistamines with which she improved gradually.

Conclusion

Vancomycin is not the only antibiotic which can cause red man syndrome. This might rarely be associated with ciprofloxacin and radiocontrast exposure. Double exposure might be a strong incriminating factor in development of this syndrome. Proper recognition of this syndrome and the inciting agents is important in prevention.

TREATING LUPUS NEPHRITIS WITH CYCLOPHOSHAMIDE DURING PREGNANCY

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Case Report: Introduction: Renal impairment is a complication of systemic lupus erythematosus (SLE) that occurs in 40-70% of patients, and 20% may develop end-stage renal disease. Lupus nephritis (LN) during pregnancy poses significant risk to the mother and fetus in the absence of concise treatment guidelines. Cyclophosphamide is the standard therapy for LN refractory to steroids and hydroxychloroquine in nonpregnant patients, but exposure in the first and second trimester has been linked to poor fetal outcomes. We present a patient who developed LN during pregnancy that was successfully treated with cyclophosphamide.

Case Presentation: A 26-year-old female with intrauterine pregnancy at 23 weeks gestation presented with 2-month history of polyarthritides and ankle swelling. Physical exam revealed hypertension, periangual edema of lower extremities, and synovitis of MCPs, PIPs, elbows, and knees. Significant labs were potassium 5.4 mmol/L, BUN 55 mg/dL, creatinine 3.73 mg/dL, ESR >140mm/hr, CRP 1 mg/dL, and 3.6 g proteinuria. Serology included positive ANA, high dsDNA, positive SSA, low C3 and C4. Chest X-ray showed pleural effusion. Despite pulse-dose steroids and hydroxychloroquine, she became dependent upon daily hemodialysis. Renal biopsy revealed class IV LN. After extensively discussing risks and benefits, she started cyclophosphamide 500mg every 2 weeks until delivery for 4 doses. She continued daily dialysis. At 31 weeks, she presented with preeclampsia and delivered a healthy baby girl. After one month, she was able to discontinue dialysis. She currently receives cyclophosphamide 1 mg monthly to complete induction therapy.

Discussion: Treating lupus nephritis during pregnancy is challenging. With lupus, pregnancy may be complicated by spontaneous abortion and premature birth. LN additionally increases the risk of intrauterine growth restriction, fetal heart block, and preeclampsia. While cyclophosphamide is standard therapy for refractory LN in nonpregnant patients, there are case reports of miscarriage and fetal anomalies with use in early pregnancy. There are few reports of successful cyclophosphamide use during second and third trimesters. Cyclophosphamide should be considered as a treatment option for severe LN in late pregnancy.
LIVING WITH CONNECTIVE TISSUE DISEASE (CTD) INTERSTITIAL LUNG DISEASE (ILD): PATIENT EXPERIENCE OF DISEASE PROCESS

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1University of Toronto, Toronto, ON, Canada; 2Louisiana State University Health Sciences Center, New Orleans, LA; 3National Jewish Health Center, Denver, CO; 4Office of Public Health, New Orleans, LA and 5University of Manitoba, Toronto, MB, Canada.

Purpose of Study: Limited information exists on patient experience of CTD-ILD. Such information is important to inform practice & in developing outcomes (patient experience) in CTD-ILD. Such information is important to inform practice & in developing outcomes measures.

Methods Used: Data were collected through a focus group, involving 9 patients. A purposeful sample was recruited from a tertiary care hospital in Manitoba. Inclusion criteria: English speaking adults with ILD based on at least 1 of histology, chest imaging, dyspnea or cough, restrictive lung function and/or impaired DLCO, oxygen desaturation. Exclusion pulmonary hypertension. Two questions were asked (“How have you experienced your disease since the diagnosis of ILD?”, “How has the mainstay of treatment is discontinuation of the offending drug. Corticosteroids have been shown to produce dramatic improvements in clinical symptoms though its use in the management of DRESS syndrome remains controversial.

Patients with DRESS syndrome usually fully recover following removal of the offending agent. However, a fatal outcome has been reported in 10-40% of all cases.

Summary of Results:

- Patients were asked, on average, for a 5.2 year period following diagnosis.
- A range 1-14 years (mean 6.2 years).
- 7 patients answered yes, 6 patients answered no.
- 7 patients stated that their experience was not what they expected.
- 6 patients stated that their experience was what they expected.
- 2 patients were not asked.

Conclusions:

- Patient experience of disease impacts their ability to manage their condition and impact their quality of life.
- Patient experience of disease is not consistent with what patients expect.
- Future research should focus on patient experience of disease and its impact on quality of life.

81 THE ROLE OF ANGIOTENSIN II AND ENDOTHELIN I IN THE CARDIOMYOPATHY OF DIABETIC PATIENTS

Altieri PI, Alvarado S, Banchs HL, Escobales N, Crespo M University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico.

Purpose of Study: Reported data shows that angiotensin II (ANG II) produces apoptosis and necrosis of myocytes (CirRes. 2000; 87:1123-1132). Endothelin I (El) also produces the same pathological abnormalities. Ang II and El were measured in the coronary sinus (CS) and peripheral circulation. All had normal coronary arteries. The ejection fraction (EF) was calculated by standard methods. The findings were analyzed using the student test.

Summary of Results: The levels of Ang II in the CS and aorta were elevated (46 ± 18 vs 35 ± 15 pg/ml, respectively) compared to normals (10 pg/ml, P<0.001). Similarly, El was elevated in the CS and aorta (14 ± 4 and 13 ± 6 pg/ml, respectively, vs 3 ± 1 pg/ml in control patients, P<0.001). The E.F. of the diabetic group was subnormal 49 ± 3%, when compared to controls (62 ± 5%) P<0.001. Diffuse hypertikis was observed.

Conclusions: These results support the notion that Ang II and El play a role in the development of diabetic cardiomyopathy. Blockers of these peptides may help in the prevention of these myocardial abnormalities which reduces myocardial contractility. Intracellular abnormalities induced by Ang II and El will be discussed.

82 CORRELATION BETWEEN PALPITATION AND LEFT VENTRICULAR EJECTION FRACTION IN PATIENTS WITH ATRIAL FIBRILLATION

Soni M, Gowkanappali B, Dissanayake W, Khanna A Coney Island Hospital, Brooklyn, NY.

Purpose of Study: Atrial fibrillation is the most common cardiac arrhythmia, affecting more than 3 million people in the USA, a number expected to climb to 16 million by 2050. Patients with AF have about a 5-fold increased risk for stroke, mostly thromboembolic events. The mainstay of ef

Case report

28-year-old African American woman was admitted in 2007 with bilateral proximal muscle weakness and typical rash of dermatomyositis. CPK was mildly elevated with normal aldolase. Infectious disease work up was negative. ANA was negative but Jo-1 antibody was positive. EMG did not show myopathic changes. Muscle biopsy showed minimal interstitial inflammation and scattered necrotic fibers. She received pulse dose steroids and IVIG while malignancy work up was negative. She was maintained on azathioprine/100mg and prednisone/10mg with resolution of rash and weakness. In 2008 she was found to have interstitial lung disease (ILD) with active alveolitis and was given 6 doses of monthly cyclophosphamide. A year later she presented with shortness of breath and was found to have pneumoenucleatum which was treated conservatively. She also ruptured the extensor digitorum brevis tendon (2010) with repair. In 2011 she developed extensive subcutaneous calcifications so prednisone was increased to 60mg with slow taper and azathioprine increased to 200mg with clinical improvement.

Discussion

Dermatomyositis has a prevalence rate of 1 in 100,000 with female predominance. Calcinos is, a delayed manifestation of unknown pathogenesis, is uncommon in adults but there are case reports of recurrent tendon ruptures due to calcinos is. Pneumomediastinum is an unusual complication of dermatomyositis related ILD and carries a poor prognosis. It has been speculated that subpleural blebs rupture, allowing air dissection around perivascular sheaths, through the mediastinum, and into the pleural space and subcutaneous tissue planes. It is more commonly associated with cutaneous vasculopathy and a proposed mechanism is active pulmonary vasculitis which explains its association with calcinos is. Our patient is unique in that adult onset dermatomyositis with such protean clinical manifestations is very rare, especially in one patient.

Joint Plenary Poster Session

Cardiovascular

5:00 PM

Thursday, February 9, 2012

80 PNEUMOMEDIASTINUM TO SUBCUTANEOUS CALCIFICATIONS IN DERMATOMYOSITIS-DIFFERENT SPECTRUMS OF THE SAME DISEASE

Thomas A, Johnson D UMMC, Jackson, MS.

Case Report: Introduction

Dermatomyositis is a systemic inflammatory disease characterized by proximal muscle weakness and cutaneous manifestations (Gottron’s papules, heliotrope rash, V-sign,shawl sign and mechanic’s hands). Herein we present a patient with amyopathic dermatomyositis complicated by pneumomediastinum and subcutaneous calcifications which are rare in adults.

Case report

A 28-year-old African American woman was admitted in 2007 with bilateral proximal muscle weakness and typical rash of dermatomyositis. CPK was mildly elevated with normal aldolase. Infectious disease workup was negative. ANA was negative but Jo-1 antibody was positive. EMG did not show myopathic changes. Muscle biopsy showed minimal interstitial inflammation and scattered necrotic fibers. She received pulse dose steroids and IVIG while malignancy workup was negative. She was maintained on azathioprine/100mg and prednisone/10mg with resolution of rash and weakness. In 2008 she was found to have interstitial lung disease (ILD) with active alveolitis and was given 6 doses of monthly cyclophosphamide. A year later she presented with shortness of breath and was found to have pneumomediastinum which was treated conservatively. She also ruptured the extensor digitorum brevis tendon (2010) with repair. In 2011 she developed extensive subcutaneous calcifications so prednisone was increased to 60mg with slow taper and azathioprine increased to 200mg with clinical improvement.

Discussion

Dermatomyositis has a prevalence rate of 1 in 100,000 with female predominance. Calcinos is, a delayed manifestation of unknown pathogenesis, is uncommon in adults but there are case reports of recurrent tendon ruptures due to calcinos is. Pneumomediastinum is an unusual complication of dermatomyositis related ILD and carries a poor prognosis. It has been speculated that subpleural blebs rupture, allowing air dissection around perivascular sheaths, through the mediastinum, and into the pleural space and subcutaneous tissue planes. It is more commonly associated with cutaneous vasculopathy and a proposed mechanism is active pulmonary vasculitis which explains its association with calcinos is. Our patient is unique in that adult onset dermatomyositis with such protean clinical manifestations is very rare, especially in one patient.

Joint Plenary Poster Session

Cardiovascular

5:00 PM

Thursday, February 9, 2012

81 THE ROLE OF ANGIOTENSIN II AND ENDOTHELIN I IN THE CARDIOMYOPATHY OF DIABETIC PATIENTS

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Purpose of Study: Reported data shows that angiotensin II (ANG II) produces apoptosis and necrosis of myocytes (CirRes. 2000; 87:1123-1132). Endothelin I (El) also produces the same pathological abnormalities. Ang II and El were measured in the coronary sinus (CS) and peripheral circulation. All had normal coronary arteries. The ejection fraction (EF) was calculated by standard methods. The findings were analyzed using the student test.

Summary of Results: The levels of Ang II in the CS and aorta were elevated (46 ± 18 vs 35 ± 15 pg/ml, respectively) compared to normals (10 pg/ml, P<0.001). Similarly, El was elevated in the CS and aorta (14 ± 4 and 13 ± 6 pg/ml, respectively, vs 3 ± 1 pg/ml in control patients, P<0.001). The E.F. of the diabetic group was subnormal 49 ± 3%, when compared to controls (62 ± 5%) P<0.001. Diffuse hypertikis was observed.

Conclusions: These results support the notion that Ang II and El play a role in the development of diabetic cardiomyopathy. Blockers of these peptides may help in the prevention of these myocardial abnormalities which reduces myocardial contractility. Intracellular abnormalities induced by Ang II and El will be discussed.
treatment of atrial fibrillation is rate vs. rhythm control and anticoagulation. Some people with atrial fibrillation have no symptoms and are unaware of their condition until it's discovered during a physical examination. Those who do have symptoms may experience: Palpitations, weakness, lightheadedness, confusion, shortness of breath and chest pain. Palpitation is an extremely common symptom and one of the classic symptoms of atrial fibrillation. It is unknown why certain patients feel palpitation and some patients don’t feel any palpitation with atrial fibrillation.

Methods Used: This study is designed to see if there is a relationship between palpitations and left ventricular ejection fraction in patients with atrial fibrillation.

In this study we reviewed the charts of 212 patients who presented with atrial fibrillation between 2009 and 2010. In these 212 patients we checked presence or absence of palpitation and measured the left ventricular ejection fraction by transthoracic echocardiogram. We have also documented the sex and the age demographics of these 212 patients. We hypothesize that there will be a positive correlation between the palpitations and low ejection fraction in patients with atrial fibrillation. We used Mann-Whitney Rank Sum Test to determine whether significantly more patients with palpitations had low left ventricular ejection fraction.

Summary of Results: There was no significant correlation between palpitations and low ejection fraction in patients with atrial fibrillation.

Conclusions: There was a statistically significant correlation between palpitations and patients with younger age group. There was no significant correlation between palpitations and sex of the patient.

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83 UTILIZATION RATE OF AUTOMATIC IMPLANTABLE CARDIOVERTER-DEFIBRILLATORS (AICD) FOR PRIMARY PREVENTION: AN ANALYSIS OF ADHERENCE TO GUIDELINES—A RETROSPECTIVE CHART REVIEW


Purpose of Study: Implantation of AICDs for primary prevention of sudden cardiac death is associated with a relative risk reduction of 30-50 percent, but under-utilization remains a concern. The objectives of this retrospective chart review were to estimate the utilization rate of AICD implantation for primary prevention in patients with low LVEF admitted to our institution and to identify factors associated with non-utilization.

Methods Used: After IRB approval, we reviewed the medical records of all patients who were admitted 2/1/11-5/31/11 who had an LVEF < 33% in years. Patients who were readmitted within 30 days of discharge were excluded from analysis.

Summary of Results: There was no significant correlation between palpitations and low ejection fraction in patients with atrial fibrillation.

Conclusions: In this retrospective review of hospitalized patients, 43% of AICD-eligible pts had an AICD implanted. The AICD NEG group was associated with a sig older mean age and a fewer number of co-morbidities than the AICD POS group.

84 LESS THE SODIUM, MORE THE "CONFUSION" Joshi HK, Patel M, Roy T East Tennessee State University, Johnson city, TN.

Case Report: Introduction

To report the use of Angiotensin converting enzyme inhibitors (ACEI) as one of the rare cases of hyponatremia.

Learning objectives

To keep in mind that ACEI can be one of the unexpected causes of hyponatremia.

Case

An 87 year old male with hypertension, hyperlipidemia, and Diabetes Mellitus II developed new onset atrial fibrillation that required evaluation. His maintenance medications which included metoprolol tartrate were continued and lisinopril 5 mg was added. After 2 days of lisinopril therapy, the patient's serum sodium dropped from 134mEq/L to 126 mEq/L, and eventually to 113 mEq/L over 5 days of therapy. Although thirsty, he was asymptomatic and neurologically intact. Physical examination was consistent with euvolemia and no signs of volume overload could be documented. Serum osmolality was low at 244 mosm/kg, urine osmolality was 392 mosm/kg. Fluid restriction was instituted and lisinopril was discontinued. Over the duration of 4 days, patient's sodium corrected to 131 mEq/L. Since then patient's average sodium has stayed in the range of 132 mosm/L.

Discussion

It is well documented that medications are one of the causes of hyponatremia. ACEI are rare causes of hyponatremia, however there is enough evidence in medicine literature to suggest that it may lead to a decrease in serum sodium. The exact mechanism is unclear. One proposed mechanism is the potentiation of the action of plasma renin, which results in increased levels of brain angiotensin. This, in turn, results in the release of AVP from the hypothalamus and an increase in thirst. Another theory is that ACEI may prevent normal physiological recovery from volume depletion. Our purpose is to report a case with this rare occurrence. We believe the hyponatremia in our patient fits best with the first mechanism of action. After fluid restriction and discontinuing lisinopril, patient's sodium returned to his baseline.

85 PREDICTORS OF HOSPITAL READMISSIONS WITHIN 30 DAYS OF DISCHARGE IN A MEDICAID POPULATION

Jeevanantham V 1, Vadlamudi R 2, Roberts N 2, Gaskins R 2, Dawn B 1 University of Kansas Medical Center, Kansas City, KS and 2 Northwest Community Care Network, Wake Forest University, Winston-Salem, NC.

Purpose of Study: Early hospital readmission is a major burden on the health care delivery system and costs more than $12 billion annually. Medicaid patient population has unique challenges, which may put them at high risk for readmission. Our goal was to identify risk factors for readmissions within 30 days of discharge.

Methods Used: Medicaid patients readmitted within 30 days of discharge from Wake Forest University Hospital in 2008 were identified from North Carolina Medicaid central database. Medicaid patients discharged in 2008 and not readmitted within 30 days served as controls. Individual chart review was performed to gather data manually. Deaths and planned readmissions were excluded from analysis.

Summary of Results: A total of 145 cases and 781 controls were included in the final analysis. The two groups did not differ with respect to age, sex, race, weight, incidence of hypertension, substance abuse, employment status, discharge status, or length of stay. By univariate analysis, compared with the control group, patients in the readmission group had greater frequency of coronary artery disease (13% vs. 22%, P=0.009), heart failure (7% vs. 13%, P=0.008), diabetes (24% vs. 36%, P=0.006), chronic obstructive lung disease (COPD, 9.9% vs. 18%, P=0.006), asthma (11% vs. 17%, P=0.04), renal disease (1% vs. 4%, P=0.015), cerebrovascular accident (CVA, 5% vs. 16%, P=0.001), history of noncompliance (25.4% vs. 34.3%, P=0.03), and prescription drug abuse (3.5% vs. 12%, P=0.001). Compared with controls, readmitted patients also had a greater number of admissions within the previous 6 months (0.2±0.6 vs. 1.4±2.6, P=0.001). Multivariate logistic regression
Within 30 days after adjusting for other comorbidities. and a greater number of prior readmissions to be at high risk for readmissions after adjusting for confounding factors. **Conclusions:** Our results show that patients with a history of CVA, COPD, and a greater number of prior readmissions to be at high risk for readmissions within 30 days after adjusting for other comorbidities.

### ALTERNATIVE METHOD OF CALCULATING ANKLE BRACHIAL INDEX PREDICTS PERIPHERAL ARTERIAL DISEASE BETTER THAN CONVENTIONAL METHOD IN DIABETIC PATIENTS

Chelah B, Jeevanantham V, Nagavalli S, Austria E, Shrivastava R, Wiley M, Tadros P, Nath J, Dawn B, Gupta K. Univ. of Kansas Medical Center, Kansas City, KS.

**Purpose of Study:** Ankle-brachial index (ABI) is conventionally calculated as the ratio of higher of the two systolic ankle blood pressures to the higher brachial systolic pressure (HABI method). In patients with diabetes, ABI determined by HABI method is often falsely elevated due to medial calcinosis causing noncompressible arteries. We hypothesized that using the lower of the two systolic ankle pressures (LABI method) would better predict PAD in diabetics.

**Methods Used:** We reviewed medical records of patients who underwent both ABI measurement and arteriography at our institution between July 2005 and June 2010. Abnormal ABI was defined as <0.9 for both methods. Angiograms were analyzed independently by 2 experienced physicians, who were blinded to the ABI data. PAD by angiography was defined as the presence of >50% stenosis of any one lower extremity arterial segment. Subjects with ABI >1.3 were excluded.

**Summary of Results:** A total of 82 patients with diabetes were enrolled (50 men, avg 63 years). The ABI was <0.9 (abnormal) in 82% of patients by LABI method and in 73% by HABI. Abnormal ABI by LABI method, but not by HABI, correlated significantly with angiographic PAD diagnosis (LABI, r=0.263, P=0.02 vs. HABI, r=0.131, P=0.24). Compared with HABI method, LABI method had better sensitivity (77% vs. 88%) and accuracy (72% vs. 82%) and similar specificity (40% vs. 40%) to detect PAD by angiography (McNemar test: P=0.01). Receiver operating analysis identified an abnormal ABI by LABI method (odds ratio [OR] 12, 95% confidence interval [CI]: 1.5, 76, P=0.009) and male gender (OR 6.8, CI: 1.1, 41, P=0.04) as independent predictors of PAD by angiography after adjusting for age, body mass index, diabetes, hypertension, smoking history, chronic kidney disease and HABI method.

**Conclusions:** Compared with the conventional (HABI) method of calculating ABI, LABI method offers greater sensitivity and accuracy in predicting PAD in patients with diabetes independent of traditional confounding variables and risk factors. A broader use of this method may enhance the detection of PAD in diabetics.

### QTC PROLONGATION WITH HYPOKALEMIA AND ASSOCIATED HYPMAGNESEMIA IN HOSPITALIZED PATIENTS

Flatt DM, Holmes B, Shaheen M, Weber KT. University of Tennessee Health Science Center, Memphis, TN.

**Purpose of Study:** A dyshomeostasis of serum K+ and Mg2+ is common in patients hospitalized with acute or chronic stressor states. Hypokalemia and/or hyponatremia can be accompanied by delayed myocardial repolarization with prolongation of the QTc interval of the electrocardiogram and an increased propensity for supra- and ventricular arrhythmias. Objectives: in patients having prolonged QTc interval (>440 ms) on standard ECG and who also were found associated hyponatremia (<4.0 mmol/L), we determined the severity of hypokalemia and whether there was associated hyponatremia (<2.0 mg/dL) and its severity.

**Methods Used:** A retrospective study was conducted to determine serum K+ and Mg2+ levels in 78 hospitalized patients (53.7±1.5 yrs; 29/49 women-men) who were found to have prolonged QTc interval on their standard ECG during April to May, 2011. The severity of hypokalemia (mmol/L) was graded as: mild, 3.9-3.5; moderate, 3.4-3.0; and severe, <3.0. Hypomagnesemia (mg/dL), when present, was graded as: mild, 1.9-1.8; and moderate, 1.7-1.6; and severe <1.6.

**Summary of Results:** Hypokalemia, by definition, was present in all 78 patients. Its severity was graded as mild in 65%; moderate in 28% and severe in 8%. Hypomagnesemia was not present in 46%, but when it was associated with hypokalemia its severity was graded as mild in 22%, moderate in 18% and severe in 9%.

**Conclusions:** In hospitalized patients having prolonged QTc interval on their standard ECG, together with associated dyshomeostasis in serum K+ and Mg2+, the severity of hypokalemia will be of moderate to marked severity in over one-third. Serial surveillance of serum K+ and its appropriate correction are therefore suggested. One-half of patients with prolonged QTc and hypokalemia will have associated hypomagnesemia to further suggest serum Mg2+ should likewise be closely monitored and corrected as appropriate. Maintenance of serum K+ ≥4.0 mmol/L and Mg2+ ≥2.0 mg/dL is suggested to minimize the risk of cardiac arrhythmias.

### CARDIAC ARRHYTHMIAS IN HOSPITALIZED PATIENTS HAVING QTc PROLONGATION WITH ASSOCIATED HYPOKALEMIA

Holmes B, Flatt DM, Shaheen M, Weber KT. University of Tennessee Health Science Center, Memphis, TN.

**Purpose of Study:** Hypokalemia can lead to cardiac arrhythmias particularly when coupled to delayed myocardial repolarization and prolonged QTc interval of the electrocardiogram. This pathophysiologic scenario can involve the appearance of supraventricular arrhythmias, such as atrial fibrillation or premature atrial contractions, and ventricular arrhythmias, including premature ventricular contractions. The objective of this study was to determine the presence of these arrhythmias in hospitalized patients having both QTc prolongation (>440 ms) on their standard electrocardiogram and hypokalemia (<4.0 mmol/L).

**Methods Used:** In this retrospective study we addressed the presence of atrial fibrillation, premature atrial contractions and premature ventricular contractions on standard ECG in 78 patients hospitalized during April and May, 2011 and having both QTc prolongation on standard ECG and hypokalemia (<4.0 mmol/L).

**Summary of Results:** From this cohort of hospitalized patients having QTc prolongation and hypokalemia, we found 20 patients (26%) to have supraventricular arrhythmias on their standard ECG. This included: 6 patients (58±2.9 yrs; 4 men) with atrial fibrillation; 6 patients (60±5.6 yrs, 4 men) with isolated premature atrial contractions; and 11 patients (57±5.2 yrs; 7 men) with premature ventricular contractions in which atrial fibration was also present in two.

**Conclusions:** Supraventricular arrhythmias, including atrial fibrillation, and ventricular arrhythmias are frequently seen in hospitalized patients having QTc prolongation (>440 ms) on their standard ECG coupled with hypokalemia (<4.0 mmol/L). These findings raise the importance of serial surveillance and normalization of QTc interval prolongation and hypokalemia in hospitalized patients and the potential to correct and prevent cardiac arrhythmias. Maintenance of serum K+ >4.0 mmol/L is suggested to minimize the risk of cardiac arrhythmias.

### HYPOKALEMIA AND HYPMAGNESEMIA ON ADMISSION IN PATIENTS HOSPITALIZED WITH THERMAL BURN INJURY

Komolafe BO, Weber AH, Soberman JE, Hickerson WL, Weber KT. University of Tennessee Health Science Center, Memphis, TN.

**Purpose of Study:** Acute bodily injury is accompanied by an activation of the adrenergic nervous system. The ensuing hyperadrenergic response leads to a prompt and sustained (days) elevation in circulating catecholamines that could lead to several pathophysiologic consequences. First, catecholamine-based stimulation of Na-K ATPase pumps whose marked density and increased activity in skeletal muscle would account for rapid intracellular K+ accumulation derived from serum K+ to quickly beget hypokalemia (>4.0 mmol/L). Second, catecholamine-induced lipolysis with Mg2+ bound to free fatty acids and its subsequent degradation in adipose tissue leading to the rapid appearance of hypomagnesemia. Herein, we hypothesized that hypokalemia (>4.0 mmol/L) and hypomagnesemia (<2.0 mg/dL) would be present on
admission in patients hospitalized with thermal injury, where an acute hyperadrenergic state is expected.

Methods Used: We retrospectively examined serum K⁺ and Mg²⁺ values that had been obtained on admission in 71 consecutive patients (49 men; 42.6±1.8 yrs) hospitalized in the Firefighter’s Burn Center during August to October, 2010 with total body burn surface area of 15.2%. Summary of Results: Of the 71 patients, 34 (48%) had hypokalemia (3.6±0.3 mmol/dL) on admission while 41 patients (58%) had hypomagnesemia (1.75±0.02 mg/dL). Twenty-eight patients (39%) had combined hypokalemia (3.6±0.1 mmol/dL) and hypomagnesemia (1.7±0.1 mg/dL) on admission. Conclusions: The hyperadrenergic state that accompanies thermal burn injury is accompanied by the rapid appearance of hypokalemia and hypomagnesemia evident on admission. Anticipation, serial surveillance of serum K⁺ and Mg²⁺ and their prompt replacement may avoid attendant complications, such as delayed myocardial repolarization, QTc interval prolongation and increased propensity for supra- and ventricular arrhythmias.

90 ELEVATED SERUM TROPONIN-I IN HOSPITALIZED WITH CLINICALLY DECOMPENSATED HEART FAILURE
Komolafe BO, Shahbaz AU, Borkowski BJ, Weber KT University of Tennessee Health Science Center, Memphis, TN.
Purpose of Study: Congestive heart failure has its origins rooted in a salt-avid state mediated by effector hormones of the adrenergic nervous and renin-angiotensin-aldosterone system. These hormones are also cytotoxic causing nonischemic cardiomyocyte necrosis with spillage of cell contents, including troponins. Accordingly, elevated serum troponins are biomarkers of cardiomyocyte necrosis, whether ischemic or nonischemic in origin. Herein, we hypothesized elevated serum troponin-I would accompany the neurohormonal activation responsible for salt and water retention in patients with clinically decompensated heart failure.
Methods Used: The study population consisted of 43 patients (25 men; 52±12 yrs) consecutively hospitalized at the Regional Medical Center between August and October, 2010 because of their symptoms and signs of clinically decompensated heart failure. Seven patients had preserved ejection fraction (EF >50%) with arterial hypertension while the remainder had systolic dysfunction with EF <40% and a nonischemic cardiomyopathy. Serial troponin-I level was monitored upon their arrival in the Emergency Department (ED), and every 8 hrs thereafter for 16 hrs (trop2 and 3, respectively).
Summary of Results: Normal troponin-I = <0.05 ng/mL. Trop1 was elevated (0.20±0.05 ng/mL) in the ED in 10 patients (23%) and remained so with trop2 and 3. The rise in troponin-I was first seen with trop2 and trop3 determinations (0.20±0.05 and 0.20±0.04, ng/mL, respectively) in 8 other patients. A total of 18 patients (42%) had biomarker evidence of necrosis and this occurred as early as 4 hrs after admission with preserved EF and 33% with EF <40%.
Conclusions: Biomarker evidence of cardiomyocyte necrosis occurs in patients hospitalized with decompensated failure and more often in those with systolic dysfunction. Nonischemic myocardial necrosis, when ongoing and related to neurohormonal activation that accounts for the salt-avid state, can contribute to the progressive nature of heart failure.

91 A MITOCHONDRIOCENTRIC PATHWAY TO ISOPROTERENOL-INDUCED CARDIOMYOCYTE NECROSIS: CARDIOPROTECTION WITH NEBIVOLOL PRETREATMENT
Vaughn CA, Scarborough MC, Zhao T, Zhao W, Cheyney E, Khan MU, Ahokas RA, Sun Y, Bhattacharya SK, Weber KT University of Tennessee Health Science Center, Memphis, TN.
Purpose of Study: Nonischemic cardiomyocyte necrosis with elevated serum troponin accompanies hyperadrenergic stressor states, such as thermal burn injury, surgery, or cardiac arrest. Cellular and subcellular redox and metabolic changes operative in catecholamine-mediated necrosis include: cardiomyocyte Ca²⁺ overload, involving both cytosolic free [Ca²⁺]i and mitochondrial [Ca²⁺]m, induction of oxidative stress by subarachnoidal (SSM) population of these organelles; and the increased opening potential of the SSM permeability transition pore (mPTP) with ensuing osmotic swelling leading to their structural degeneration and cell necrosis. Herein we hypothesized pretreatment with nebivolol (Nb), a β1 receptor antagonist, would render cardioprotection from catecholamine-induced cardiomyocyte necrosis caused by administering isoproterenol (Isop), a synthetic catecholamine.
Methods Used: 8-week-old male Sprague-Dawley rats were treated with Nb (10 mg/kg daily by gavage) for 9 days prior to a single subcutaneous dose of Isop (1 mg/kg) given on day 10. Four hr after Isop, cardiac tissue was harvested and SSM isolated by differential centrifugation. We monitored: total Ca²⁺ and 8-isoprostanate, a biomarker of lipid peroxidation, in tissue; and free [Ca²⁺]m, H₂O₂ production and mPTP opening in response to CaCl₂ provocation in SSM.
Summary of Results: Compared to untreated, age-sex-matched controls, we found that after Isop administration (p<0.05): i) an increase in tissue Ca²⁺ (8.2±0.8 vs. 13.7±1.0 nEq/mg FFDT) and 8-isoprostanate (111.4±13.7 vs. 232.1±17.2 pmol/mg tissue); ii) increased [Ca²⁺]m (88.8±2.5 vs. 161.5±3.5 nM) and H₂O₂ production (97.4±5.3 vs. 142.8±7.0 pmol mg protein/min); and iii) augmented mPTP opening (78.7±6.9 vs. 108.2±6.1 at 560 nm). Each of these responses, including Ca²⁺ overloading and oxidative stress in tissue and SSM and their heightened mPTP opening, were abrogated (p<0.05) by Nb pretreatment.
Conclusions: In the hyperadrenergic stressor state induced by Isop, pretreatment with Nb offered cardioprotection by minimizing Ca²⁺ overloading and the induction of oxidative stress in both SSM and cardiac tissue.

92 ISOPROTERENOL-INDUCED ACUTE STRESSOR STATE INVOLVING MITOCHONDRIA: CARDIOREPARATION WITH NEBIVOLOL COTREATMENT
Scarborough MC, Vaughn CA, Zhao T, Zhao W, Cheyney E, Khan MU, Ahokas RA, Sun Y, Bhattacharya SK, Weber KT University of Tennessee Health Science Center, Memphis, TN.
Purpose of Study: Hyperadrenergic stressor states, such as seen with acute bodily trauma, can be accompanied by catecholamine-mediated nonischemic cardiomyocyte necrosis with elevated serum troponins. Previous studies using the synthetic catecholamine, isoproterenol, to induce a hyperadrenergic state have identified a mitochondriocentric pathway to necrosis: cardiomyocyte Ca²⁺ overloading, involving both cytosolic free [Ca²⁺]i, and subarachnoidal mitochondrial (SSM) [Ca²⁺]m; the induction of oxidative stress by these organelles; and the increased opening potential of the SSM permeability transition pore with ensuing swelling and structural degeneration followed by cell necrosis. We hypothesized cotreatment with nebivolol (Nb), a β receptor blocker, given after Isop administration, would confer a reparative property in salvaging myocardium.
Methods Used: 8-week-old male Sprague-Dawley rats were given a single subcutaneous dose of Isop (1 mg/kg) followed by Nb (10 mg/kg by gavage). Four hr after Isop, cardiac tissue was harvested and SSM isolated by differential centrifugation. We monitored: total Ca²⁺ and 8-isoprostanate, a biomarker of lipid peroxidation, in tissue; and free [Ca²⁺]m, H₂O₂ production and mPTP opening potential in SSM.
Summary of Results: Compared to untreated, age-sex-matched controls, we found Isop led to (p<0.05): i) an increase in tissue Ca²⁺ (8.2±0.8 vs. 13.7±1.0 nEq/mg FFDT) and 8-isoprostanate (111.4±13.7 vs. 232.1±17.2 pmol/mg tissue); ii) increased SSM [Ca²⁺]m (88.8±2.5 vs. 161.5±3.5 nM) and H₂O₂ production (97.4±5.3 vs. 142.8±7.0 pmol mg protein/min); and iii) augmented mPTP opening (78.7±6.9 vs. 108.2±6.1 at 560 nm). Cardiac tissue Ca²⁺ and 8-isoprostanate and mitochondrial free [Ca²⁺]m were each attenuated (p<0.05) by Nb cotreatment.
Conclusions: The hyperadrenergic stressor state induced by Isop leads to cardiomyocyte and SSM [Ca²⁺]m overloading, the induction of oxidative stress and mPTP opening by these organelles. A single dose of a β blocker, Nb, given after the hyperadrenergic state has been initiated is only partially reparative at these sites.

93 RECLASSIFICATION OF CARDIOVASCULAR RISK IN PATIENT WITH NORMAL MYOCARDIAL PERFUSION IMAGING USING HEART RATE RESPONSE TO REGADENOSAN
Sanam K 1, Iqbal FM 2, Turner J 1, Heo J 1, Iskandrian AE 1, Hage FG 1
1University of Alabama at Birmingham, Birmingham, AL; 2 Tulane University, New Orleans, LA.
Purpose of Study: Patients with normal vasodilator myocardial perfusion imaging (MPI) are at higher risk for cardiac events when compared to those...
with normal exercise MPI due to an inherently higher pre-test risk. The purpose of this study was to determine the incremental prognostic value to traditional risk stratification (HRR, % change from baseline) to regadenoson in patients with normal MPI.

Methods Used: We studied 1,000 consecutive patients with normal regadenoson MPI between 07/2008-06/2009. Traditional risk stratification was performed using the Framingham Risk Score (FRS) into low < 6%, intermediate 6 - 20%, and high > 20% risk categories. Patients were then sub-stratified according to HRR tertars (<21%, 21-37% and >37%). The primary outcome was defined as all-cause mortality. A composite of major adverse cardiac events (MACE, cardiac death or non-fatal myocardial infarction) was examined as a secondary endpoint. Follow-up was truncated at 2 years from the MPI.

Summary of Results: During 2 years of follow-up 106 (11%) patients died. Patients who died were older (62±11yrs), more likely to be men (52%), ever-smokers (38%), and have a higher FRS (11.9±3.67) than patients who survived (59±12yrs, 47%, 27%, 11.10±4.25, respectively, p<0.05 for all). In a Cox proportional hazard model that controlled for age, gender, left ventricular ejection fraction and FRS risk category, HRR in the lowest tertile was independently associated with increased risk of mortality (HR 2.2, p=0.001) and MACE (HR 3.0, p=0.04). Importantly, HRR was associated with worse outcomes across all 3 FRS risk categories (p<0.001 for all). This was significantly associated with the FRS but the correlation was very poor (R2=0.003, p=0.001). When added to the FRS categories, HRR resulted in a net reclassification improvement in mortality of 17.6% and MACE of 35.6%, p<0.01 for both.

Conclusions: A blunted HRR to regadenoson is independently associated with increased risk in patients with normal regadenoson MPI and can correctly reclassify a substantial proportion of these patients on top of traditional risk stratification.

94 DIFFERENTIAL EFFECTS OF BODY MASS INDEX AND BLOOD PRESSURE FROM CHILDHOOD TO ADULTHOOD ON LEFT VENTRICULAR REMODELING PATTERNS IN ADULTS: THE BOGALUSA HEART STUDY

Chen W, Srinivasan SR, Dasmahapatra P, Fernandez C, Berenson GS Tulane University, New Orleans, LA.

Purpose of Study: This study tested the hypothesis that childhood, adulthood and long-term measures of body mass index (BMI) and blood pressure (BP) have a different impact on development of LV remodeling patterns in adulthood.

Methods Used: The longitudinal study cohort consisted of 721 asymptomatic adults (512 whites and 209 blacks; 39.9% males; age=28.8±5.1 years; average age=41.8 years). Subjects were examined for cardiovascular risk factor variables 6 times from childhood to adulthood since 1973 and LV dimensions and BMI as adults in 2008-2010. Four LV geometry types were identified as normal, concentric remodeling, eccentric and concentric hypertrophy. The long-term burden of BMI and systolic BP was measured as the area under the curve (AUC).

Summary of Results: Compared with whites, blacks had higher prevalence of concentric hypertrophy (24.4% vs 15.2%, p=0.004). In multivariable Logistic regression analyses using normal geometry as a control shown in the table, BMI had stronger associations with LV hypertrophy than systolic BP in terms of childhood (the first measurement), adulthood (the last measurement) and AUC values. Furthermore, BMI was predictive of both concentric and eccentric hypertrophy; whereas systolic BP was not associated with eccentric hypertrophy when BMI was included in the model. The standardized regression coefficients of systolic BP AUC on LV relative wall thickness were greater than those of BMI AUC (0.42±0.04 vs. 0.10). All the above associations did not differ significantly between black and white individuals.

Conclusions: These findings suggest that the childhood and life course burden of obesity and elevated BP play different roles in the pathogenesis of LV hypertrophy patterns in adulthood.

AIDS-related ratio of standardized BMI and systolic BP for LV remodeling patterns using normal geometry as a control, adjusting for race, sex, age, glucose levels and lipids (standardized measures-Z-scores with mean=0 and SD=1; * p<0.05; ** p<0.01; NS, not significant)

Outcome | BMI (Predictor) | Systolic BP (Predictor)
--- | --- | ---
Childhood | Adulthood | AUC | Childhood | Adulthood | AUC
Concentric Remodeling (n=251,35) | 2.2* | NS | 2.3* | NS | 2.3** | NS
Concentric Hypertrophy (n=381,129) | 2.2** | 2.6** | 2.7** | NS | 1.4** | 1.3*
Eccentric Hypertrophy (n=281,76) | 2.7** | 2.5** | 2.6** | NS | NS | NS

95 INSULIN-LIKE GROWTH FACTOR-1 ENHANCES GLUTATHIONE Peroxidase ACTIVITY AND EXPRESSION IN VASCULAR ENDOTHELIAL CELLS: POTENTIAL ROLE OF SENEOCYSTEIN-DEPENDENT TRANSLATION

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Purpose of Study: Oxidative stress is an important contributor to vascular damage in atherosclerosis. Systemic administration of insulin-like growth factor-1 (IGF-1) in apolipoprotein E-deficient mice decreases atherosclerotic plaque development and progression, possibly through anti-inflammatory and anti-oxidant effects. The aim of this study was to characterize IGF-1 regulation of glutathione peroxidase 1 (GPx-1) expression, a crucial anti-oxidant enzyme, in endothelial cells.

Methods Used: Cultured human aortic endothelial cells (ECs) were treated with human recombinant IGF-1 (0-100 ng/ml) and tested for oxidized low-density lipoprotein (oxLDL)-induced reactive oxygen species generation using 5-carboxy-2,7'-dichlorodihydrofluorescein diacetate. GPx-1 gene and protein expression levels were tested by real-time-PCR and Western blot analyses. Protein levels were also examined for senescence (Sec)-RNA specific eukaryotic elongation factor (eEFsec) and Sec insertion sequence binding protein 2 (SBP2), key components in the rate-limiting Sec insertion during GPx-1 translation. To identify potential signaling pathways mediating IGF-1 regulation of GPx-1, ECs were treated with IGF-1 in the presence or absence of inhibitors to ERK1/2 (PD98059, 25 μM), p38 MAPK (SB203580, 10 μM), and PI3K (LY294002, 50 μM).

Summary of Results: IGF-1 decreased oxLDL-induced peroxide generation by 67±9% with 100 ng/ml IGF-1 treatment for 24 hours, in comparison to oxLDL alone (p<0.01). IGF-1 did not alter superoxide dismutase or catalase activity but increased glutathione peroxidase activity by nearly 5-fold with 24 hour treatment of 100 ng/ml (p<0.01). IGF-1 (100 ng/ml) increased GPx-1 protein levels by 2.6-fold at 24 hr (p<0.01) but did not increase GPx-1 mRNA levels, suggesting a translational/post-translational mechanism. LY294002 blocked GPx-1 upregulation by IGF-1, indicating involvement of the PI3K pathway. Additionally, levels of eEFsec diminished in the presence of LY294002, consistent with GPx-1 expression.

Conclusions: IGF-1 exerts anti-oxidant effects on EC, mediated by increased GPx-1 expression and activity, possibly through improving Sec incorporation efficiency in a PI3K-dependent manner.

96 MECHANISMS BY WHICH INSULIN-LIKE GROWTH FACTOR MODULATES VASCULAR SMOOTH MUSCLE CELL PHENOType AND COLLAGEN DEPOSITION

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Purpose of Study: Our previous studies in an apoE-/- mouse model of atherosclerosis have shown that insulin-like growth factor-1 (IGF-1)-infusion increases collagen expression and the number of alpha-smooth muscle actin (αSMA)-positive cells within plaques. These features describe lesions less prone to rupture and our aim is to elucidate the mechanisms responsible for these effects.

Methods Used: Human aortic smooth muscle cells were cultured and treated with IGF-1 and various types of inhibitors. Protein expression was assessed by western blot and visualized by ICC.

Summary of Results: IGF-1 up-regulated expression of collagen-1α1 and contractile proteins, αSMA and SM22α. Presence of a translation inhibitor, cycloheximide, completely abolished this IGF-1-effect. However, in the presence of a transcription inhibitor, actinomycin D, a significant IGF-1 induction of protein expression was still observed. In agreement, real-time PCR showed no significant change in mRNA levels in response to IGF-1.

Pharmacological inhibition of PI3K strikingly reduced expression of procollagen-1α1 and blocked the increase by IGF-1. The PI3K inhibitor also reduced basal expression of αSMA but did completely block the IGF-1 effect. Inhibition of Erk1/2 had no effect on basal or IGF-1-stimulated expression of procollagen-1α1 or αSMA.

Presence of a collagen synthesis inhibitor or a blocking antibody for the α2β1 integrin (a receptor for collagen) had no effect on αSMA expression but significantly reduced basal expression levels of SM22α and PCNA. In
contrast, blockade of the α5β1 integrin markedly reduced expression of αSMA and completely blunted the IGF-1-induced increase, while simultaneously reducing the basal and IGF-1-stimulated expression of αSMA. Conclusions: IGF-1 regulation of collagen-1α1 and markers of a more stable, differentiated cell phenotype involves a post-transcriptional and translation-dependent mechanism. Regulation of collagen-1α1 and αSMA expression is dependent on PISK-signaling and independent of Erk1/2. Cellular interaction with collagen, in part via the α2β1 integrin, is necessary for proliferation and SM22α expression but has no effect on αSMA expression. In contrast, ECM interaction via the α5β1 is necessary for αSMA expression and IGF-1’s effect on differentiation.

97 ANGIOTENSIN II REDUCES FOOD INTAKE BY ALTERING OREXIGENIC NEUROPEPTIDE EXPRESSION IN THE MOUSE HYPOTHALAMUS
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Purpose of Study: Angiotensin II (Ang II), which is elevated in many chronic disease states such as end-stage renal disease and congestive heart failure, induces cachexia and skeletal muscle wasting by increasing muscle protein breakdown and reducing food intake. The purpose of this study is to analyze the neuroendocrine mechanisms that mediate Ang II-induced appetite suppression.
Methods Used: Expression of orexigenic and anorexigenic neuropeptide expression in the hypothalamus was analyzed by quantitative PCR in Ang II (1 μg/kg/min) infused mice. Circulating hormone levels that controls appetite was analyzed by quantitative PCR and ELISA. Intracerebroventricular Ang II infusion and hypothalamic ex vivo culture was used to determine the direct effect of Ang II on the hypothalamus.
Summary of Results: Systemic Ang II (1 μg/kg/min) infusion in FVB mice rapidly reduced hypothalamic expression of neuropeptide Y (NPY) and orexin (NPX, 48.3±9.1% decrease, p<0.01; orexin, 70.5±9.5% decrease, p<0.05; N=5) and decreased food intake at 6h compared with sham-infused controls but did not change peripheral leptin, ghrelin, adiponectin, glucagon-like peptide, peptide-YY, or cholecystokinin levels. These effects were completely blocked by the Ang II type I receptor antagonist candesartan or deletion of Ang II type Ia receptor. Ang II markedly reduced phosphorylation of AMP-activated protein kinase (p-AMPK, 64.0% decrease, N=3) and 29% decrease in food intake (3.20 ±0.38 g vs. 4.48±0.35 g after 1d infusion, N=6, p<0.05), and Ang II dose-dependently reduced NPY and orexin expression in the hypothalamus cultured ex vivo (41.0±4.0% decrease, 45 min culture in 100 nM Ang II, N=5, p<0.05), an enzyme that is known to regulate NPY expression. Intracerebroventricular Ang II infusion (50 ng/kg/min) caused a reduction of food intake (3.20±0.38 g vs. 4.48±0.35 g after 1d infusion, N=6, p<0.05), and Angle II dose-dependently reduced NPY and orexin expression in the hypothalamus cultured ex vivo (41.0±4.0% decrease, 45 min culture in 100 nM Ang II, N=5, p<0.05). This effect was prevented by candesartan.
Conclusions: AT1aR-dependent Ang II signaling reduces food intake by suppressing hypothalamic expression of NPY and orexin, possibly via AMPK diphosphorylation. These findings have major implications for understanding mechanisms of cachexia in chronic disease states such as congestive heart failure and end-stage renal disease, in which the renin-angiotensin system is activated.

98 A DYSMETHODESIA OF SERUM POTASSIUM, MAGNESIUM AND IONIZED CALCIUM IN PATIENTS HOSPITALIZED WITH ACUTE BODILY INJURY
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Purpose of Study: Acute bodily injury is accompanied by the prompt elevation in circulating catecholamines which have adverse consequences. These pathophysiologic outcomes include a rapid translocation of mono- and divalent cations from the circulation into the intracellular compartment of soft tissues based on: i) Na/K ATPase pump activation, which in skeletal muscle accounts for rapid K+ sequestration with ensuing hypokalemia; ii) lipolysis and Mg2+ binding to free fatty acids and adipose tissue deposition to promote hypomagnesemia; and iii) intracellular Ca2⁺ overloading in diverse tissues leading to ionized hypocalcemia. Herein we hypothesized the presence of hypokalemia, hypomagnesemia and ionized hypocalcemia would be present at the time of admission when critically ill patients with traumatic injury were hospitalized.
Methods Used: A retrospective analysis of serum K+ and Mg2+ and plasma ionized [Ca2+]i, in 300 consecutive admissions (40.7±9.9 yrs; 226 men) to our Trauma Center in 2008. Hypokalemia (<4.0 mmol/L) was graded as mild (3.9-3.5), moderate (3.4-3.0), and severe (<3.0), with hypomagnesemia (<2.0 mg/dL) as mild (1.9-1.8), moderate (1.7-1.6), and severe (<1.6). Ionized hypocalcemia when <1.1 mmol/L.
Summary of Results: Serum K+ on admission was 3.65±0.44 mmol/L with 78% having hypokalemia which was of mild, moderate and marked severity in 46%, 29% and 3%, respectively. Serum K+ was normal (4.0-5.0 mmol/L) in 19% while hyperkalemia (>5.0 mmol/L) was seen in 4 patients (1%). Serum Mg2+ on admission was 1.97±0.35 mg/dL. Hypomagnesemia was present in 48% of these patients, where it was of mild, moderate and marked severity in 22%, 7% and 1%, respectively. Admission ionized [Ca2+]i was 1.02±0.07 mmol/L with ionized hypocalcemia present in 84% of these critically ill patients. [Ca2+]i was normal in the remainder.
Conclusions: A vast majority of critically ill patients hospitalized with acute bodily injury will have a dyshomeostasis of K+, Mg2+ and [Ca2+]i, presenting as hypokalemia, hypomagnesemia and ionized hypocalcemia on admission. Systematic monitoring and appropriate replacement of these cations are recommended to avoid adverse cardiovascular complications, including arrhythmogenicity.

99 ARTERIAL AND VENTRICULAR ARRHYTHMIAS IN HYPERTENSIVE PATIENTS HAVING PRIMARY ALDOSTERONISM: A CASE SERIES
Yusuf J, Khan MU, Weber KT University of Tennessee Health Science Center, Memphis, TN.
Purpose of Study: Supra- and ventricular arrhythmias can each occur when myocardial repolarization is delayed and the QTc interval of the electrocardiogram is prolonged, especially when accompanied by a dyshomeostasis of extra- and intracellular K+ and Mg2+. Patients with primary aldosteronism will oftentimes have hypokalemia and hypomagnesemia in association with a metabolic alkalosis. They therefore are at increased risk for arrhythmias. Our objective was to determine the nature of cardiac arrhythmias that appeared in a group of patients we follow with primary aldosteronism and who had associated dyshomeostasis of serum K+, Mg2+ and HCO3-.
Methods Used: We followed 10 patients (63±4.1 yrs; 6 females) with primary aldosteronism in the out-patient cardiology continuity clinic at the Regional Medical Center. All have arterial hypertension and an aldosterone:renin ratio of 55±10 (normal <23) with plasma renin <1.0 in all patients and below the limits of detection in 5. Patients were seen between May 2009 and June 2011 either because of poorly controlled hypertension and/or the appearance of arrhythmias.
Summary of Results: We found: serum K+ to be reduced (<4.0 mmol/L) in 7 of the ten patients (3.7±0.4); serum Mg2+ was also reduced (<2.0 mg/dL) in 7 patients (1.9±0.3) and all 7 had combined hypokalemia and hypomagnesemia; and serum HCO3 levels were elevated in all 10 patients (32.0±2.0 mg/dL). All ten patients had QTc prolongation (>440 ms) at 472.7±5.2 ms on their ECG. Five had arrhythmias during episodes of hypokalemia and hypomagnesemia and which included: premature atrial contractions in 2; atrial fibrillation in 1; and premature ventricular contractions in 1. Limited cation supplements, in combination with daily spironolactone (50 mg po), an aldosterone receptor antagonist, corrected these electrolyte abnormalities, normalized QTc and blood pressure, and eliminated arrhythmias.
Conclusions: Patients having primary aldosteronism, who present with poorly controlled hypertension and/or supraventricular and/or ventricular arrhythmias are likely to have hypokalemia, hypomagnesemia and a metabolic alkalosis. Correction of these hemodynamic and metabolic derangements with spironolactone will eliminate associated QTc prolongation and arrhythmias.

100 QTc PROLONGATION WITH HYPOKALEMIA IN HOSPITALIZED PATIENTS: CARDIAC AND NONCARDIAC-RELATED ADMISSIONS AND DIURETIC USE
Shaheen M, Flatt DM, Holmes B, Weber KT University of Tennessee Health Science Center, Memphis, TN.
Purpose of Study: In hospitalized patients, a dyshomeostasis of plasma K+ and Mg2+ can lead to important cardiovascular complications, irrespective of whether they have been admitted for cardiac- or noncardiac-related health
Purpose of Study: Fernandez C, DasMahapatra P, Chen W, Srinivasan SR, Xu JH, Berenson GS

Comparison of multiple instruments measuring vascular system changes in predicting left ventricle hypertrophy: The Bogalusa Heart Study

Fernandez C, DasMahapatra P, Chen W, Srinivasan SR, Xu JH, Berenson GS Tulane University Health Sciences Center, New Orleans, LA

Purpose of Study: The effect of impaired arterial compliance on cardiac structure changes has been broadly described. However, information is limited as to which of seven non-invasive measurements of arterial compliance by different instruments better indicates changes in cardiac structure (as defined by hypertrophy of the left ventricle), in relatively young asymptomatic adults.

Methods Used: In a community-based biracial (black-white) cohort of 914 participants (36.6% male, 27.6% blacks) aged 29-50 years (mean of 43.3), vascular compliance measurements were assessed in terms of: Peripheral Augmentation Index (PAI)@75, Central Augmentation Index (CAI)@75, Large Artery Elasticity Index C1, Small Artery Elasticity C2, Systemic Vascular Resistance SVR, Petersen Elastic Modulus Ep and Young's Elastic Modulus YEM.

Left Ventricle Hypertrophy (LVH) was defined through echocardiographic evaluation and estimation of the Left Ventricle Mass Index indexed to height (LVMII2.7), considering an inclusion criteria of LVMII>51 gm² /m².

Summary of Results: All instruments provided measurements of vascular compliance related to LVH. As expected, the group associated with LVH had decreased C1, C2 and increased SVR, Ep, YEM, pAI@75, AI@75. In multiple regression analyses, creating one model for each non-invasive vascular parameters with adjustments for age, ethnicity, gender and traditional CV risk factors, pAI@75 showed a significantly greater predictability for LVH, (OR=1.44 (1.21-1.96) p<0.03) in contrast to the other vascular measurements.

Conclusions: In this study of asymptomatic adults, peripheral Augmentation Index, a resultant of reflective pulse wave, demonstrated greater association with LVH, compared to other non-invasive vascular measurements based on elasticity indices. AI as an analysis of the wave pulse through the arterial tree serves as an early predictor for changes in cardiac structure. Further, such observations help enhance the assessment of CV risk as defined by the clinical Framingham and Reynolds scores.
DYSPNEA ON EXERTION
A RARE VARIANT OF THE SCIMITAR SYNDROME CAUSING DYSPEA ON EXERTION
Marmorato RM, Banchs H, Altieri PI Internal Medicine Program, University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico.

Case Report: We present the case of a 36-year-old man that was transferred to our institution after incidental findings of an anomalous right pulmonary vein draining into the inferior vena cava (IVC), while being evaluated for leg edema, or syncope. The physical examination revealed no abnormalities besides a soft systolic ejection murmur along the left sternal border and pectus excavatum. Transeosophageal echocardiogram showed left pulmonary veins draining to the left atrium while the right pulmonary veins were not visualized. Contrast enhanced computed tomography showed complete right lung anomalous vein draining into the inferior vena cava (IVC), while being evaluated for leg edema, or syncope. Blood was drawn, but prior to the return of laboratory results, the patient’s rhythm degenerated into a polymorphic VT. CPR was initiated, and a sinus rhythm was successfully restored after defibrillation with 200 J as well as 2 mg of magnesium IV. After stabilization labs revealed a potassium of 2.5 MMOL/L and a magnesium of 0.7 MG/DL. The patient was admitted to the ICU for further workup of metabolic disturbances and possible ischemic workup and EP study to follow.

A STRIKING SEQUELAE OF T WAVE ALTERNANS
Ali RZ, Singh M, Jameel A, Jain N, Ehsan K LSUHSC, New Orleans, LA.

Case Report: Torsade de pointes or “twisting of the points,” occurs in a specific type of polymorphic VT. The ECG may give the illusion of a twisting QRS complex around an isoelectric baseline. Predisposing factors include long QT syndrome, electrolyte disturbances, and medication side effects.

Our case describes a 59 year old gentleman who presented to the ED with the chief complaint of “passing out.” The patient had a past medical history of hypertension and seizure disorder, as well as a strong history of alcohol abuse. His home medications included candesartan, duloxetine, levetiracetam, amloidipine, mirtazapine, carbamazepine, and oxcarbazepine; however he had been non-adherent with those medications for the week prior to admission.

The patient’s workup included an ECG which showed T-wave alternans, as well as a markedly prolonged QTc of 661 ms. Blood was drawn, but prior to the return of laboratory results, the patient’s rhythm degenerated into a polymorphic VT. CPR was initiated, and a sinus rhythm was successfully restored after defibrillation with 200 J as well as 2 mg of magnesium IV. After stabilization labs revealed a potassium of 2.5 MMOL/L and a magnesium of 0.7 MG/DL. The patient was admitted to the ICU for further workup of metabolic disturbances and possible ischemic workup and EP study to follow.
HONEYMOON V-TACH: A CASE OF TETRALOGY OF FALLOT/VSD

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Case Report: A 49-year-old man with a past medical history of hypertension, hyperlipidemia, and previous ventral septal defect (VSD) repair at age 8 was on his honeymoon in New Orleans when he was awakened from sleep with a sensation of heavy palpitations associated with shortness of breath. This episode lasted about 10 minutes and his wife reported that he became very pale and diaphoretic. EMS found the patient to be in monomorphic ventricular tachycardia (VT) with an extremely accelerated rate and he was given 1 shock at 100 joules to break the VT. At the time of admission, his vital signs were stable and physical exam demonstrated a harsh 3/6 systolic ejection murmur that was loudest at the left upper sternal border. EKG showed a right bundle branch block and significantly fragmented QRS morphology. The patient was admitted to the ICU and started on an amiodarone drip. Transthoracic echocardiogram showed a mildly dilated left atrium, akinetic right ventricle, and normal left ventricle. LV angiograms showed normal coronary arteries. Right ventricular volume overload with increased flow across the pulmonic valve. A cardiac CT angiogram suggested a repaired tetralogy of Fallot and no evidence of residual VSD leak. Coronary angiography revealed normal coronary arteries. The patient underwent an EP study and received a dual chamber defibrillator. He was discharged with records from his honeymoon hospital visit and provided follow-up with his cardiologist in his hometown.

Discussion: There are over a million adults in the US with congenital heart disease (CHD). Mortality is increased in adults with congenital heart disease and of all deaths; most are of cardiovascular origin. Sudden cardiac death occurs with high frequency in certain forms of CHD and usually involves VT. Patients who have undergone a ventriculotomy or patching of a VSD (eg, tetralogy of Fallot repair) are at highest risk for VT. Patients with CHD and documented VT may often require an implantable defibrillator or ablation procedures. Adult patients with CHD will benefit from better attention to treatment of cardiovascular complications.

“A LONG FORGOTTEN CAUSE OF ABNORMAL STRESS TEST IN THE ABSENCE OF CORONARY ARTERY DISEASE”

Erbli J, Hanna E - LSU Health Sciences Center, New Orleans, LA.

Case Report: Introduction: The coronary arteries normally take an epicardial course over the surface of the heart, but occasionally they have an intramyocardial segment that may get compressed in systole and cause symptomatic ischemia. This is called “myocardial bridging.” Since two-thirds of the left coronary blood flow occurs during diastole, bridging does not usually cause symptomatic ischemia. We present a case of a woman who had symptomatic ischemia from myocardial bridging.

Case Presentation: A 62-year-old Hispanic woman with hypertension and hyperlipidemia presented to the emergency department with complaints of chest pain. She described a three-year history of typical exertional angina and dyspnea. Of note, she had an abnormal stress test three years prior, followed by an unremarkable coronary angiography. Upon evaluation, she was noted to have ST segment depression in the lateral leads that progressed to anterior. Serial cardiac biomarkers were negative and echocardiography showed normal left ventricular function. Cardiac computed tomography (CT) did not reveal significant atherosclerotic coronary disease but did illustrate that a long portion of her proximal LAD had a deep intramyocardial portion rather than a normal epicardial course. This bridging causes the LAD to get squeezed by the myocardium during systole, particularly with exertion, leading to ischemia.

Discussion: Myocardial bridging is not a rare disorder, and it is seen on 2% of coronary angiograms. It is often asymptomatic with various rates of myocardial ischemia on stress testing. In a patient presenting with chest pain and ischemic ECG changes on stress test despite the lack of atherosclerotic coronary disease, bridging is potentially the cause of anterior myocardial ischemia. Coronary CT is emerging as a new diagnostic modality. Myocardial bridging likely explains our patient’s history of abnormal stress test.

MASSIVE DIAPHRAGMATIC HERNIA DURING PULMONARY VEIN ISOLATION “AN INCIDENTAL FINDING WITH SIGNIFICANT CLINICAL IMPORTANCE”

Hamed I, Cassidy M, Mackinnie J - Tulane University and Heart Vascular Institute, New Orleans, LA.

Case Report: A 49 year-old man with paroxysmal atrial fibrillation refractory to medical therapy was scheduled for pulmonary vein isolation. Deviation of the trachea was noted during the coronary sinus catheter placement which led to a contrast CT scan of the thorax and postponement of the procedure. The CT scan confirmed significant deviation of the mediastinum but also illustrated a massive diaphragmatic hernia on the left side and close proximity of the aorta to the left atrium. A ruptured diaphragm was noted on the left side with abdominal viscera (stomach and pancreas) protruding into the left thorax, a collapsed lung and deviated course of the left pulmonary vein. The patient was referred for surgical correction of the diaphragmatic hernia.

There are a few highlights pertinent to this case. First and foremost is the knowledge of anatomical landmarks under fluoroscopy. The variation in these landmarks should prompt further imaging, potentially preventing fatal complications. In our patient, the close proximity of the stomach and aorta to the left atrium could have led to the delivery of radiofrequency energy to these vital structures. Diaphragmatic herniation of such extent in association with atrial fibrillation has never been reported in the literature. Published literature supports the association of atrial fibrillation with hiatal hernia; however, the exact mechanism remains elusive. Second, CT scanning is an important tool in the recognition of the anatomy of the pulmonary veins and their association with extracardiac structures, especially in patients undergoing pulmonary vein isolation.

PERCUTANEOUS CLOSURE OF AN AORTO-ATRIAL FISTULA: AN EMERGING THERAPEUTIC OPTION

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Case Report: Aorto-atrial fistulas are a rare abnormal communications associated with aortic dissection, endocarditis, trauma, and as a post-surgical complication. There are also cases of congenital fistulas. The usual treatment was surgical correction but since the era of percutaneous procedures, there are a very limited number of reports of percutaneous repair. We present the case of a 55-year-old woman with past tricuspid valve endocarditis resulting in severe tricuspid valve regurgitation, atrial fibrillation, and multiple medical visits due to heart failure. She underwent heart catheterization which revealed a fistula from the aorta to the right atrium. She was scheduled for fistula closure with an Amplatzer duct occluder. Serial aortograms done after deployment of the device revealed less flow through fistula. The patient was successfully discharged without complications and has been asymptomatic ever since. In conclusion, we want to augment the scarce evidence that percutaneous closure of an aorto-atrial fistula may be the therapeutic option in these patients.

TAKOTSUBO CARDIOMYOPATHY

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Case Report: Introduction: Takotsubo cardiomyopathy (stress-induced cardiomyopathy) is characterized by transient systolic dysfunction that mimics myocardial infarction but without evidence of obstructive coronary artery disease.

Case: A 58 year-old female with diabetes, hypertension and hyperlipidemia presented to the emergency department with “chest heaviness” over two
days. She reported her symptoms occurred while singing in her church choir and resolved after rest. She had another episode with the same pattern the following morning. The patient reported associated shortness of breath but denied radiation of pain or history of similar symptoms. Upon presentation her vital signs were stable and physical exam was unremarkable. Her laboratory studies revealed an elevated troponin of 1.65ng/ml. Chest x-ray was unremarkable and electrocardiogram showed j-point elevation in the anterior-lateral leads. Cardiac catheterization revealed normal coronaries. An echo-cardiogram showed apical hypokinesis without left ventricular dysfunction or thrombus. A repeat electrocardiogram, weeks later, revealed diffuse t-wave inversions in the anterior leaflet leads.

Discussion: Onset of Takotsubo cardiomyopathy is not well understood but has been associated with severe stressors and acute medical illness. An association with excess catecholamines, coronary spasm or microvascular dysfunction is believed to exist. Symptoms and laboratory studies are similar to acute myocardial infarction. 2D echocardiogram typically reveals apical ballooning with possible midventricular hypokinesis. Coronary angiography typically reveals normal coronaries.

Diagnosis is based on the Mayo Clinic diagnostic criteria; all four of the following must be met: (1) transient wall motion abnormalities of the left ventricular with or without apical involvement, (2) absence of coronary obstruction, (3) new EKG abnormalities or elevation of troponins and (4) absence of pheochromocytoma and myocarditis. Initial management is similar to acute coronary syndrome. Long-term treatment is suggested to include beta-blocker, ACE inhibitor if without left ventricular outflow obstruction and aspirin. Anticoagulation is suggested if evidence of thrombus or severe left ventricular dysfunction.

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SPONTANEOUS CONVERSION OF CHRONIC ATRIAL FIBRILLATION INTO SINUS RHYTHM AFTER CARDIAC RESYNCHRONIZATION THERAPY - IMPROVEMENT IN HEMODYNAMICS IS THE KEY
Panikkhath R, Meyeerose G, Perez Verdia A. TTUISC, Lubbock, TX.

Case Report: Introduction
Hemodynamic stress is associated with development of atrial fibrillation (AF). Improved hemodynamics could result in restoration of sinus rhythm in patients with permanent AF. Spontaneous conversion of permanent atrial fibrillation into sinus rhythm (SR) after cardiac resynchronization therapy (CRT) has been uncommonly reported in literature.

Materials and methods
We searched our clinic data base of patients with CRT who had AF which spontaneously which converted to sinus rhythm on post procedure follow up. We found two patients with permanent AF who had spontaneous conversions to SR.

Results
The first was a 38 year old male with non-ischemic cardiomyopathy with severe left ventricular (LV) systolic dysfunction. He had longstanding persistent AF with a fast ventricular response. He had left atrial appendage (LAA) clot which precluded cardioversion for conversion to SR. Despite anticoagulation he had a stroke due to cardiac embolism. Oral anticoagulation was associated with recurrent hematuria that limited its continuous use and precluded cardioversion. Due to symptomatic high ventricular rate, he underwent atrioventricular nodal ablation for rate control followed by a CRT defibrillator implantation. Ten months after the implantation of the CRT device, he had spontaneous reversion to sinus rhythm. At this point, evaluation revealed that his LV ejection fraction (EF) had improved from the baseline of 20% to 40%. He also had good symptomatic improvement to New York Heart Association (NYHA) FC II.

The second patient is a 61 year old gentleman with severe LV dysfunction (EF 25%), sick sinus syndrome, permanent AF and NYHA FC III heart failure. He had failed attempt at cardioversion multiple times. Due to his AF an atrial lead was not placed during implantation of his CRT. He spontaneously converted to sinus rhythm after 8 months of CRT and reported good symptomatic improvement. At this point, his CRT was upgraded with an atrial lead.

Conclusion
Spontaneous conversions of permanent AF after CRT implantation, though uncommonly reported in the literature is possible. We believe that the improvement in hemodynamics is the key. AF should not preclude physicians from considering patients for CRT.
tumors. Primary intracardiac lymphomas are very unusual extranodal lymphomas that should be distinguished from secondary cardiac involvement by disseminated non-Hodgkin’s lymphoma. These tumors often mimic other cardiac neoplasms, and often require multimodality cardiac imaging, in combination with endomyocardial or excisional biopsy to establish a definitive diagnosis. Malignant primary cardiac tumors often strike a young patient population with dismal prognosis: with out surgical resection, the survival rate at 9 to 12 months is only 10%.

We present the case of a 28-year-old woman without history of systemic illnesses that presents with one-month history of progressive shortness of breath, general malaise and weight loss, accompanied with onset of facial swelling and worsening dyspnea in the last 2 weeks suggesting superior vena cava (SVC) syndrome. Patient was referred to our service for evaluation of an intracardiac mass found on transthoracic echocardiogram. A transesophageal echocardiogram (TEE) confirmed the presence of a large right atrial mass with significant intravascular involvement of superior vena cava obstructing venous return. Chest CT scan revealed evidence of aforementioned mass with intravascular SVC involvement without evidence of extracardiac masses. Based on acute onset and severity of symptoms, endovascular stenting of SVC was successfully performed along with biopsy of mass, resulting in complete resolution of symptoms in 48 hours. Diagnosis of B cell lymphoma was reported, for which was referred for chemotherapy with CHOP-R (cyclophosphamide, hydroxydaorubicin, vincristine and prednisone + rituximab) tolerating it well. Upon follow up in 6 months, no evidence of intracardiac mass was entertained in TEE. Although many reports have recommended surgical excision of mass to restore venous return, this case proposes an effective, less invasive combined approach with endovascular stenting and chemotherapy for the treatment of this unusual presentation. To our knowledge, less than five primary intracardiac B cell lymphomas with associated SVC obstruction have been reported in literature.

### 117 ANTERIOR PRECordial TERMINAL T WAVE INversion - BE WELL-WARnED

Husain S, Nguyen T, Jain N. LSU-Health Sciences Center, New Orleans, LA.

**Case Report:** A 35 year old male with a history of hypertension diagnosed one year ago as well as non-compliance with antihypertensive therapy due to undesired side effects presented to medical attention with complaint of chest pain worsening over the last one month. The chest discomfort was described as a “Charlie horse” in his left chest which became manifest during exertion. Radiation of his chest discomfort to the left elbow and a feeling of nausea accompanied each episode of chest discomfort. Typical episodes lasted approximately 20 minutes and were abated by rest. The patient is a non-smoker and has a family history of premature coronary artery disease. He denied presyncope, syncope or heart failure symptoms. Cardiac biomarkers were negative for myocardial infarction and the patient underwent cardiac risk stratification with a treadmill stress test. The baseline electrocardiogram showed biphasic T wave inversion in leads V1 to V3. The stress test was immediately cancelled because of concern for proximal left anterior descending artery (LAD) occlusion based upon the abnormal baseline electrocardiogram. The patient underwent coronary angiography which showed a 90% luminal diameter stenosis in the ostium of the LAD. This lesion was treated with a drug eluting stent and the patient had subsequent resolution of his exertional chest discomfort.

Discussion: Patients presenting with a history of exertional angina and resting biphasic T waves with terminal T wave inversion as this patient demonstrated are at high risk of acute myocardial infarction. Anterior precordial terminal T wave inversion is dubbed Wellens warning after Dr. Hans Wellens’ initial description. The finding of biphasic, terminal T wave inversion is an ominous finding which should immediately raise the degree of suspicion for acute coronary syndrome.

Conclusion: Wellens warning sign is a pre-infarction stage and is a marker of a severe proximal LAD stenosis. Patients with this sign are mostly chest pain free at rest. Its finding prior to stress testing constitutes a contraindication to the test.

### 118 EVERY CARDiac ISCHEMIA IS NOT ATHEROSCLEROSIS

Amin P1, Meebleh W2, Sharma R2, Downs C2, James H Quillen College of Medicine, East Tennessee State University, Johnson City, TN and 2James H Quillen College of Medicine, East Tennessee State University, Johnson City, TN.

**Case Report:** A 60 year old male was admitted for typical chest pain. On admission, ECG showed ST segment depression in anterior leads. Troponin was 1.12 ng/ml (normal=0-0.04 ng/ml) and showed rising trend. He was given Aspirin, Metoprolol, ACE inhibitor and Heparin. Coronary Angiography (CAG) showed anomalous origin of left main coronary artery (LMCA) from right coronary cusp with minimal atherosclerosis. CT Angiogram showed anomalous origin of left main coronary artery from the right coronary cusp with minimal atherosclerosis. CT Angiogram showed anomalous origin of left main from right coronary cusp and its further course between aorta and pulmonary artery. He was explained the risks associated with the anomaly and advised for Coronary Artery Bypass Graft (CABG) and given medical management. Discussion: Anomalous origin of coronary artery is a rare anomaly occurring in 0.6 to 1.3% of general population. It is one of the causes of sudden cardiac death during exercise. Coronary arteries arise from Sinuses of Valsalva which are dilations of ascending aorta above the aortic valve. Normally each coronary artery originates from their respective right and left cusps. Aberrant origin of left coronary artery from the right coronary cusp is the rarest of all these anomalies, more common in males. Four variants of this anomaly are described based on the further course of LMCA: (1) Anterior: LMCA turns anteriorly in front of the right ventricular outflow tract. (2) Inter-arterial: LMCA lies between aorta and pulmonary artery as in our patient. (3) Septal: LMCA has an intramyocardial septal course. (4) Posterior: LMCA courses behind aorta in infero-posterior direction. Myocardial ischemia occurs due to decreased coronary flow reserve and abnormal mechanics of ostium due to aberrant course of arteries. Of all the variants, inter-arterial variant carries the highest risk of sudden cardiac death estimated to be more than 50% due to kinking of the coronary artery between the great vessels. CAG is considered to be the investigation of choice for diagnosis; however MRI and CT angiogram can be used to correctly define the course of LMCA. Treatment options are limited and depend on the...
Joint Plenary Poster Session
Clinical Epidemiology and Preventive Medicine
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119 CASE REPORT OF MALIGNANT METASTATIC PHEOCHROMOCYTOMA
Rasul K, Dubin R, Richards R LSU-Health Sciences Center, New Orleans, LA.
Case Report: A 22 year old male was admitted with uncontrolled hypertension.
He had a history of right adrenalectomy at age 4 due to pheochromocytoma.
He remained stable until age 12 when he developed hypertension again.
Due to poor compliance with medications, his hypertension had remained uncontrolled.
His mother and his maternal aunt also had history of surgery for pheochromocytoma.
Plasma normetanephrine levels were elevated at 827 pg/mL. His calcitonin, intact PTH and calcium were normal.
A CT scan of his abdomen showed two nodules in left adrenal measuring 1.7 x 1.5 cm with two nodules in periaortic chain, right external iliac lymphadenopathy, right sided bladder mass, and multiple nodules in seminal vesicles.
An I-133 MBIG scan was performed and it showed intense localization in left adrenal, right side of urinary bladder and right iliac lymphadenopathy, consistent with pheochromocytoma.
The patient was deemed not to be a candidate for surgical resection and FDA approval was obtained to treat him with I-131 MBIG ablation therapy.
Discussion: Pheochromocytomas are chromaffin tumors arising in adrenal medulla. They are unilateral in 90% of cases. Bilateral pheochromocytomas are common in familial pheochromocytoma syndromes. Treatment is surgical resection. Chemotherapy has been used with a median survival of 3.3 years in a small study of 14 patients. Sunitinib was used in anecdotal case reports.
Our patient has malignant recurrent metastatic likely familial pheochromocytoma and I-131 MBIG ablation therapy was preferred over chemotherapy because of more clinical data with MBIG.
I-131 MBIG ablation therapy is not currently approved by FDA for treatment of malignant metastatic pheochromocytoma. However several small case studies have shown improved survival with it (4.7 vs. 2.8 years in one study with 500 mCi). Dose ranges have been between 100 to 1690 mCi with more response seen at higher doses. Risk of hematological complications was 26% in one study with a dose of 600 mCi. Patients who receive high doses need to have stem cell harvest performed prior to ablation.
Conclusion: I-131 MBIG ablation therapy can be considered in a patient with metastatic malignant pheochromocytoma which is not amenable to surgery. However more data and clinical trials are needed.

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120 STRUCTURAL AND FUNCTIONAL STUDIES OF NOVEL SMALL-MOLECULE INHIBITORS TO MITOCHONDRIAL BRANCHED-CHAIN alpha-KETOACID DEHYDRGENASE KINASE
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Purpose of Study: Branched-chain alpha-ketoadid dehydrogenase (BCKD) kinase (abbreviated BDK) inhibits the BCKD complex by phosphorylating its E1α subunit. BCKD loss of function mutations cause accumulation of branched-chain α-ketoacids and amino acids, resulting in maple syrup urine disease (MSUD). Phenylbutyrate, a BDK inhibitor, can modestly lower levels of BCKD substrates in MSUD patients. With BDK as the therapeutic target, we report here studies to elucidate the binding site and quantify the activity of two novel inhibitors, (S)-chloroisocaproate (S-CIC) and benzoylthiophene-2 (BT-2), in order to determine the effects of these inhibitors on BDK interactions with other proteins. This information provides a framework for developing new generations of BDK inhibitors.
Methods Used: Wild-type (WT) and I170F BDK were expressed in BL-21 cells, tested in enzyme activity assays, and compared in isothermal titration calorimetry (ITC) binding studies with both inhibitors. I170F, crystallized with ADP and BT-2, was screened at the Rigaku FR-E X-ray facility to determine diffracting resolution before synchrotron diffraction. 3T3L1 cells were assayed to measure BT-2 potency and efficacy.
Summary of Results: I170F was 150-fold more resistant to BT-2 inhibition than WT. In ITC, S-CIC bound to WT with a Kd of 11.1 μM and did not bind to I170F. BT-2 bound to WT with a Kd of 4.2 μM and I170F with an interesting Kp of 6.1 μM. BT-2 decreased the affinity of WT for ADP and increased affinity for ATP. BT-2 increased the affinity of WT for lipoic acid bearing domain (LBD). I170F/BDT/2/ADP crystals diffraction to a resolution of 2.8 Å. BT-3, a hydrophobic pro-drug form of BT-2, increased BCKD activity in 3T3L1 cells by two-fold.
Conclusions: Activity assays show that BT-2 can effectively inhibit WT BDK and increase BCKD activity. I170F is resistant to inhibition, because the large benzyl side chain of the sterically interferes with S-CIC and BT-2 binding to an allosteric inhibition site in the 4 α-helix domain of BDK. Remarkably, BT-2 increases the affinity of BDK for both inhibitors. The inhibitory mechanism of BT-2 and S-CIC is not decreased affinity for LBD or a relative increase in affinity for ATP over ADP. The crystal structure of I170F/ADP/BT-2 will provide deeper insights.

121 INCREASED PHYSICAL ACTIVITY IMPROVES HDL CHOLESTEROL IN VIETNAMESE AMERICANS
Allerton TD, Lau LC, Uwaifo G, Cefalu WT LSU-Health Sciences Center, New Orleans, LA.
Purpose of Study: Lowered High Density Lipoprotein Cholesterol (HDL-C) is considered to be a risk factor for coronary artery disease (CAD). Vietnamese Americans (VNAs) have an increased prevalence of dyslipidemia, specifically low HDL-C, when compared to Non-Asian populations. Physical activity has been identified as a primary therapy to target improvement in HDL-C. We evaluated the relationship between levels of physical activity and HDL-C in VNAs.
Methods Used: A fasting lipid panel was drawn on 18 subjects to calculate HDL-C levels. Weekly physical activity was measured using the International Physical Activity Questionnaire (IPAQ). The IPAQ assesses the weekly minutes of vigorous, moderate, and leisure walking activities. Data for weekly physical activity are expressed as Met Minutes/Week (MMW). Calculations were as follows; (Walking MMW = 3.3 x walking minutes x walking days), (Moderate MMW/week = 4.0 x moderate-intensity activity minutes x moderate days), (Vigorous MMW = 8.0 x vigorous-intensity activity minutes x vigorous-intensity days), and (Total physical activity MMW = sum of Walking + Moderate + Vigorous MMW scores). Subjects were divided into Normal HDL-C (<40mg/dl for women, and <50mg/dl for men) and Low HDL-C.
Summary of Results: Subjects with normal HDL-C (n=10) levels demonstrated a positive correlation in relation to normal HDL-C (n=8) (r=.48) (mean ±SEM 95% CI: 2.38 vs. 35 ± 3.27) respectively.
Conclusions: Published data on lipid profiles of Asians showed 58% of VNA participants had lowered HDL-C levels. VNAs are one of the fastest growing minority groups in the United States and constitute the second fastest growing minority population in New Orleans. With this knowledge, it is clear that research efforts should be increased to understand the barriers to access or motivation to increase physical activity amongst VNA men and women.
Methods Used: We studied 300 healthy adult offspring (159 Black, 141 White; 216 male, 84 female) of parents with type 2 diabetes. A 20-item Functional History and Questionnaire (FHQ), a Modifiable Activity Questionnaire (MAQ), and National Health and Nutrition Examination Survey III Physical Activity Scale (NHANES-PAS) were administered to all subjects. The FHQ evaluates selected areas of dietary fat consumption habits. The MAQ evaluates year-long physical activity habits, while NHANES-PAS determines monthly physical activity habits with 14 questions addressing frequency of specific activities. Assessments included anthropometric measurements, oral glucose tolerance test, body fat measurements by DEXA and lipid profile.

Summary of Results: The mean ± SE age of study subjects was 45.01 ± 0.59 years and the body mass index (BMI) was 30.05 ± 0.40 kg/m² (range 17.68 - 65.28 kg/m²). The fasting plasma glucose was 92.05 ± 0.39 mg/dL, and the 2-hr plasma glucose was 121.44 ± 1.39 mg/dL. The mean FHQ score was 2.68 ± 0.056 in men and 2.52 ± 0.034 in women (P = 0.0144). The FHQ score was greater in Blacks compared to Whites (2.68 ± 0.04 ± 2.44 ± 0.04, P < 0.0001). The mean MAQ score was 19.4 ± 3.06 in men and 15.3 ± 1.31 in women (P = 0.15). There was no significant ethnic difference in mean MAQ scores (14.7 ± 1.78 in Blacks vs. 18.2 ± 1.83 in Whites, P = 0.17). In linear regression models, FHQ scores correlated directly with BMI (r = 0.126, P = 0.0291), body surface area (BSA) (r = 0.211, P = 0.0002), waist circumference (r = 0.177, P = 0.0021), and serum triglycerides (r = 0.118, P = 0.404), and inversely with HDL cholesterol (r = 0.172, P = 0.0027). The physical activity measures (MAQ and NHANES) correlated inversely with BMI, BSA, waist, and triglycerides.

Conclusions: Among our healthy normoglycemic subject cohort, the FHQ, MAQ, and NHANES significantly predicted conventional measures of adiposity and dyslipidemia. These findings suggest that subjective reports of dietary and physical activity practices convey metabolically valid information.

123 HYPOTHYROIDISM WITH ISOLATED GROWTH HORMONE DEFICIENCY PRESENTING AS HYPOGLYCEMIA: A RARE OCCURRENCE
Chaudhry MA, Khan F, Scofield H. Oklahoma University Health Sciences Center, Oklahoma City, OK.

Case Report: 51 YEAR OLD AFRICAN AMERICAN GENTLEMAN who was a nursing home resident with h/o paranoid schizophrenia since the age of 16 years and hypothyroidism was admitted with difficulty to arouse and decreased levels of alertness. His finger stick glucose in ER was 12 mg/dL. He was not combative and did not appear to be in pain but was totally disoriented.

His HOME MEDICATIONS were Prilosec, Zyrtec, Naturel and vitamin C. He had no allergies or recent travel. He had a 30 pack year history of smoking and remote history of marijuana use.

Upon admission his vital signs were: Blood pressure 111/70 mm of Hg, pulse 70/min, respiratory rate 17/min, oxygen saturation 97% on room air and body temperature 98.8°F. He was totally disoriented in time, place and person. Cardiovascular and respiratory exams were normal and there were no meningeal signs on neurological exam.

On labs hemoglobin and hematocrit were normal, electrolytes were within normal range, TSH was 3.2,

Cortisol was 20.5. C-reactive protein was normal, Chest xray was normal, BLOOD AND URINE CULTURES showed no growth, urine Histoplasma antigen was negative. Hepatitis panel, HIV and RPR were negative, CT scan brain was normal.

He continued to have persistent hypoglycemia and the moment he was weaned off the D10 infusion, the hypoglycemia recurred. Further testing showed low insulin and C peptide.

At this point scenario was extremely perplexing. MRI pituitary showed no abnormality of pituitary, sella turcica or suprasellar cistern.

Functional pituitary was shown normal FSH, LH, free androgen index and sex hormone were all normal.

IGF-1 LEVELS WERE THEN MEASURED which were remarkably low (25 ng/mL). At this point isolated idiopathic growth hormone deficiency was considered and glucagon stimulation test confirmed this diagnosis. Replacement therapy with recombinant growth hormone was followed by dramatic resolution of symptoms.

This is the first case of hypopituitarism with isolated growth hormone deficiency presenting as hypoglycemia in an adult male of African American origin.

124 CARDIOVASCULAR DYSFUNCTION IN NEWLY DIAGNOSED PRE-DIABETIC SUBJECTS
Chen J-I, Dupuis J, Wu M, Stoner J, Lyons T-

Purpose of Study: Cardiovascular dysfunction (CVD) is responsible for a majority of morbidity and mortality in diabetes, and is thought to commence in the pre-diabetic stage. However, clinical studies of CVD in newly diagnosed pre-diabetic subjects are limited. Studies have indicated that low-level inflammation is involved in the pathogenesis of CVD. We hypothesized that early cardiovascular dysfunction is present in pre-diabetes and is associated with inflammation and accumulation of advanced glycation end products (AGEs).

Methods Used: In a cross-sectional study, 131 subjects were classified by 2-hour 75-g oral glucose tolerance tests into pre-diabetic (n=73, 12M/61F) and normal glucose tolerant (NGT, n=58, 8M/50F) groups. Cardiovascular dysfunction was assessed non-invasively by the pulse wave analysis (PWA). Fasting serum CRP, TNF-alpha, IL-1-alpha, adiponectin, leptin, VCAM-1, and ICAM-1 were analyzed by ELISA assays. Skin AGE content was determined non-invasively by an investigational device (SCTOUT score), which scans and analyzes skin AGE-related autofluorescence to provide a "SCOUT score." Means were compared between groups using a two sample t-test, correlations between continuous measures were quantified using Pearson’s correlation coefficient for unadjusted analyses, and partial correlation coefficients were calculated for adjusted analyses.

Summary of Results: Compared to NGT, newly diagnosed pre-diabetic subjects exhibited significantly larger and small artery elasticity indexes (P<0.002 and 0.03), and higher pulse pressure (P<0.004) and total vascular impedance (P<0.01). In addition, they had significantly higher SCOUT scores (P=0.006); higher serum CRP (P=0.01) and TNF-alpha (P=0.01), and lower adiponectin (P=0.01) and IL-1-alpha (P=0.06). SCOUT score and serum levels of CRP, leptin, and adiponectin were significantly correlated with certain parameters from PWA with and without adjustment for age, BMI, and gender.

Conclusions: Newly diagnosed pre-diabetic subjects exhibited abnormal cardiovascular function and pro-inflammatory status. The associations of AGEs and the tested pro-inflammatory markers with cardiovascular dysfunction suggest these factors may be implicated in the early pathogenesis of the disease.

125 AN UNUSUAL CASE OF HYPOKALEMIC PERIODIC PARALYSIS SECONDARY TO THYROXINOSIS
Cosentino GL, Dubin RL, Richards RJ. LSU-Health Sciences Center, New Orleans, LA.

Case Report: Introduction: Hypokalemic Periodic Paralysis (HPP) is a rare cause of acute weakness. We present an unusual case of spontaneous HPP associated thryoxinosis in a non-Asian patient.

Case: 25 year old African-American male was evaluated in the emergency room with complete paralysis. He reported gradual development of stiffness and difficulty moving in the morning. Mild weakness began approximately 1 month before initial evaluation and progressed to a point of being completely unable to get up out of bed on admission. Review of systems was noted for moderate palpitations. He denied changes in diet or activities. He was taking no medications, had no allergies or recent travel. He used no alcohol and smoked 1/2 pack of cigarettes per day. Family history was non-contributory. On presentation, the patient had a normal temperature and stable vital signs but had complete paralysis of his upper and lower extremities. Laboratory data: Potassium 1.5 Meq/L, phosphorus 1.6 Meq/L; all other baseline labs (including renal function, magnesium and glucose) were normal. The patient was started on aggressive IV potassium supplementation with rapid paralysis improvement. His potassium remained stable and he was discharged home after 3 days with a potassium of 4 Meq/L. The following day, the patient had similar symptoms and was readmitted with a potassium of 2.1 Meq/L. Thyroid function tests revealed TSH 0.01 IU/ml, and a free T4
of 2.65 ng/dL. In addition to further potassium supplementation, the patient was started on Methimazole. Thyroid ultrasound was consistent with thyroiditis. Over the following 2-3 months as thyroid status improved, all muscular symptoms completely resolved.

Discussion: Thyrotoxic HPP is unusual in North America affecting only 0.1 - 0.2% of thyrotoxic patients and the reported cases are largely in Caucasians. In contrast, Asian populations have a higher incidence of 1.8 - 1.9%. The underlying mechanism remains unclear. This is an unusual case occurring in an African-American male unrelated to any familial, dietary or activity changes. This potentially fatal, but curable disorder must be considered in patients presenting with acute weakness.

126 ENDOPLASMIC RETICULUM STRESS IN RETINAL PIGMENT EPITHELIUM IN HUMAN DIABETES AND IN A MOUSE MODEL: A ROLE FOR MODIFIED LIPOPROTEINS?

Du M, Zhang J, Yang S, Fu D, Wilson K, Lyons TJ Oklahoma University Health Science Center, Oklahoma City, OK.

Purpose of Study: Blood-retinal barrier leakage (BRB) is implicated in diabetic retinopathy (DR). Retinal pigment epithelium (RPE) forms the outer BRB and fulfills critical functions for retinal health and nutrition. The present study aimed to investigate whether RPE was compromised in diabetes and to determine the possible mechanisms.

Methods Used: Immunostaining of KDEL (an ER stress marker) and RPE65 (RPE specific protein) was performed in human retinas from non-diabetic subjects, and from diabetic subjects with and without DR. Double-staining of KDEL and RPE65 were also performed on streptozotocin (STZ)-induced diabetic mice after intravitreal injection of N-LDL, HOG-LDL (in vitro-heavily-oxidized glycedated LDL), or PBS. In addition, in cell culture, hTERT RPE cell were treated with N-LDL, HOG-LDL, and the activation of ER stress was assessed by western analysis and immunocytochemistry. DCF assay was used to detect intracellular reactive oxygen species (ROS) production.

Summary of Results: KDEL staining was increased in RPE in human diabetic subjects with DR vs. non-DR or non-diabetic subjects. In the animal study, positive staining of KDEL was shown in RPE layer in diabetic mouse retina after HOG-LDL injection, but was absent in diabetic mouse retina with N-LDL or PBS injection and in all non-diabetic mouse retinas. In RPE cell culture, HOG-LDL induced activation of ER stress as evidenced by increased KDEL expression and ATF6 translocation. DCF assay showed HOG-LDL caused increased expression of ROS in RPE cells.

Conclusions: Modified LDL causes oxidative and ER stress in the RPE, and may compromise cell functions. This may lead to a vicious cycle of outer BRB leakage and further RPE and retinal injury.

127 BUCKLE UP FOR PATIENT SAFETY: SEAT BELT USAGE IN EXTREMELY OBESE PATIENTS


Purpose of Study: Motor vehicle accidents (MVAs) are a leading cause of preventable death and injury in the United States, causing nearly 40,000 fatalities per year. Seatbelt use can reduce crash-related morbidity and mortality by more than 50%. Previous studies have demonstrated lower seatbelt usage in obese individuals. Associated risks increase with increasing weight. Obesity may also increase the risk of death associated with MVAs. Therefore, improving seatbelt compliance should be an important public health initiative especially for patients with extreme obesity.

Methods Used: We surveyed 33 subjects in our Weight Management clinic to evaluate seatbelt usage. Baseline characteristics included: mean body mass index (BMI) 59.3 +/- 10.7 kg/m2; mean age 44.3 +/- 5.7 years; 69% were females; 58% were African American. Greater than 90% of patients had existing multiple co-morbidities including diabetes, hypertension, obstructive sleep apnea, anxiety/depression and dyslipidemia.

Summary of Results: 78.8% of patients reported regular seat belt usage. Risk factors associated with nonuse included: higher mean BMI: 74.3 +/- 8.1 kg/m2, younger mean age (38.3 years) and African American descent (71.4%). All non-users had Vitamin D deficiency with a mean Vitamin D 25-OH of 9.1 +/- 2.2. Passenger discomfort and inadequate seat belt size were the most common reasons for non-compliance. When compared with historical non-obese controls (U.S. Department of Transportation, 2010), the odds ratio for seatbelt use was 0.66 (95% CI, 0.19-2.4). Seat belt usage in our sample was greater than the latest published data (Schlundt, et al. 2007) for extremely obese patients (78.8% vs. 69.8%; OR 0.66 vs. 0.45).

Conclusions: Patients with extreme obesity have decreased seatbelt compliance versus their normal weight counterparts. Compared to previous reported data, our sample demonstrated improvements in seatbelt compliance. Physician communication and means to further improve seatbelt usage in obese patients is an important healthcare and public safety initiative.

128 ARE BISPHOSPHONATES BENEFICIAL IN SPONTANEOUS OSTEONECROSIS OF THE KNEE?

East HE, Melecseu E, Koch CA University of Mississippi Medical Center, Jackson, MS.

Case Report: Three distinct knee osteonecrosis (ON) entities have been identified: postarthroscopic, secondary, spontaneous. Spontaneous ON of the knee is considered to be more common than secondary ON. The incidence of spontaneous ON in people older than 50 y is 3.4% and 9.4% in those > 65 y (Pape D. Knee Surg Sports Traumatol Arthrosc 2002).

We saw a 65 yo man referred for asymptomatic hypercalcemia due to primary hyperparathyroidism (pHPT). He reported a recent dx of the knee without a clear trauma/etiology. He did not smoke or drink ETOH. PMH revealed hyperlipidemia. Lab: iPTH-99 pg, s-calcium-10.3 mg/dL, Ur Ca-416 mg/24h, Ur Creat-1862 mg/24 h. DEXA-BMD revealed osteopenia: T-score at fem neck -1.1; spine -1.7; forearm + 1.7. MRI (Figure): right knee edema of the medial compartment, ON.

Management of symptomatic (normo)calcemic pHPT is debated. Our patient opted to start alendronate 70 mg/wk. Possible beneficial effects of bisphosphonates in ON of the knee have been advocated (Marius E et al. 2010). His response to tx will be regularly monitored.

Conclusion: The etiology of ON of various body locations is unknown, although exogenous/endogenous hypercortisolism, alcohol abuse, infections, and others are discussed (CA Koch et al. JCEM 1999). The association of ON of the jaw in people using bisphosphonates has been reviewed extensively (Stuart LS et al, Am J Med 2009). On the contrary, recent data suggest the use of bisphosphonates in treating pts with ON of the knee and hip.
129 WHICH CAT IS THAT LURKING BEHIND THE ACUTE RENAL FAILURE?

Fremin K, Kumar S, Paccone R, Cosentino G, Engel L, Morse S LSU-Health Sciences Center, New Orleans, LA.

Case Report: Introduction: Disorders of lipoprotein metabolism are an uncommon cause of renal dysfunction. Here we describe a case of a young woman with progressively worsening renal failure secondary to Lecithin-cholesterol Acyltransferase Deficiency (LCAT).

Case: A 29 year old African American woman with a history of hypertension, diabetes and pre-eclampsia presented to the emergency department with 3 days of nausea, vomiting, diarrhea and decreased oral intake. Physical exam revealed dry mucous membranes. Serum chemistries included: BUN 52 mg/dL, creatinine 5.2 mg/dL; and glucose 170 mg/dL. There was 4+ protein, 1+ glucose, 3+ red blood cells, 2 white blood cells, and no RBC casts on urinalysis. Fractional excretion of urea was 9%, urine osmophils were negative, and urine protein/creatinine ratio was 3.92 mg/dL. Her serum creatinine improved to 4.9 mg/dL after intravenous fluid hydration. A fasting lipid profile showed cholesterol of 189 mg/dL, high density lipoprotein of 25 mg/dL, low density lipoprotein of 125 mg/dL, and triglycerides of 193 mg/dL. Renal ultrasound showed normal sized kidneys with resistive indices of 0.68-0.76. Renal biopsy showed severe chronic lobular glomerulopathy with lipid deposition. Electron microscopy demonstrated capillary loops surrounded by double basement membrane with abundant intra- and extra-cellular foamy material interposition with ill defined lipid lamellar bodies. A diagnosis of LCAT was established based on the pattern of lipid deposition.

Discussion: LCAT is an enzyme normally secreted by the liver into the circulation which esterifies free cholesterol and plays a major role in the metabolism of lipoproteins, especially of high density lipoprotein (HDL). Most patients are diagnosed as adults when they present with acute kidney injury and this is the leading cause of morbidity and mortality associated with LCAT. Laboratory values are significant for low levels of high density lipoprotein and elevated triglyceride levels; however, paradoxically there is a low incidence of premature atherosclerotic disease. No definite treatment currently exists: management is supportive in nature and genetic counseling is recommended.

130 U-500 REGULAR INSULIN USE IN TYPE 2 DIABETIC PATIENTS: A RETROSPECTIVE STUDY

Galloway AL, Azar M OUHSC, Oklahoma City, OK.

Purpose of Study: To evaluate the impact of U-500 insulin use on glycemic control, weight, and total daily insulin dose in patients with type 2 diabetes and severe insulin resistance.

Methods Used: A retrospective chart review of all patients followed at the Harold Hamm Diabetes Center who were transitioned to U-500 insulin due to severe insulin resistance (total daily dose>200 units) from May 2010 until present. Patients for whom we had data before and three months after initiation of U-500 were included. The total daily dose of insulin, weight, and HbA1c were obtained by chart review and the average difference in these data before the initiation of U-500 and three months after the initiation of U-500 insulin were calculated and compared.

Summary of Results: Fifteen patients met inclusion criteria. After transition to U-500 insulin from other forms of insulin, mean reduction in HbA1c was 1.2% (± 2.02%) after three months of therapy. Thirteen of the fifteen patients gained weight and the average weight gain was 10.2 pounds (± 5.6 pounds). The total daily dose of insulin increased in 9 patients by an average of 181 units per day and decreased in 5 patients by an average of 82 units per day. There was no report of severe hypoglycemia leading to an emergency room visit in any patient and no noted increased frequency of hypoglycemia reported by patients after switching to U-500 insulin.

Conclusions: In severe insulin resistance, U-500 insulin is a safe and effective option. Despite a significant improvement in glycemic control, it may promote weight gain and patients need to be educated on adequate dietary intake.

131 THYROTROPIC TOXIC PARATHYROIDISMS

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Case Report: A 27-year-old Hispanic man with no known past medical history presented to the ED with proximal leg weakness starting at 3 am. He woke up with vomiting; he had no history of recent illness, trauma, travel, numbness, or incontinence. Physical exam showed bilateral weakness of the iliopsoas and quadriceps with strength of 1/5 and absent ankle reflexes. On admission his labs included potassium of 2.3. His muscle weakness resolved with potassium replacement. Later that evening the patient complained of severe, sharp, parasternal chest pain that radiated to the back and again noted proximal muscle weakness in the hips which progressed to upper extremity weakness. He also had nausea and vomiting. ECG showed ST depression in I, II, V3-V6. Stat labs showed potassium of 2.0, Mg of 1.8, TSH of 0.02, and free T4 of 2.61. Potassium was replaced and patient was started on methi-mazole. Patient's symptoms resolved upon discharge, and at follow up in clinic he no longer complained of muscle weakness. He has continued treatment for hyperthyroidism.

Thyrotropic periodic paralysis (TPP) is a common complication of hyperthyroidism in Asian men not seen often in the West. It presents with hypokalemia and proximal muscle weakness due to the sudden shift of potassium into the intracellular compartment. Patients are typically men aged 20-40 years of age and present with attacks of muscle weakness ranging from mild to flaccid paralysis. These attacks can occur after strenuous exercise, heavy meals, or in early morning hours as our patient experienced. TPP occurs when the patient is thyrotropic and resolves when thyroid levels are normal. Labs show a low TSH, elevated T4, low potassium, magnesium, phosphate, and ECG findings, such as U waves, ST depression, and T-wave flattening. The shift of potassium is due to several factors: the increased Na-K-ATPase pump by thyroid hormones, disturbances in the intracellular Ca shifts in muscle, increased responsiveness to beta-adrenergic stimulation, hypophosphatemia, and exaggerated insulin responses to carbohydrate loading. With recognition and treatment of the hyperthyroid, TPP patients recover and muscle weakness and paralysis resolve.

132 RECURRENT PRIMARY HYPERPARATHYROIDISM IN A 61 YEAR OLD WOMAN

Long AN, Jiang Y, Gosmanov AR, Nyenwe E University of Tennessee, Memphis, TN.

Case Report: Background: Multiple endocrine neoplasia type 1 (MEN1) is characterized by a strong, proliferative drive in parathyroid cells and recurrent primary hyperparathyroidism. These patients are also known to have an increased incidence of intrathyroidal parathyroid tissue.

Clinical Case: A 61 year old woman with a history of diabetes mellitus, recurrent primary hyperparathyroidism (PHPT) and three parathyroidectomies over last 20 years presented with abdominal pain, nausea, and diarrhea for a month after recent parathyroidectomy with implantation of parathyroid tissue in the forearm. Initial evaluation revealed elevated ionized calcium of 1.46 (1.10-1.30 ng/mL) and PTH of 624 (14-72 pg/mL). Further work up demonstrated elevated serum gastrin level of 2117 (13-115 pg/mL) and chromogranin A of 3400 ng/mL (1.9-15 ng/mL). Biopsies of her gastrum and duodenum stained positive for chromogranin. All these findings indicated that she had MEN1 syndrome. She was treated with intravenous fluids, omeprazole 80 mg by mouth twice daily, and octreotide 100 mcg subcutaneous thrice daily with the resolution of abdominal complaints followed by decrease in serum gastrin to 625 pg/mL while on octreotide. Of note, more detailed analysis of pre-surgery sestamibi parathyroid scan revealed suspicious activity in the thymic area which could explain recurrent PHPT.

Discussion: MEN1 is an autosomal dominant disorder that predisposes to PHPT, anterior pituitary tumors, and gastrointestinal neuroendocrine tumors. PHPT is the most common presenting feature with penetrance of nearly 100% by the age of 40 to 50. Multiple parathyroid gland involvement is common, but also includes intrathyroidal parathyroid tissue; 50% of subjects with MEN1 presenting with recurrent PHPT within 12 years of undergoing parathyroidectomy are found to have thymeric involvement. Hence, the recommended initial surgical approach in management of PHPT in MEN1 is removal of three and one-half parathyroid glands and thymectomy. Parathyroidectomy may also improve symptoms of gastrinoma, as hypercalcemia can increase gastrin levels.
Conclusion: MEN1 should be considered in the differential diagnosis of patients with recurrent primary hyperparathyroidism. Thymectomy in such patients would be prudent to prevent further recurrence.

133 IMPAIRED METABOLIC FLEXIBILITY IN VIETNAMESE AMERICANS
Luu LC, Allerton TD, Wuafio G, Cefalu WT. LSU Health Sciences Center, New Orleans, LA.

Purpose of Study: Metabolic flexibility (MF) refers to the body’s ability to switch from fat to carbohydrate oxidation in response to feeding or insulin stimulation. Race has been suggested to affect this parameter. Studies have shown that healthy African Americans (AA) and Caucasian Americans (CA) have greater MF than their diabetic counterparts. Currently, there is a paucity of data on diabetes presentation in Vietnamese-Americans (VNA). We evaluated the MF of Healthy and Type 2 Diabetic (T2D) VNA.

Methods Used: MF was determined by assessing respiratory quotient (RQ) and macronutrient substrate utilization with indirect calorimetry during a mixed meal tolerance test (MMTT) in 21 subjects (Healthy: n = 12, Age = 41, BMI = 23.6; T2D: n=6, Age = 56, BMI = 25.8). Baseline labs were drawn and at every 30 minutes up to 180 minutes after consumption of the test meal (ENSURE® liquid meal). Indirect calorimetry was performed 30 minutes before start of test and during the last 30 minutes of the test meal to measure the resting metabolic rate and whole-body substrate utilization. The basal and insulin-stimulated glucose and lipid oxidation rates were calculated. Change in RQ (ΔRQ) (MF) was calculated as Post-Prandial RQ - fasting RQ.

Summary of Results: Both Healthy and T2D subjects demonstrated blunted MF to the mixed meal. The RQ was adjusted for insulin sensitivity. ΔRQ values for Healthy and T2D were (.075 and -.007) respectively. Additionally, 3 impaired glucose tolerant subjects were studied and also demonstrated blunted MF (ΔRQ = .01).

Conclusions: In this study, our data show that healthy VNA are considerably less metabolically flexible (ΔRQ = .075) than AA and CA combined (ΔRQ = .099). Furthermore, VNA diabetics (ΔRQ = .007) are drastically less MF then AA and CA combined. This is the first real-time measurement of metabolic flexibility in Vietnamese-Americans. Considerable research is needed to better understand and define potential mechanisms for this population’s unique metabolic inflexibility.

134 NON-GENOMIC SIGNALING BY 24,25-DIHYDOXYVITAMIN D3 IN HEPG2 CELLS
Maharaj J, Jainumgul S, Wehmeier K, Mooradian AD, Haas MJ. University of Florida College of Medicine, Jacksonville, FL.

Purpose of Study: The vitamin D metabolite 24,25-dihydroxyvitamin D3 was recently shown to induce non-genomic signaling pathways in resting zone chondrocytes and other cells involved in bone remodeling. Recently our laboratory demonstrated that 24,25-dihydroxyvitamin D3 but not 25-hydroxyvitamin D3 suppresses apolipoprotein A-I gene expression and HDL secretion in hepatocytes. Since 24,25-dihydroxyvitamin D3 has low affinity for the vitamin D receptor and since little is known with regard to how 24,25-dihydroxyvitamin D3 modulates non-genomic signaling in hepatocytes, we investigated the ability of 24,25-dihydroxyvitamin D3 to activate various signaling pathways in HepG2 cells.

Methods Used: Activation of intracellular signaling pathways by 24,25-dihydroxyvitamin D3 was investigated by Western blotting with phospho-specific antisera. Changes in Apo A-1 promoter activity in HepG2 cells were measured using the chloramphenicol acetyltransferase assay.

Summary of Results: Within hours, treatment of hepatocytes with 50nM 24,25-dihydroxyvitamin D3 induced PKCα activation as well as c-jun-N-terminal kinase (JNK) and extracellular regulated kinase 1/2 activity. These changes in enzyme activity correlated with changes in c-jun phosphorylation and down-regulation of apolipoprotein A-I gene promoter activity. Treatment with 24,25-dihydroxyvitamin D3 also resulted in decreased peroxisome proliferator-activated α and retinoid-X-receptor expression.

Conclusions: These observations suggest that 24,25-dihydroxyvitamin D3 induces several non-genomic signaling pathways that may affect metabolism and lipid homeostasis.

135 PARASELLAR SYMPTOMATIC GRANULAR CELL TUMORS: THE UNIVERSITY OF MISSISSIPPI MEDICAL CENTER EXPERIENCE
Melcescu E1, Nicholas WC1, Parent AD2, Fratkin JF2, Koch CA3 1University of Mississippi, Jackson, MS and 2University of Mississippi Medical Center, Jackson, MS.

Case Report: Parasellar tumors are found in up to 22% of people (1). Symptomatic granular cell tumors (GCT) involving the sella region represent less than 1% of tumors in this location (2).

Case 1 - A 38 yo woman presented with a moderate headache and bitemporal hemianopsia. She defined these as moderate and persistent since 2006. PE revealed moderate visual field defects but no other specific neurological findings. FHx and PMH were noncontributory.

Case 2 - A 59 yo female presented with a 1 y l/t progressive visual decline and bitemporal hemianopsia of the visual fields. FHx and PMH were noncontributory.

Table 1. Main demographic characteristics of our patients
Case No Clinical presentation Hormonal profile Immunohistochemistry Postop complications
1 Headache, bitemporal hemianopsia [TSH: 1.2 ng/mL, T4: 0.9 ng/mL, T3: 1.4 ng/mL, FSH: 3.2 μIU/mL, TPO: 8.18 ng/mL, GAD-65: 0.1 ng/mL, estradiol 26 pg/mL] S100+; GFAP -; 1-.antimyotrypsin +; α-antitrypsin +; CD68 - transient diabetes insipidus
2 Bitemporal hemianopsia [TSH: 1.6 ng/mL, T4: 3.5 ng/mL, T3: 2.4 ng/mL, TPO: 8.18 ng/mL, GAD-65: 0.1 ng/mL, GH: 0.1 mg/dL] S100+; GFAP+

136 BODY COMPOSITION, GLUCOREGULATION AND ENERGY EXPENDITURE IN HEALTHY AFRICAN-AMERICANS AND CAUCASIANS
Nyenne E, Edeoga C, Ebenibo S, Chapp-Jumbo E, Wan J, Dagogo-Jack S. University of Tennessee HSC, Memphis, TN.

Purpose of Study: Low energy expenditure is associated with obesity, a major risk factor for dysglycemia. Available evidence shows that resting energy expenditure (REE) is determined mainly by lean body mass (LBM), but the influence of ethnicity and glycemic burden, especially in adults have not been well characterized. Therefore, determined the relationship between REE, body composition and glycemic status in healthy African-Americans (AA) and Caucasians (C).

Methods Used: We performed 75g Oral Glucose Tolerance Test in healthy volunteers after an overnight fast with sampling for plasma glucose and insulin at 0, 30 and 120 minutes. Insulin sensitivity was estimated using Minimal Model of insulin sensitivity estimation (RQ) (MF) was calculated as Post-Prandial RQ - fasting RQ.

Summary of Results: Both Healthy and T2D subjects demonstrated blunted MF to the mixed meal. The RQ was adjusted for insulin sensitivity. ΔRQ values for Healthy and T2D were (.075 and -.007) respectively. Additionally, 3 impaired glucose tolerant subjects were studied and also demonstrated blunted MF (ΔRQ = .01).

Conclusions: In this study, our data show that healthy VNA are considerably less metabolically flexible (ΔRQ = .075) than AA and CA combined (ΔRQ = .099). Furthermore, VNA diabetics (ΔRQ = .007) are drastically less MF then AA and CA combined. This is the first real-time measurement of metabolic flexibility in Vietnamese-Americans. Considerable research is needed to better understand and define potential mechanisms for this population’s unique metabolic inflexibility.

Case 1 - A 38 yo woman presented with a moderate headache and bitemporal hemianopsia. She defined these as moderate and persistent since 2006. PE revealed moderate visual field defects but no other specific neurological findings. FHx and PMH were noncontributory.

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Nyenne E, Edeoga C, Ebenibo S, Chapp-Jumbo E, Wan J, Dagogo-Jack S. University of Tennessee HSC, Memphis, TN.

Purpose of Study: Low energy expenditure is associated with obesity, a major risk factor for dysglycemia. Available evidence shows that resting energy expenditure (REE) is determined mainly by lean body mass (LBM), but the influence of ethnicity and glycemic burden, especially in adults have not been well characterized. Therefore, determined the relationship between REE, body composition and glycemic status in healthy African-Americans (AA) and Caucasians (C).

Methods Used: We performed 75g Oral Glucose Tolerance Test in healthy volunteers after an overnight fast with sampling for plasma glucose and insulin at 0, 30 and 120 minutes. Insulin sensitivity was estimated using
Matsuda index, while insulin secretion was determined by intravenous glucose tolerance test. Glucose disposal was derived as a product of insulinogenic index and Matsuda index. Insulinogenic index was calculated as: Insulinogenic index = 15.24 · (FPG/22.5)^0.333. Matsuda index was calculated as: Matsuda index = 10,825 · (FPG)^(-3.33) · (INS)^0.333. The Matsuda index was decreased in both patients, with a value of 1.03 ± 0.58 in the African American patients and 1.10 ± 0.14 in the Caucasians. The Matsuda index was lower in the African American patients compared to the Caucasians, with a P-value of 0.04.

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RAPID TRANSITION FROM SIADH TO TRANSIENT DIABETES INSIPIDUS IN A PATIENT WITH HYPERTENSIVE STROKE
Onyeaso NC, Dagogo-Jack S University of Tennessee Health Science Center, Memphis, Memphis, TN.

Case Report: Vasopressin secretory abnormalities occur frequently following head trauma and pituitary surgery, but less so in association with stroke. Case Presentation: A 51 year old man with a history of hypertension was brought to the Emergency Room (ER), having been found unresponsive. He subsequently had a seizure in the ER and was intubated. On exam, he was unconscious. His blood pressure was 230/120 mmHg. There was no evidence of head trauma or goiter. Examination of the lungs, heart and abdomen was unremarkable. Laboratory findings (see table) were initially consistent with SIADH. CT scan showed cerebral hemorrhage. He was given 3% saline infusion followed by 0.9% saline when sodium levels increased to 115 mmol/L. Within 48 hrs, plasma sodium increased to 134 mmol/L and the urine output increased to >5000 ml/hr. Plasma vasopressin was undetectable (<0.8 pg/ml). C1 was diagnosed and desmopressin was started, with resolution of polyuria and normalization of urine and plasma osmolality.

On day three of admission, plasma sodium level decreased to 130 mmol/L; hyponatremia persisted despite desmopressin dose reduction. Suspecting iatrogenic SIADH, desmopressin was stopped, with prompt normalization of sodium level. Repeat vasopressin level was 2.9 pg/ml.

Discussion: Transient CDI followed by SIADH occurs frequently following pituitary surgery or head trauma. Although described, vasopressin abnormalities are distinctly uncommon following stroke. Other unique features in our patient include 1) the initial presentation with SIADH, 2) the rapid transition from SIADH to CDI occurred in less than 48 hours, and 3) anatomical localization of a hemorrhagic stroke that seemed not to involve the pituitary gland. To our knowledge, there have been no similar reports in the literature.
Bilateral macronodular hyperplasia is a rare cause of Cushing’s syndrome. The aberrant adrenal expression and function of one or several G-protein-coupled receptors can lead to cell proliferation and abnormal regulation of steroidogenesis. The nodules appear to be typical benign adrenal nodules, but the internodular cortex is hypertrophic. The treatment of choice for endogenous Cushing’s syndrome is surgical resection of the causative tumor. Macronodular hyperplasia causing Cushing’s syndrome may be treated effectively by bilateral adrenalectomy, followed by lifelong glucocorticoid and mineralocorticoid replacement.

Conclusion: This case highlights the importance of considering AIMAH in a patient with Cushing’s syndrome who has undetectable plasma ACTH and simultaneously elevated serum cortisol level.

**Case Report:** 11β-hydroxylase CAH is a rare form of congenital adrenal hyperplasia representing 5% of all cases. A 3 yo black boy was referred to our pediatric endocrinologist for premature virilization.

Exam: BP 150/114 mm Hg, fully developed penis, testes descended and no masses, sparse pubic and axillary hair, minimal acne, increased muscle mass, above 90% for ht, wt and head circumference for age. Bone age 11-14.5 yrs. 11-deoxycortisol and 17-hydroxyprogesterone were elevated at the time of diagnosing 11β-hydroxylase deficiency. Subsequent evaluations reconfirmed the initial diagnosis describing virilization, HTN, [k], prehnin, aldosterone, [ cortisol and 11-deoxycortisol and DOC.

Table 1. Labs and physical findings

The patient was prescribed dexamethasone and antihypertensives. Due to noncompliance, he continued to advance through puberty and had multiple hospital admissions for hypertension. At age 26, he had hypertensive urgency after being lost to follow-up for 10 years.

This case illustrates that rare causes of endocrine hypertension should not only be considered in patients with resistant hypertension but also in the pediatric population where obesity and hypertension are on the rise (1,2). In blacks, 11β-hydroxylase deficiency is even rarer than in other ethnic groups and is likely underdiagnosed. Elucidating the pathogenesis and disease course of monogenic forms of hypertension may advance understanding of polycyclic hypertension as seen in metabolic syndrome. This case of an underprivileged and noncompliant patient also underscores the outcome outlook (survival) of such hypertensives.

References:

### Vitamin D Levels in Southern Louisiana

<table>
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<tr>
<th>Age</th>
<th>Cortisol ng/dL</th>
<th>11-DOC ng/dL</th>
<th>DOC ng/dL</th>
<th>17-OH DOC ng/dL</th>
<th>Renin activity ng/mL/h</th>
<th>BP mm Hg</th>
<th>BMI</th>
<th>Wt kg</th>
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<td>3</td>
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<td>350 (H)</td>
<td>162/112</td>
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<td>114 (H)</td>
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<td>P5</td>
<td>150 (H)</td>
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<tr>
<td>26.5</td>
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<td>HTN urgency</td>
<td>59 (H)</td>
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</table>

### REVERSED SEASONAL VARIATION IN MATERNAL VITAMIN D LEVELS IN SOUTHERN LOUISIANA

Ponnappakkam T, Bradford E, Katikaneni R, Gensuer R (Albert Einstein College of Medicine/Children’s hospital at Montefiore, Bronx, NY and Childrens Hospital, New Orleans, LA)

**Purpose of Study:** Vitamin D levels of cord blood were measured in a population from New Orleans, (latitude 29o), providing an index of maternal vitamin D status at time of delivery. We analyzed these samples to determine seasonal variations, correlation with dark skin, and predictive value for future 25(OH)D levels in breastfed infants.

**Methods Used:** Cord blood samples were obtained from 68 patients recruited to participate in a vitamin D treatment trial in breastfed infants. 25(OH)D levels were assessed for correlations with ethnicity and season. Blood samples were obtained from infants at 2 and 4 months; only those from the placebo group in the treatment trial were analyzed for correlation with cord blood values.

**Summary of Results:** Average, 25(OH)D levels for the cohort were 59.2±3.2 nmoles/l, ranging from 18 to 150 nmoles/l; thus, while the average was above the target value (50 nmoles/l), there were some individuals with vitamin D deficiency and insufficiency. African American (High Risk) subjects had lower 25(OH)D levels than did caucasian (Low Risk) subjects (43.0±2.8 vs. 69.2±4.2 nmol/l, p<0.001). 25(OH)D levels were lowest during the winter (41.1±4.92, n=12) and summer (52.2±3.6, n=24), higher in the spring (61.00±9.7, n=12), and highest in the fall (72.0±6.1, n=20) (mmol/l, p<0.05, ANOVA followed by Tukey). When stratified by risk, seasonal variations of 25(OH)D in the low risk group followed the same pattern as was seen for the entire cohort, while those of the high risk group showed no significant seasonal variation, although there was a trend towards lower values in the winter. Cord blood 25(OH)D levels did not correlate with levels obtained at either 2 or 4 months of age (2-month: r2=0.19, NS, 4-month: r2=0.50, NS). There was a trend towards a reverse correlation, but this appears to be the result of season change between measurements.

**Conclusions:** The overall results suggest that, while vitamin D levels in the general population fall within recommend target ranges, greater care should be taken to avoid vitamin D deficiency in individuals at higher risk based on dark skin and during the winter and summer seasons in southern Louisiana.

**A CASE REPORT OF METHIMAZOLE OVERDOSE**

Raul K, Dubin R, Firday KE, Richards R (LSU-Health Sciences Center, New Orleans, LA)

**Case Report:** A 58 year old gentleman was admitted to the hospital for worsening renal failure. He also had a history of hyperthyroidism and had been on methimazole (MIMI). Orders were written to continue his home medications including MMI 5 mg every 8 hours. By mistake he was given 50mg of MMI twice, 8 hours apart. Admit labs showed TSH of 11.28IU/ml, free T4 0.94ng/dL, wbc 8000/μL, hematocrit of 30.8%, platelets 204,000/μL, T. bili 0.6mg/dL, ALT 11u/L, AST 18u/L and prothrombin time (PT) of 1.29sec. Once the error was realized, the MMI was discontinued and his CBC, liver enzymes, PT, TSH and free T4 were monitored along with clinical observation. The patient remained stable clinically. His liver enzymes increased by day 13 but remained within normal limits with T. bili 0.5mg/dL, ALT of 20u/L and AST of 25u/L and by 4 weeks, his liver enzymes had returned to baseline and his TSH decreased to 0.01IU/mL. His PT increased to 14.1s on day 2 and normalized on day 13. He was discharged in good condition.

Discussion: MMI overdose is rare. Maximum recommended dose for severe hyperthyroidism currently is 60mg/day in three divided doses but higher doses were used in 1960’s and 70’s. Our patient received 100 mg over a period of eight hours. A previous study from 1972 demonstrated that 25 patients who were given 120 mg of MMI over 24 hours as an initial treatment, developed toxic reactions, eight of them severe enough to warrant discontinuation of therapy. The most common reactions were erythematous skin rashes, neutropenia and abnormal liver enzymes. Skin rashes are usually seen early and hematologic manifestations are seen late. PT elevation can occur due to anti vitamin K activity of MMI.

Conclusion: At a dose of 100 mg of MMI over a period of eight hours, mild elevation in PT can occur as early as day 2 with stabilization within two weeks and increase in liver enzymes occur within two weeks with stabilization by four weeks. There were no hematological or skin manifestations at this dose. There was no evidence of permanent sequelae after this accidental overdose.

**PAPILLARY THYROID CARCINOMA IN A TOXIC ADENOMA**

Behman RA, Nyenwe E (University of Tennessee, Memphis, TN)

**Case Report:** Introduction: Hyperfunctioning thyroid nodules are rarely malignant; hence current treatment guidelines do not recommend routine...
cytologic evaluation of such nodules. We herein report a case of papillary thyroid cancer in a toxic adenoma.

Clinical case: A 41-year-old African American female with history of hyperthyroidism secondary to toxic thyroid adenoma and congestive heart failure [CHF-(EF 40%)] treated with propylthiouracil (PTU) and propranolol presented with complaints of shortness of breath. She also reported dysphagia, palpitations, weight loss, and heat intolerance. She also had history of HIV and substance abuse. She was an active smoker, who had been poorly compliant with her therapy and follow-up. Examination revealed an emaciated woman with respiratory rate of 24/min and tachycardia- pulse rate of 111/min regular; her temperature was normal - 97.6°F. She had moderate firm, non-tender thyromegaly with a prominent right nodule but no bruit or lymphadenopathy. She had no eye signs. Auscultation of the chest and heart showed bibasilar crackles, and S3 gallop but no murmur. She had no pedal edema. Laboratory evaluation showed unremarkable blood chemistry and complete blood count; Elevated brain natriuretic peptide 3660 pg/mL; thyroid function test showed undetectable TSH (<0.015 mIU/mL), Free thyroxine of 4.3 (0.58-1.64ng/dL) and Total triiodothyronine of 1.820 (0.067-7.81ng/mL). Thyroid autoantibodies were negative. Radioiodine uptake and scan demonstrated solitary toxic adenoma with uptake of 62.2% in 24 hours within the right lobe and suppression of other thyroid tissue. A diagnosis of recurrent CHF due to decompensated thyro-cardiac disease complicating solitary toxic adenoma was made. She was continued on treatment with PTU and propranolol. Thyroid ultrasound done for worsening dysphagia revealed 4.6cm heterogeneous mass with increased vascularity and coarse/microcalcifications in right lobe (previous ultrasound showed no vascularity or calcifications). Fine needle aspiration biopsy (FNAB) showed features consistent with papillary thyroid adenoma.

Conclusion: Thyroid cancer could occur in a toxic nodule; therefore, FNAB should be considered in the case of a hot thyroid nodule that is accompanied by suspicious sonographic features such as increase in size, calcification or hypervascularity.

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PROFILE OF A HEALTHY LIFESTYLE CLINIC
Stender S1, Connell H1, Shah S1, Burghen G2

Purpose of study: To present data from a Lifestyle Clinic treating extreme adiposity, using an anti-obesity toolkit: lab evaluation and family focused lifestyle intervention (“Guidelines for Rearing Healthy Children”C: behavioral, nutritional, physical activity).

Methods Used: Retrospective chart review: youth 4-20 years, mean BMI 37 kg/m2, all BMI ≥ 85 percentile, referred to Lifestyle Clinic (academic, suburban, 46% Caucasian, 38% African-American, 12% Hispanic, 4% Asian, 53% female). Degree of adiposity (BMI z-score), baseline labs: responders (R) lost weight, non-responders (NR) gained weight. Labs: Hba1C (DCA 2000 non-diabetic range 4.3-5.7%), glucose mg/dl, insulin uU/mL, C-peptide ng/mL, TSH uU/mL, triglycerides (TG) mg/dL, HDL mg/dL, LDL mg/dL, fibrinogen mg/dL, serum 25-hydroxy vitamin D (Vit D) ng/mL (by mass spectrometry- HPLC (Esoterix), @latitude 30 N). Relationships of independent lab variables (insulin, fibrinogen, TG, TSH, and Vit D) between BMI evaluated (Pearson corr coefficients.). Data reported using mean ± standard deviation. Self-reported lifestyle change (meals at table/portion size, sodas, sleep duration) evaluated at baseline/follow-up. SAS 9.2 statistical analysis.

Summary of Results: 111 patients, 66 returning, two without weight change. R 45%; mean age 12.9±4 years, 51% female, 57% privately insured, mean BMI z 2.5±0.4 decreased to 1.9±0.6, initial mean BMI 39 kg/m2 with range 26-67 kg/m2; NR 53%: mean age 11.6 ± 4 years, 60% female, 49% privately insured, BMI z 2.4±0.7 increased to 2.7±0.7, initial mean BMI 29 kg/m2, range 23-53 kg/m2. Labs: glucose 87-14 mg/dL, Hba1C 5.6±0.4 %, insulin 35.7±48 uU/mL, C-peptide 4.4±2.6 ng/mL, TSH 2.4±1.1 uU/mL, TG 150.8±117.0 mg/dL, HDL 43.7±9.6 mg/dL, LDL 95.2±27.0 mg/dL, Vit D 33.7±9.2 ng/mL, fibrinogen 384±75.9mg/dL. BMI correlated with fibrinogen (p<0.001) and insulin (p<0.003), inversely with Vit D (p<0.001); without correlation between TG, TSH. Lifestyle changes: R more likely to eliminate regular sodas from the diet (R 100%, NR 82%), often eat meals at the table (R 74%, NR 60%), sleep nine hours or more (R 78%, NR 56%). Major difference in the two groups: not eating large food portions (R 100%, NR 17%).

Conclusions: Use of an obesity-kittool made improved health of 45% of youth, high BMI associated with elevated fibrinogen and insulin, inversely correlated with Vit D.

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A DIAGNOSIS OF PHEOCHROMOCYTOMA MADE WHILE EVALUATING BLOOD PRESSURE AT THE PEDIATRICIAN’S OFFICE
Syed Y, Salameh M, Retting K, Kauffler A University Of South Alabama, Mobile, AL.

Case Report: Purpose of study: The diagnosis of pheochromocytoma requires a high index of suspicion especially if the child presents to the clinic with an unusually high blood pressure recording. The presence of obesity will also complicate the diagnosis.

Methods used: We report an asymptomatic 17 year old female who presented to her Pediatrician’s office with complaint of a rash that was present on her upper extremity.

Summary of results: Routine examination was done and she was found to have elevated blood pressure so it was rechecked and found to be 180/120. Upon further questioning she admitted to having chest pain and tightness while exercising. The patient was admitted to the PICU as a case of malignant hypertension for further management. Her blood pressure was controlled by 48 hours. EKG, CBC, and electrolyte panel were normal. The renal US showed a right suprarenal rounded hypo echoic mass measuring 3.7 x 3.0 cm. MRI showed a mass superior to the right kidney which was most suggestive of a pheochromocytoma. Urine metanephrines and catecholamines levels were done and were found to be elevated: norepinephrine 984 ug/day; normetanephrine 5059 mmol/day and dopamine 91 ug/day. The patient was started on Phenoxybenzamine and after controlling her blood pressure she was started on labetalol. MIBG scan was done to rule out additional metastases and was negative. The patient then underwent right adrenalectomy, and was discharged home 2 days after the procedure in a stable condition.

Conclusion: Abnormally elevated blood pressure in previously healthy children associated with cardiovascular compromise should make us suspicious for pheochromocytoma.

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STERIOD-INDUCED DIABETIC KETOACIDOSIS, A RARE COMPLICATION
Usavgarunngi K, Mankongpaisarnrung C, Nugent K Texas Tech University Health Sciences Center, Lubbock, TX.

Case Report: Purpose of study: Glucocorticoids are widely used as anti-inflammatory drugs and as replacement therapy for adrenal insufficiency. These drugs are associated with many side effects, including hyperglycemia. However, diabetic ketoacidosis has rarely been reported.

Methods used: We report a patient with Addison’s disease who received steroid over replacement and presented with generalized weakness, fatigue, skin discoloration, and more than 20 pounds weight loss over 3 months. Her morning cortisol was low. Her fasting blood sugars were 70-90 mg/dl. She was discharged on dexamethasone 4 mg four times daily for more than a month. She returned to clinic with generalized weakness, anorexia, polyuria, pain in her left ear with purulent discharge which was diagnosed with malignant otitis externa. She was admitted again for re-evaluation. Lab included hyperglycemia (470 mg/dl), hyponatremia (106 mmol/l), anion gap metabolic aci-

Conclusions: Glucocorticoids stimulate gluconeogenesis in liver and decrease peripheral tissue sensitivity to insulin; these effects can cause hyperglycemia. Diabetes and ketoacidosis can occur even in non-diabetic patients. Physicians need to consider diabetic ketoacidosis in patients taking steroids who present with dehydration and hyperglycemia. Our patient will
need regular evaluation to determine whether she develops diabetes mellitus in the future.

147 THE ROLE OF ORAL HYPOGLYCEMIC AGENTS IN MANAGEMENT OF TYPE 1 DIABETES; A PERSONAL CLINICAL EXPERIENCE

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Purpose of Study: Type 1 diabetes (T1dm) is caused by absolute insulinopenia often due to autoimmune islet destruction. Recent developments with the recognition of LADA, Flatbush and other diabetes (DM) variants have blurred DM classification. While insulin is typically the exclusive treatment for T1dm, complexities of dose titration and side effects make its use difficult in many type 1 diabetes especially those with brittle glycemic profiles. Very little is published on the use of oral hypoglycemic agents (OHAs) in the glycemic management of T1dm. We present data from our clinical experience over ~ 3 yrs to demonstrate the potential utility of OHAs as adjunctive therapy in T1dm.

Methods Used: We reviewed the records of all T1dm patients (pts) seen in the endocrine practice at UMC between July 2007 and July 2010. The clinical data was collated into an excel spreadsheet and data analysis performed using both Microsoft Excel and JMP in version 4.0.

Summary of Results: Of the 212 T1dm pts seen, 38 were on OHAs. OHAs consisted of metformin, pioglitazone, acarbose and coleslam. Compared to the insulin alone T1dm pts, those on OHAs+insulin were demographically similar. Before starting OHAs, the T1dm+OHAs pts were heavier than insulin alone pts; body mass index (BMI) 34.2±15.8 vs 27.4±12.6 and had higher total insulin doses; 64.7±17.4 vs 48±13.9 similar HbA1c, blood pressure and lipids compared to the insulin alone pts. The T1dm+OHAs pts showed significant interval reductions in HbA1c; 8.6±0.9 vs 7.7±0.65 after addition of OHAs. The T1dm+OHAs pts overall had no weight change though the metformin treated pts had lower BMIs at final follow up than before metformin use (41.8±12.2 vs 34.7±8.6). The T1dm pts did not have more hypoglycemic events than the insulin alone pts but the acarbose and coleslam treated pts had less events on treatment than before their use.

Conclusions: Insulin may not be the only treatment option for glycemic management of T1dm. OHAs may have an adjunctive role in the care of some T1dm pts and may improve HbA1c without causing more hypoglycemic events. Further well designed studies in this therapeutic area are needed.

148 HEPATOBLASTOMA: AN UNUSUAL CAUSE OF PRECOCIOUS PUBERTY IN FEMALE CHILD

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Case Report: Elevated human chorionic gonadotropin (hCG) causes precocious puberty in males since it mimics the action of LH, causing the Leydig cells to make testosterone. However, hCG tumor rarely causes precocious puberty in girls since both LH and FSH are required to produce estradiol. Our patient is a 26 month old female with Beckwith-Wiedemann syndrome who developed hepatoblastoma stage III involving liver and complete resection was done at one year of age. She presented with metastasis to lungs and brain at 18 months of age. Resection of lung metastases was done and she was started on chemotherapy. She developed seizures 2 months ago and MRI of brain showed increase in size and number of brain metastases. Mother reported 3 month history of vaginal bleeding every month as mild spotting, breast enlargement, acne and body odor. On examination she was noticed to have Tanner stage 3 breast buds, darkening and dimpling of the areola and nipple protrusion, Tanner stage 2 pubic hair, enlarged clitoral (3 cm) and mild acne over face. Labs showed undetectable LH(0.1 mIU/ml) and FSH(<0.2 mIU/ml). Serum hCG was elevated to 2438 mIU/ml, with elevated total testosterone to 202ng/dl and estradiol to 265 pg/ml. Cortisol and DHEAS level were normal, CT scan of the abdomen and pelvic ultrasound were within normal limits. Hepatoblastoma, an embryonal tumor, which is one of the most common primary liver tumors in childhood, typically secretes hCG hormone. After extensive literature review, we found only a few cases of hCG induced tumors other than hepatoblastoma causing precocious puberty in girls and very few cases of hCG producing Hepatoblastoma in boys. Our case is likely the only case where hepatoblastoma, producing hCG, has led to precocious puberty in a female child. Human chorionic gonadotropin shares extensive structure homology with LH, but its similarity with FSH is limited to the alpha subunit. It has been believed that when hCG is very high, it can mimic FSH. By the mechanism known as "sensitivity spill over", it acts on FSH receptor which will lead to increased production of estrogen and can cause precocious puberty in girls. Our case illustrates the fact that, although rare, hepatoblastoma can cause precocious puberty in females if the hCG level is extremely elevated.

149 EFFECT OF MACRONUTRIENT DIET COMPOSITIONS ON WEIGHT CHANGE AND METABOLIC PARAMETERS

Wheeler DH, Stentz FB, Kribbachi AE University of Tennessee Health Science Center, Memphis, TN.

Purpose of Study: The prevalence of obesity and Type 2 Diabetes (T2DM) has increased in a parallel fashion. The major cause of death in T2DM is cardiovascular disease. Diet is the backbone of treatment for both conditions. There are numerous diets promising results; however, the optimal diet has not been identified that provides weight loss that is sustainable for a long period without negatively affecting other metabolic parameters. The standard diet is composed of 55% carbohydrates, 30% fat, and 15% protein (HC), but it’s superiority is over high protein (30% protein, 30% fat and 40% carbohydrates) is not known. The goal of this study is to compare the HC vs HP diets in regard to weight loss and different metabolic parameters such as glycemic excursions by the Oral Glucose Tolerance Test (OGTT) and Meal Tolerance Test (MTT). We hypothesize that the HP diet will provide greater satiety and improve metabolic parameters than the HC diet.

Methods Used: Non diabetic women ages 20 to 50 years with a BMI >30 and <55 were randomized to either HP(12) or HC(10) diets for 6 months with 500 kcal restrictions from their Basal Metabolic Rate. The meals were provided weekly at weigh-in. Subjects were monitored for weight, BP, waist circumference, chemistry profile, and lipid profile at baseline(S1) and 6 months(V7). Glucose, insulin, glucagon and glucagon dependent insulinotropic polypeptide (GIP) were measured and Area Under the Curve (AUC) for the OGTT and MTT calculated.

Summary of Results: Both diet groups had similar and significant weight loss of approximately twenty pounds/ patient in 6 months. Glucose AUC was significantly (p=0.001, p=0.05) different between the S1 and V7 OGTT for HP and HC, respectively. S1 and V7 for MTT in both HP (p=0.005), and HC (P=0.002) diets, and V7 OGTT and MTT were significantly different (p=0.043, p=0.022) between the HP and HC diets. Glucagon results showed no difference between the diets. The GIP AUC was significantly different between the S1 and V7 OGTT for HP and HC (p=0.02, p=0.05). S1 vs V7 MTT for both the HP (p=0.005) and HC (P=0.02) diets, and V7 HP vs HC MTT were significantly different (p=0.03).

Conclusions: The HP diet provides a greater reduction in glycemic, insulin and glucagon excursions but greater increase in GIP excursion compared to HC diet.

Joint Plenary Poster Session
Health Services Research
5:00 PM Thursday, February 9, 2012

150 INCREASING SMOKING CESSATION IN RESIDENT CLINIC

Angotti LB, Erway S, Mason R, Petz C, Moran W, Davis K MUSC, Charleston, SC, SC.

Purpose of Study: A quality improvement project was designed to evaluate the number of patients receiving smoking cessation counseling in our resident clinic. Our aim was to increase the number of patients counseled on smoking cessation after specific educational and logistical interventions.

Methods Used: We initially performed a chart review of patients in our clinic who were current smokers and recorded the number of visits in which they received smoking cessation counseling over a one year time course. We then designed an intervention to increase the number of patients in our resident clinic receiving smoking cessation counseling. This intervention included a resident noon conference on smoking cessation techniques and...
151 ASSOCIATIONS BETWEEN HEALTH LITERACY AND PREVENTATIVE CARE BEHAVIOR: ANALYSIS OF A NATIONAL SAMPLE
Bains S, 1 Edgoe LE, 2, 3 Medical University of South Carolina, Charleston, SC and 4 Ralph H. Johnson VAMC, Charleston, SC.

Purpose of Study: Health literacy status has been associated with disease self-management behavior, preventative care utilization and clinical outcomes. The aim of our study was to investigate health literacy and its association with preventative care in a national sample. Based upon prior literature, our hypothesis was that higher literacy would be associated with utilizing preventative care.

Methods Used: We performed a secondary analysis of the 2003 National Assessment of Adult Literacy (NAAL) background questionnaire. Data was analyzed on approximately 18,000 national participants. Background questions pertaining to preventative care use (receiving flu vaccination, screening mammogram, yearly pap smear, pneumonia vaccination, colon screening, prostate cancer screening, osteoporosis screening, and yearly dental visits) were used. Preventative care was analyzed as a categorical variable (yes/no). Health literacy was assessed using the overall score on the health literacy scale in the dataset. We used t-tests to test which preventative care variables significantly related to overall health literacy score. We used marginal maximum likelihood estimators in AM statistical software to obtain population estimates accounting for the complex survey design of the NAAL.

Summary of Results: The response rate to the NAAL dataset was 88.3%. Higher literacy scores significantly related to receiving yearly pap smear (256 vs 249, p<0.001) and receiving the dentist in the past year (253 vs 228, p<0.001). Lower health literacy scores were associated with flu vaccination (239 vs 248, p<0.001) and marginally associated with prostate cancer screening (240 vs 243, p=0.08). Health literacy did not significantly relate to the other screening measures.

Conclusions: Consistent with our hypothesis, higher health literacy scores related to yearly pap smear and dental visits. However, inconsistent with our hypothesis, lower health literacy scores related to flu vaccination. Also, other preventative care measures did not significantly relate to health literacy. These findings suggest that health literacy is inconsistently associated with preventative care behavior. Future research should examine the mechanism by which preventative care behavior is influenced by health literacy.

152 JUSTICE TOO LATE? PRETERM BIRTH AND FOLLOW-UP
Carter BS, Vanderbilt, Nashville, TN.

Purpose of Study: To examine the functional requirement of histone deacetylases (HDACs) 1 and 2 in the ureteric bud (UB) lineage.

Methods Used: We examined HDAC1 and HDAC2 double knockout (DKO) mice which lack both renal cystic hypoplasia, including absent nephrogenic zone, lack of cortico-medullary patterning, decreased nephron number, and multiple cysts in both cortical and medullary zones. Immunostaining of SIX2, Pax2, two markers of renal progenitor cells, and phosphorylated histone H3, an indicator of cell proliferation, demonstrated that the DKO mice completely lack renal progenitor cells. The renal cysts originate from glomeruli (WT1), proximal tubules (LTA and angiotensinogen), and collecting ducts (cytokeratin and AQP2). Ex vivo real-time monitoring of GFP fluorescence revealed that DKO mice exhibited aberrant UB branching pattern as early as E13.5, followed by degeneration of UB tissue over 2-3 days in culture. At E13.5, there was no difference in SIX2 and Pax2 expression levels between DKO and wild type kidneys. By E15.5, hypoplasia due to defective UB branching was clearly evident and accompanied by reduced number of glomeruli and dysmorphic proximal tubules.

Conclusions: We conclude that HDAC1 and HDAC2 are required for normal UB branching morphogenesis and differentiation causing a cystic hypoplastic renal phenotype.
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LOW ACUTITY PEDIATRIC ER PATIENTS REQUIRING ADMISSION

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Purpose of Study: Pediatric patients presenting to ER are triaged by RN’s upon arrival according to acuity, as available provider resources are often limited at peak times. Children presenting with common childhood complaints are often triaged to the lowest acuity and may wait long periods of time before being seen by a provider. Many serious pediatric illnesses may be overlooked in the triage process and a number of the lowest acuity patients are later admitted to the hospital. This study was designed to identify those patients and to determine which chief complaints are most often involved.

Methods Used: A retrospective chart review was conducted for the lowest acuity patients in the ER requiring admission. A total of 283 patients from the age of 2 weeks to 19 years of age met study criteria in 2008. Electronic medical records were reviewed for demographic data, language barriers, shift at presentation, chief complaints, and admitting diagnosis. Also examined were significant past medical history, pertinent abnormal vital signs, and patients who were upgraded when vital signs and were obtained.

Summary of Results: A majority of the patients (75%) were 5 years of age or younger and presented during the 3pm-11pm shift (47%). There was a language barrier in 11%. The most common presenting chief complaint and the most common admitting diagnosis will be reviewed as well as other concerning diagnoses found. There was a pertinent past medical history in 38% and pertinent abnormal vital signs in 39%. After obtaining vital signs or a more complete triage history while obtaining the vital signs, 26% were upgraded to a higher triage level.

Conclusions: Serious pediatric illnesses with potential for high morbidity and mortality may present with common pediatric chief complaints such as fever, vomiting, and uri or ‘cold’ symptoms. It is important to recognize these illnesses early in the triage process to prevent a long wait or possible elopement from the emergency department without being evaluated by a provider.

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MELANOMA AWARENESS AND KNOWLEDGE IN FAMILY PRACTICE PATIENTS: DOES RACE OR LITERACY MAKE A DIFFERENCE?

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Purpose of Study: To determine if race or literacy has an impact on safety-net clinic patients awareness of melanoma and knowledge of melanoma risk factors, methods of protections, and signs of a lesion.

Methods Used: Male and female patients 18 years of age or older were recruited from a public hospital family practice clinic. Each was given a structured interview assessing knowledge and awareness of melanoma, warning signs, methods of protection, and previous discussions with a physician about melanoma, as well as the REALM literacy test.

Summary of Results: Of the 163 patients enrolled 77% were African American (AA), 23% white, 66% read on < 9th grade level (low literacy). Patients ranged in age from 19-80. Approximately half of the (58%) patients had heard of melanoma with whites and those with adequate literacy being more likely to be aware of melanoma (90% vs. 49% p<0.0001 and 84% vs. 45% p=0.0001 respectively). Of all patients who stated they had heard of melanoma only 51% were able to accurately describe it as “skin cancer”. Few patients (39%) said they knew possible signs of melanoma, of these only 46% of those were able to name a correct sign. Most patients agreed that it is possible for African Americans to get skin cancer (91%AA vs. 81% white p=0.062). However, patients’ belief in their own risk of developing melanoma was minimum and varied by race (2% of AA vs. 27% white, p=0.0001). The majority of patients (79%) stated they knew of ways to protect themselves from developing melanoma; methods most commonly cited were using sunscreen (72%) and avoiding sun exposure (12%). Very few patients reported a physician had ever specifically address melanoma with them (8% black vs. 19% white p=0.124).

Conclusions: Although most patients stated they were aware of melanoma, the majority did not actually know what it is and could not describe potential signs. AA patients were less likely to have heard of melanoma, know warning signs, or feel they were at risk.

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HURRICANE KATRINA RELATED EXPERIENCES AND BLOOD PRESSURE CONTROL IN OLDER ADULTS: FINDINGS FROM COSMO

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Purpose of Study: Disaster events can negatively impact the health and well-being of residents, particularly among vulnerable populations such as older adults. We assessed the relationship between Hurricane Katrina related experiences and blood pressure control among older adults living in Greater New Orleans and the surrounding areas.

Methods Used: Data were analyzed for 2,194 participants in the Cohort Study of Medication Adherence in Older Adults (CoSMO). As part of the baseline CoSMO survey conducted between August 2006 and September 2007, participants were asked about their hurricane-related experiences including property damage, life disruptions, and loss of life. Blood pressure measurements for the 24 month period following Hurricane Katrina were abstracted from patient medical records, and uncontrolled blood pressure was defined as SBP ≥ 140 mmHg or DBP ≥ 90 mmHg.

Summary of Results: The mean age of study participants was 75 (range 65, 97). Overall, 30.5% of participants were black, 33.9% had uncontrolled blood pressure, 18.7% reported that they had a family member or friend who had died within one month of Hurricane Katrina, 22.2% had ≥50% damage to their residence, and 6.8% reported both of these experiences. After adjustment for socio-demographic characteristics, participants with ≥50% damage to their residence and those with a family member or friend who died within one month of Hurricane Katrina were more likely to have uncontrolled BP (PR = 1.18, 95% CI = 1.03, 1.35, p=0.020 and PR = 1.13, 95% CI = 0.98, 1.31, p=0.096, respectively). The association with uncontrolled BP was even stronger for participants reporting both compared to none or one of these disaster-related experiences (PR = 1.37, 95% CI = 1.14, 1.66, p=0.001).

Conclusions: These data show Katrina-related losses of property and life are associated with uncontrolled blood pressure in older adults. Further research is needed to examine the short and long-term impact of Katrina-related experiences on BP control and cardiovascular outcomes.

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PATIENT DISASTER PREPARATION HAS IMPROVED BUT IMPORTANT GAPS REMAIN

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Purpose of Study: Chronic disease management was problematic with the collapse of the healthcare infrastructure in the Gulf Coast after Katrina. This study investigated if health care providers, not-for-profit pharmacies and social service organizations changed policies and procedures to facilitate patient preparation and continuity of care after disaster.

Methods Used: Health care administrators and providers, along with not-for-profit pharmacy administrators and service agency administrators from MS and AL were interviewed for this qualitative study. Transcripts of the Key Informant (KI) taped interviews were coded using qualitative software. Subsequent discussions between coders led to consensus in the interpretation of the information. Findings were summarized and returned to KI for validation. KI e-mailed comments and focus group discussions provided confirmation and clarification of findings.

Summary of Results: All participating organizations that provide services for chronic disease patients help these patients prepare for disaster. Many reported improving their patient disaster preparation after Katrina. Current efforts include annual pre-disaster preparation training, evacuation advice and assistance, provision of “grab and go” packs with basic survival supplies, referrals to service providers in evacuation areas, provision of patient...
information including prescribed medications as well as treatment docu-
tmentation, and advance prescriptions and supplies. However, several barriers
were identified including infrequent contact with patients, which limited
training opportunities, patients’ limited literacy, non-English speaking patients,
patient complacency and lack of patient compliance with preparation guide-
lines. KI caution against over-dependence on limited public resources for
evacuation and sheltering.

Conclusions: In spite of changes implemented to assist chronic disease
patients with continuity of care in case of disaster, efforts to prevent disruption
of care are hindered by limited organizational capacity to meet the needs of
the patient population as well as relaxed compliance by some patients.

158 CONGENITAL ABDOMINAL WALL DEFECTS: A SIX-YEAR
EXPERIENCE AT KOSAIR CHILDREN’S HOSPITAL
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Louisville, KY; 2Kosair Children’s Hospital, Louisville, KY; 3Neonatal Intensive Care
Experts, Louisville, KY and 1Onsite Neonatology, Dayton, OH.

Purpose of Study: Gastroschisis and omphalocle are the most common
congenital abdominal wall defects with prevalence estimates ranging from
1.86 per 10,000 live births for omphalocle to 4.48 per 10,000 live births for
gastroschisis. There has been a well-documented increase in the incidence of
gastrochisis, with no known etiology. Advances in neonatal and surgical
treatment have improved the prognosis of these conditions. However, there is
a lack of consensus on the optimal time and type of intervention. A large
multicenter abdominal wall defect database has been created. We have ana-
lyzed our local contribution. Data was collected regarding prenatal demo-
graphics, postnatal hospital course, treatment modalities, complications and
outcomes of infants born with either gastrochisis or omphalocle and ad-
mitted to the Kosair Children’s Hospital from Jan 2005 through Dec 2010.

Methods Used: This is a retrospective observational study of 110 infants
meeting the above criteria. SAS v9.1(Cary, NC) was used to describe the data.

Summary of Results: 110 infants were admitted with a diagnosis of gas-
trochisis or omphalocle in the study period. Gastrochisis was more
common than omphalocle (79 vs. 31 or 72% vs. 28%). Congenital cardiac
defects were noted in 25 (80.6%) of the omphalocle patients. Most patients
with gastrochisis underwent a silo placement with sequential reduction and
closure compared to primary surgical closure (59 [74.9%] vs 19 [24.1%]).
The mean silo duration in gastrochisis patients was 6.3 days. Closure of the
gastrochisis defect was achieved at a mean age of 9.5 days, versus 3 days for
omphalocle. In addition to the intestines, the most commonly present organs
in gastrochisis were stomach (17 [21.5%]), bladder (8 [10.1%]) and liver (4
[5.1%]). Postoperatively omphalocle patients stayed on ventilators longer
than those with gastrochisis (11.3 days vs 7.5 days). Mortality was higher in
omphalocle patients (22.6% vs 7.8%).

Conclusions: Our data is in agreement with the published literature on
associated congenital defects, morbidity and mortality which were higher for
omphalocle patients.

159 US EMERGENCY DEPARTMENT VISITS FOR
MALTREATMENT AMONG CHILDREN 0 TO 3 YEARS
OF AGE
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1University of Arkansas for Medical Sciences, Little Rock, AR and
2University of Arkansas for Medical Sciences, Little Rock, AR.

Purpose of Study: Intentional injury, neglect and sexual abuse are estimated
to occur in over 200,000 infants and young children per year in the U.S. While
many abused children are recognized by primary care providers, admitted di-
rectly to the hospital for serious injuries, or overlooked by health care, the
maltreatment of some young children is first recognized in the emergency
department. This study uses nationally representative data to document ED
visits among infants and young children for physical abuse, sexual abuse and
neglect. Characteristics of patients associated with visits for maltreatment are
also assessed.

Methods Used: Data come from 2008 Nationwide Emergency Department
Sample (NEDS). Using ICD-9 diagnosis codes and ecodes for external cause
of injury, we identified ED visits for physical abuse, sexual abuse, neglect,
and unspecified abuse among children 0 to 3 years of age. These visits were
then assessed by age, gender, insurance status, income, and region. Rates of
maltreatment were calculated per 100,000 US populations. The proportion of
ED visits that resulted in hospital admissions was also calculated for each
form of maltreatment.

Summary of Results: The rate of maltreatment seen at the ED in 2008 was
estimated at 64.1 cases per 100,000 children aged 0 to 3. Weighted estimates
identified 5512 visits to the ED for physical abuse, 1138 for sexual abuse,
1481 for neglect, 583 for unspecified abuse, and 8141 for any form of abuse,
as compared with 10,281,102 visits to the ED overall. Sexual abuse occurred
more frequently in girls (77%), increased from age 0 to 3 (p<0.01), and seldom
resulted in hospitalization (3%). Relative to all ED visits, sexual abuse was
more likely to occur in non-metropolitan areas (24% vs. 18%). As compared
to all visits, children 0 to 3 years old seen at the ED with any form of abuse
were more likely insured by Medicaid (66% vs. 54%) and less likely to be
privately insured (18% vs. 33%).

Conclusions: ED visits for children for physical abuse, sexual abuse and
neglect were confirmed by diagnosis among 64 children out of 100,000 in the
US population. Hospital ED data are a useful additional source of informa-
tion to monitor the epidemiology and care of child maltreatment nationwide.

160 HOSPITAL AND PROVIDER CHARACTERISTICS
ASSOCIATED WITH VARIATION IN MANAGEMENT OF
PATIENT DUCTUS ARTERIOSUS
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2University of Arkansas for Medical Sciences, Little Rock, AR and 1Duke
University, Durham, NC.

Purpose of Study: Patency of the ductus arteriosus is essential for fetal
dye. In term infants the DA usually closes within the first 3 days of life. In preterm
infants closure may be delayed or not occur. A PDA can be treated conser-
vatively (CONS), medically by indomethacin (INDO) or ibuprofen (IBU), or
by surgical ligation (SURG). No single treatment strategy has been univer-
sally adopted. In this study we determine the variability across large chil-
dren’s hospitals in the first-line management of PDA for extremely low birth weight (ELBW<1000g) infants, and determine if hospital characteristics,
their neonatal intensive care units, and neonatology staff are associated with
preference a given PDA management strategy.

Methods Used: Data on PDA management for years 2006-2010 were drawn
from the Pediatric Hospital Information System (PHIS). First-line therapy was
treatment within the first 7 days of life. Hospital and staff characteristics were
gathered from PHIS and hospital webpages, which included hospital bed size,
region, payer mix, and racial mix, NICU inclusion of fellowship program, bed
size, status as one of 50 best neonatology programs, and number of neonatol-
gists, and faculty experience, publications, and involvement in major PDA
trials.

Summary of Results: Of 23 PHIS hospitals, IBU use varied from 0 to 51%,
INDO from 0 to 84%, SURG from 0 to 32%, and CONS management from
8 to 75%. Only two factors were consistently associated with management:
hospital and NICU bed size. Hospital bed size (r = .40, p = .05) and number
of NICU beds (r = .36, p = .09) were positively correlated with percent of
patients managed conservatively. No hospital, NICU or provider character-
istics was significantly associated with frequency of IBU use, INDO use, or
surgical ligation.

Conclusions: Few identifiable differences were observed to explain the
variability in first-line PDA therapy. Providers in larger hospitals with more
volume of ELBW infants may be more skeptical of the value of medical or
surgical treatment of PDA. Other factors including each neonatologists’
unique experiences may better explain variability in first-line management.

161 DO LITERACY, RACE AND AGE IMPACT FAMILY
PRACTICE PRACTITIONERS’ SUN-PROTECTION PRACTICES?
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T1 1LSU Health Sciences Center - Shreveport, Shreveport, LA and
2Centenary University, Shreveport, LA.

Purpose of Study: To determine if literacy, race or age has an effect on
sun-protection behaviors intended to prevent melanoma.

Methods Used: Male and female patients age 18 and over in a public
hospital family medicine clinic were given a brief literacy test and a short
structured interview assessing their sun protection practices.
162 MAMMOGRAPHY BARRIERS IN RURAL AND URBAN PATIENTS

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Purpose of Study: Determine differences in screening mammography knowledge, barriers and experiences between rural and urban patients

Methods Used: Women age 40 and over who had not been screened in the last two years were recruited from eight Louisiana FQHCs. They were given a structured interview assessing mammography knowledge, beliefs, barriers, self-efficacy, physician recommendation, and literacy.

Summary of Results: Of 168 patients interviewed: 76% were female; 75% were African American (AA), 23% were white; and 63% were unemployed. Despite the majority (70%) having a high school education or better, two-thirds (66%) had low literacy (< 9th grade level). AAs and older patients (over age 50) were more likely to have low literacy (73% vs. 42%, p = 0.001; 74% vs. 50%, p = 0.002, respectively). Overall, 69% of patients spent more than an hour outside on an average day, with 56% reporting outdoor hobbies. Those with low literacy were more likely to work outside (14% vs. 25%, p = 0.02). AAs were more likely to rarely or never use sunscreen when in the sun more than an hour (89% vs. 73%, p = 0.025). White patients and those age 49 and under were more likely to rarely or never use protective clothing (68% vs. 37%, p = 0.005; 53% vs. 39%, p = 0.02, respectively). Half of all patients (51%) reported rarely or never using a hat. Overall, 83% reported that they would use sun protections if they knew these could prevent cancer. White patients and those over age 50 were more likely to know someone who had melanoma (60% vs. 22%, p < 0.0001; 37% vs. 16%, p = 0.006, respectively). Few patients thought they were likely to get skin cancer, with whites being more likely than AAs to think they were at risk for skin cancer (27% vs. 2%, p = 0.001). Only 10% of all patients had ever discussed melanoma with a physician.

Conclusions: Most patients said they would use sun protections if they knew it could prevent cancer, yet few actually used sunscreen, hats or protective clothing. AAs were less likely to use sunscreen, while whites and younger patients were less likely to use protective clothing. Lower-literacy patients were more likely to work outside, but there was no difference between literacy and use of sun-protections. Of concern, very few patients in this primary care clinic had ever discussed melanoma with a physician.

163 EVALUATION OF PHYSICAL ACTIVITY LEVELS IN AN AFTERSCHOOL PROGRAM

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Purpose of Study: The Physical Activity (PA) Guidelines for Americans suggest that children are moderately to vigorously active sixty minutes a day to improve overall health and fitness. An after-school PA program can help reach this goal. Initial research has shown positive health outcomes for after-school PA program participants. We assessed an after-school PA and nutrition education program for: percentage of time spent in different levels of PA, time spent on instruction, management, and activity, and instructor time spent promoting PA.

Methods Used: Thirty-seven elementary school students [grades 1-5, 38% male, 62% female, 24% normal weight, 35% overweight (BMI 85-95th percentile), 41% obese (BMI > 95th percentile), 27 completed the program] participated in an ongoing high intensity intervention consisting of twice weekly 90-minute after-school PA and nutrition education sessions. PA was assessed eight times using the System for Observing Fitness Instruction Time (SOFIT). SOFIT is a valid and reliable momentary time sampling and interval recording system used to evaluate PA intensity, class context, and PA promotion from the instructor.

Summary of Results: On average, participants spent 58% of time in sedentary behaviors, 31% of time in moderate intensity PA, and 11% of time engaged in vigorous intensity PA. Activities were dedicated 78% of the time to fitness, skill, and game time. Instructor management behaviors were observed 19% of the time, while knowledge (i.e., instruction) was provided 3% of the time. Instructors spent 9% of time promoting in-class PA. Overall, children spent an average of 29.9 minutes (42% of time allotted for PA) in moderate and vigorous physical activity (MVPA) each session.

Conclusions: Participants spent about one-third of the 90-minute program in MVPA during each session. While this does not meet the 60 minute recommendation for children made by the PA Guidelines for Americans, it contributes almost half of the suggested daily level of PA. Limitations to this evaluation include inability to differentiate PA by gender, grade level, or BMI percentile. After-school programs can be important in the promotion of PA in overweight and obese children, but there appears to be room for improvement in devotion of time to MVPA.

164 GENDER DIFFERENCES IN USE OF PRIMARY CARE SERVICES FOR PATIENTS WITH SUBSTANCE USE DISORDERS

Tran CT1, Dibble A2, Safford LA1, May JC3, Farrell-Moore D4, Sviks D2
Aggarwal A1, 1Virginia Commonwealth University School of Medicine, Richmond, VA; 2Virginia Commonwealth University, Richmond, VA and 3Richmond Behavioral Health Authority, Richmond, VA.

Purpose of Study: Patients with substance use disorders (SUDs) are often neglected and have poor health outcomes. Our study focuses on gender differences and other barriers associated with having a regular primary care provider (PCP) and use of emergent room (ER) services for acute and regular medical care.

Methods Used: An anonymous computer assisted survey is given to eligible SUD patients at community treatment programs: two outpatient, two inpatient and one facility with both services. Patients are recruited by convenience sampling. A computer directed Health Anonymous Research and Evaluation Survey contains the following domains: demographics, health care experiences, substance use, mental health and sexual behaviors. The data from these surveys were analyzed using PASW 18 Statistical Software.

Summary of Results: A total of (N=286) SUDs patients completed the survey; 62% of the participants stated that they had a PCP and 54% reported having scheduled a routine appointment in the past year. Males were less likely to have a PCP when compared to females (25.2% and 40.1% respectively, p-value < 0.001). Barriers to having a regular PCP were due to lack of insurance (33%) and alcohol & drug problems (22%) were reported. However, 69.6% of all subjects reported utilizing emergency services in the prior year. Males were less likely to report visiting the ER in the past year than females (36.4% vs. 20.8%, p-value < 0.01). A large proportion of SUDs patients (75%) reported inadequate access to PCP and despite having a PCP, using the ER when needed acute medical care. Only 37.8% of the participants
ADHERENCE TO CANCER SCREENING IN PATIENTS WITH LIMITED HEALTH LITERACY

Tran CT1, Alsalman AF2, Jones RM2, Krist A1, Aggarwal A1 1Virginia Commonwealth University School of Medicine, Richmond, VA and 2Virginia Commonwealth University School of Pharmacy, Richmond, VA.

Purpose of Study: Impact of limited health literacy (LHL) on adherence to cancer screening guidelines in patients is controversial. The objective of this study is to determine the impact of LHL on cancer screening rates in an outpatient setting.

Methods Used: Electronic Health Records were retrieved (years 2001-2010) to collect outpatient data on demographics, cancer screening, and health literacy test (REALM-R score). Using REALM-R scores, all patients were categorized in two groups. Adherence to cancer screening was based on the national guidelines by US Preventive Task Force. Three independent multivariate logistic regression models were used to examine the association between LHL and cancer screening (breast, cervical, and colorectal cancer). Odds ratios (OR) and confidence interval (CI) were calculated using SPSS software. A p-value of <0.05 was significant.

Summary of Results: Thirty six percent (408/1121) of our sample was found to have LHL. The older age, male gender, African American race, and having a public insurance was significantly associated with LHL (all p <0.01). A 38% of women (155/406) were found to be non-adherent to breast cancer screening; whereas, 33% (150/455) were non-adherent to cervical cancer screening; and 41% (196/470) men and women were non-adherent to colorectal cancer screening. Cancer screening rates considerably varied among patients with and without LHL: breast (37% versus 63%), cervical (30% versus 70%), and colorectal (43% versus 57%) cancer. When adjusted for age, race, insurance, and gender (for colorectal cancer), we did not find LHL to be a statistically significant predictor of adherence to cancer screening guidelines.

Conclusions: LHL was not associated with adherence to recommended breast, cervical, and colorectal cancer screening guidelines in an outpatient population. However, clinically meaningful differences in LHL rates were found in our study sample suggesting other unobserved confounding factors. These differences in screening rates may be larger in general population, among the ones’ without a regular primary care physician. Future studies may focus to understand the relationship between LHL and adherence to cancer screening guidelines in a larger population.

PATIENT AND HEALTH SYSTEM FACTORS ASSOCIATED WITH CARDIAC CATHETERIZATION

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Purpose of Study: This study seeks to determine factors accounting for differences in catheterization (cath) rates in patients admitted for coronary and non-coronary chest pain.

Methods Used: We performed a cross-sectional analysis of 22,091 admitted patients with a chest pain or acute cardiac condition after presenting to any Memphis Area ED from 1/1/2007 to 7/31/2009. We examined factors associated with cardiac cath, repeat cardiac cath, and potentially avoidable cardiac cath (defined as no discharge diagnosis for active cardiac conditions and no positive serum troponin > 0.05 mg/dl).

Summary of Results: The majority of the patients analyzed were females (50.6%), white (54.3%), and with Medicare (39.3%). There were 6,504 (29.4%) patients who had a cardiac cath. Of these 733 (11.3%) patients had potentially avoidable cath and 1,765 (27.1%) had repeat cath within the study period. Multivariate analysis showed that cath was less likely among African Americans (OR 0.86, CI 0.79 - 0.94) and more likely in patients with private insurance (OR 1.24, CI 1.10 - 1.40). Females were less likely to have potentially avoidable caths (OR 0.84, CI 0.71 - 0.99). In multivariate Cox regression modeling, repeat cath was less likely in patients with a chest pain primary diagnosis (OR 0.16, CI 0.09 - 0.28) or secondary diagnosis (OR 0.18, CI 0.06 - 0.56) as compared to patients with acute MI.

Conclusions: More than 10% of patients have caths that do not result in coronary disease diagnosis, many of which may be potentially avoidable. Race, gender and insurance appear to influence cath rates of chest pain patients. Further studies need to identify and address reasons for disparities in caths and assess true rates of unnecessary caths in community settings.
Joint Plenary Poster Session  
Hematology and Oncology  
5:00 PM  
Thursday, February 9, 2012

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GASTRIC ADENOCARCINOMA MASQUERADING AS A CHRONIC PARTIAL SMALL BOWEL ILEUS  
Austin CA, Kauffman EB, Leithead LR, Engel L  
LSU-Health Sciences Center, New Orleans, LA.  
Case Report: A 46-year-old African-American male with medical history of treated tuberculosis and remote trauma requiring abdominal exploratory laparotomy presented with a one month history of epigastric pain, nausea, early satiety, decreased caliper stools, and a fifteen pound weight loss. He had no melena, fever, dysphagia, hematemesis, or any history of adhesions. Physical exam noted hyperactive bowel sounds and voluntary guarding in his epigastrium. Initial labs were unremarkable including negative HIV. Abdominal CT revealed a partial small bowel ileus without a transition point, thickened stomach and colon, and early left lower quadrant abscesses. The patient was unable to tolerate orals, received a nasogastric tube, IV fluids and antibiotics. An esophagogastroduodenoscopy was performed noting a nodular, edematous gastric body consistent with limits plastic, with pathology confirming diffuse gastric adenocarcinoma. A subsequent gastrografin study revealed multiple serosal omental implantations consistent with peritoneal carcinomatosis, thus presumptive stage IV gastric adenocarcinoma. The patient refused diagnostic laparoscopy and was discharged to home hospice.  
Discussion: Gastric adenocarcinoma is the fourth most common cancer worldwide and the second most common cause of cancer death worldwide. However, it is infrequent in the United States, representing approximately 2% of new cancer diagnoses annually. Gastric cancer is much more common in Asian countries, especially in Japan. Risk factors for the disease include ethnicity, diet high in N-nitroso compounds common in preserved meats, excess BMI, smoking, and chronic atrophic gastritis. Persistent abdominal pain with early satiety, weight loss, iron deficiency anemia, and dysphagia are common presenting symptoms. Unfortunately, symptoms usually do not occur until the cancer has reached advanced stages, which contributes to the disease’s poor prognosis. Treatment options consist of surgical resection if the tumor is diagnosed before it is locally advanced with concomitant chemotheraphy and radiation, but despite these treatment modalities, median life expectancy is approximately nineteen months.

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SOFT TISSUE SARCOMA METASTASES TO THE HEART  
Caruthers C, Hebert C, Varughese S, Boulmay BC  
LSU-Health Sciences Center, New Orleans, LA.  
Case Report: Introduction: Soft tissue sarcomas are rare malignancies in adults, affecting approximately 1% of the population. They are usually found in extremities as an enlarging, painless mass. There are few documented cases where pericardial metastases exist, especially for clear cell sarcoma.  
Case: A 56-year-old Vietnamese male with a past medical history of clear cell sarcoma of the left fifth digit status post amputation presented to the hospital with four days of non-productive cough, shortness of breath that was worse while lying supine, and substernal sharp chest pain that worsened with cough. On physical examination, the patient had dullness to percussion on the left lower lung field. Initial labs showed hypercalcemia of 12.5mg/dl and Beta-Natriuretic Peptide of 427pg/mL. EKG showed T-wave inversion in leads V5-V6. Chest X-ray showed bilateral pleural effusions (greater on the left) and cardiac enlargement which obscured the left heart border. A CT of the chest showed a large pericardial mass posterior to the left atrium measuring 6.6cm x 4.5 cm with multiple pericardial nodules. A significant pericardial effusion was seen measuring 5.7cm. 2-D echocardiogram showed an ejection fraction >55% with a large fibrinous pericardial effusion without any hemodynamic compromise. Cardiothoracic Surgery performed a subxiphoid pericardial window. 1200cc of bloody fluid was drained, a pericardial biopsy was taken and a chest tube was placed for continued drainage. The patient’s symptoms improved. The pericardial fluid was positive for ESWR1 gene which is consistent with clear cell sarcoma. A repeat chest CT showed left axial lymphadenopathy with possible infiltration into the left tees major and subscapularis muscles. The patient was discharged home with palliative doxorubicin chemotherapy.  
Discussion: Soft tissue sarcomas can recur either locally or as metastatic disease. Surveillance monitoring is important in patients with soft tissue sarcoma since patients are often asymptomatic with metastases. Cardiac metastases in patients with a history of soft tissue sarcomas should be considered especially when symptoms/signs of heart failure are present. Unfortunately, the prognosis with patients with metastases to the pericardium is poor.

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CASE REPORT AND REVIEW OF THE LITERATURE ON EPISODIC ANGIOEDEMA WITH EOSINOPHILIA (GLEICH SYNDROME)  
Cassell M, Herrin V  
University of Mississippi Medical Center, Flowood, MS.  
Case Report: Our patient is a 65 year old African-American male who presented to us complaining of several episodes of diffuse edema starting in 2005. The edema involved his upper extremities, abdomen, chest, and lower extremities. During the episodes, he also experienced nightly fevers and would develop an urticarial rash affecting his chest and back. He stated that this would happen about once per year and would last for 2-3 months. He has never experienced any difficulties breathing or fatigue with each flare. He states that he has smoked 1 pack of cigarettes per day for the previous 40 yrs. Otherwise, he has no significant medical problems or risk factors for chronic disease. Upon laboratory evaluation, the patient was found to have a normal WBC but with an abnormally elevated eosinophil percentage (45%). All other CBC parameters were normal. Routine chemistry and liver studies were normal. The only other laboratory value that was found to be abnormal was an elevated IgE at 845 IU/mL. C3, C4, and C1 esterase inhibitor were all within normal limits. Since he had an abnormal eosinophil percentage, FISH for a FIP1-LP/PRF1A fusion was sent. This returned back as normal. CAT scan was unremarkable other than mentioning mild esophageal thickening. EGD was performed to evaluate this and revealed only mild gastritis with an esophageal biopsy of the mid-esophagus showing intraepithelial eosinophils. Based on the conglomeramation of findings mentioned above, it was felt that this patient’s clinical syndrome could best be described as episodic angioedema with eosinophilia, also known as Gleich Syndrome.

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GIANT CELL TUMOR OF BONE: A “BENIGN” TUMOR BEHAVING MALIGNANTLY  
Dickey A, Hamilton RD  
University of Mississippi Medical Center, Ridgeland, MS.  
Case Report: Giant cell tumor of the bone (GCT) is a locally destructive tumor that occurs mainly in the long bones of adolescents and young adults. GCT of bone is a benign, locally destructive neoplasm that is characterized by giant osteoclast-like cells and a stromal mononuclear population. GCT’s have a high rate of local recurrence and can rarely undergo (<10%) malignant transformation. A 34-year-old black female with no significant past medical history presented complaining of cough and hemoptysis. A large 10 x 12 x 9 cm mass arising from the thoracic spine at T3-T5 was found to be invading into the posterior mediastinum and surrounding chest with a resultant large hemotorax. A biopsy of this mass revealed a multinucleated giant cell tumor. The patient underwent tumor embolization followed by posterior spinal stabilization around the mass. She was given neoadjuvant chemotherapy with methotrexate, adriamycin, and cisplatin, and then underwent a subtotal bulk resection of the tumor with auto and allograft reconstructive surgery. Patient was lost to follow-up and presented 3 years later with chest pain and hemoptysis. A repeat CT of the thorax showed a new, large left upper lobe mass and an enhancing prevertebral and paraspinal mass around the thorax. She subsequently developed respiratory failure requiring intubation as well as bilateral chest tubes that resulted in a prolonged hospitalization. After recovery, it was decided to treat the patient with denosumab, a monoclonal antibody to RANKL, at 120 mg subcutaneously on d1, d8, d15, of a 28-day cycle.

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Giant cell tumors of bone account for approximately 3-5% of all primary bone tumors. The primary treatment modality remains surgical, but local recurrence rates range from 10-50%. The strongest predictor of GCT expressing high levels of RANKL which is thought to recruit mononuclear precursor cells to the tumor site where they are involved with bone destruction associated with the tumor. The development of denosumab, a fully humanized monoclonal antibody to RANKL led to a phase II clinical trial of patients with unresectable or recurrent GCT. The exact role of denosumab in treatment of GCT is still under investigation, but it offers a promising treatment approach to patients with aggressive and locally recurrent, or metastatic tumors.

172 TORSUS HYPERPLASIA OF PYLORIC ANTRUM SIMULATING GASTRIC MALIGNANCY
Gaeta PR, Reddy R, Davis ED, Elkins S

Case Report: Idiopathic hypertrophy (Torus hyperplasia) of the pyloric muscle in adults is a rare entity, caused by circular muscle hypertrophy affecting the lesser curvature in the pyloric region. The pathogenesis is unknown but it can be congenital and persist till adulthood or is acquired rapidly in few weeks. It is mainly a primary type which is idiopathic and of uncertain origin and the secondary type which is the result of muscular thickening due to inflammation, ulceration or carcinoma. The patients have varied presentations. We report a case in a 68 year old lady with 3-4 weeks of abdominal pain, nausea, vomiting and 15 lb weight loss. A upper endoscopy had a small ulcer with clean base at the GE Junction and a 5 cm x 4 cm prominence in the antrum, along the posterior wall, extending into pyloric channel. A endoscopic ultrasound showed it to be a endophytic mass in the gastric antrum with mixed, hypo and hyperechoic areas and no evidence of extrinsic compression. The biopsy revealed prolapsed mucosal folds in the middle of the lesser curvature wall which formed a distinct central pseudolumen with an ulcer at the base. A Cross-sectioning revealed a thickened, circumferential thickening of the underlying stomach wall. Microscopically, no malignancy was identified and there was chronic ulceration with underlying, severe concentric hypertrophy of the circular muscle, along with marked prolapse of the overlying mucosal surface. Special stains were positive for Candida species. The smooth muscle proliferation, like in our case, can mimic other spindle cell tumors or a gastrointestinal stromal tumor. IHC stains with smooth muscle actin can highlight these areas but are negative for CD34 or CD117 ruling out the other mimickers. The identified ulcer in our case could be the “cause” or the “effect” of this condition, but unfortunately, it cannot be determined which came first. More studies are needed to determine if the potential risk factors like chronic inflammation, chronic ulcers have any role in development of Torus Hyperplasia.

173 HODGKIN’S DISEASE: IT IS IN THE NECK, ALRIGHT!
Gupta D, Popescu M

Case Report: Hodgkin's disease (HD) comprises 5% of childhood cancers in the US, with the highest incidence being among 15 to 19 years old. It is rarely seen under the age of five, with a reported incidence of 0.5 per 100,000 population by the National Cancer Institute. The most common manifestation of HD is painless lymphadenopathy typically seen in the head and neck region. 15% of patients will have noncontiguous extranodal involvement (stage IV) at presentation, most commonly involving the lung, liver, bones, and bone marrow. Primary CNS involvement has an incidence of roughly 0.2-0.5%. Case reports and short case series have described initial paraspinal mass presentation of HD in rare settings. The few reported cases of cervical spine involvement have been in adults. We describe a rare case of primary cervical epidural Hodgkin's disease in an almost 4 year old girl. She presented with persistent neck pain after a fall. CT/MRI imaging revealed a perivertebral mass, with epidural extension and mass effect on the C2 cord. Biopsy of a cervical lymph node showed classical Hodgkin lymphoma. Further evaluation (PET/CT, bone scan) revealed only lymphadenopathy in the neck and chest but multiple bone metastasis, consistent with stage IV disease. No lung or bone marrow involvement was found. She was treated with combination chemotherapy and radiotherapy with great disease response and maintained normal functional status. Detection of the paraspinal mass, prior to neurological compromise was possible in this patient due to a serendipitous fall requiring imaging studies. It is highly unusual for a patient with advanced HD to be diagnosed before symptoms develop. We believe this to be the youngest case of HD with spinal involvement reported in the literature. We aim to make clinicians aware of the rare occurrence of this disease in this younger age group and that extranodal epidural disease may be the initial presentation. This case report also highlights the value of early detection ie prior to development of neurological deficits so the patients can be managed conservatively with excellent outcomes.

174 SYSTEMIC MASTOCYTOSIS: A CASE REPORT ELIZABETH HERRINGTON, DO AND STEPHANIE ELKINS, MD DEPARTMENT OF INTERNAL MEDICINE, DIVISION OF HEMATOLOGY, UNIVERSITY OF MISSISSIPPI MEDICAL CENTER, JACKSON, MS

Case Report: Mastocytosis is a rare disease defined by uncontrolled proliferation of mast cells in one or more tissues and can be divided into cutaneous or systemic mastocytosis. We present a case of systemic mastocytosis. A 33 year old woman presented initially to the emergency department with a 3 month history of nausea, emesis, right upper quadrant abdominal pain, and occasional flushing. CT of the abdomen and pelvis showed no abnormality but did show diffuse scoliotic bony abnormalities. Bone scan was also diffusely abnormal with increased radiotracer uptake throughout the appendicular and axial skeleton. She was then referred to hematology. Laboratory examination revealed a mild leukocytosis with normal differential. Serum tryptase was 2.19 ng/ml. Bone marrow aspiration and biopsy showed extensive infiltrates of atypical mast cells and large aggregates of mast cells with focal fibrosis comprising 30-50% of the marrow sample consistent with systemic mastocytosis. Flow cytometry revealed mast cell coexpression of CD2 and CD25. KIT Asp816Val mutation analysis was positive for a mutation. FISH for CHIC2 showed no evidence for CHIC2 (FIP1L1) or PDGFRα alpha abnormality. She was treated with H1/H2 antihistamines with symptomatic improvement.

Our patient met criteria for indolent systemic mastocytosis based on the extent of involvement in her bone marrow as well as having coexpression of CD2/CD25. c-KIT point mutation was detected at codon 816.

175 A RARE CASE OF ASCITES: PRIMARY FALLOPIAN TUBE CARCINOMA
Jones C, Rahdi S, Cobos E, Nugent K

Case Report: Primary fallopian tube carcinoma (PFTC) is a rare malignancy accounting for approximately 1.8% of all female genital tract malignancies. With the incidence of PFTC approximately 3% of that for ovarian carcinoma and with overlapping clinical presentations, the preoperative diagnosis of PFTC is infrequent occurring in approximately 4% of cases. Once diagnosed 5-year survival rates range from 22-57% and are significantly influenced by stage at diagnosis, presence of residual tumor, and tumor histology.

We present a case of fallopian tube carcinoma presenting with abdominal pain and ascites. Imaging and labs at presentation revealed an elevated CA-125 at 3,556 units/ml, peritoneal fluid cytology suspicious for malignancy, and a CT scan of the abdomen with a 7 cm X 8 cm pelvic mass, and probable carcinomatosis. Upon review of the surgical specimens a final diagnosis of PFTC was made.

Primary fallopian tube carcinoma is a rare female genital tract malignancy with vague presenting symptoms often attributable to other abdominal or genital tract pathology. While studies of serum markers such as CA-125 and β-hCG, help with diagnosis, assessing treatment response and have prognostic significance, their elevation is not specific to PFTC. Without specific diagnostic tools the preoperative diagnosis of PFTC can be reached only with high clinical suspicion.
THE ROAD LESS TRAVELED: THE UNCERTAINTY SURROUNDING CURATIVE THERAPY FOR MALIGNANT PHEOCHROMOCYTOMA

Kemp S, Engel L. LSU-Health Sciences Center, New Orleans, LA.

**Case Report:** A 21 year old man with history of benign pheochromocytoma status post right adrenalectomy at the age of four years old was transferred from an outside facility due to suspected recurrent pheochromocytoma in the remaining left adrenal gland. The patient had multiple hospitalizations for hypertensive emergency and the workup included elevated urine metanephrines and a left adrenal nodule. He presented to our facility with systolic pressures in the 200s and severe headaches. Phenoxybenzamine, lisinopril, and hydralazine were started. After sufficient alpha blockade, metoprolol was initiated and metyrosine was also administered to decrease the catecholamine production. Further CT studies of the thorax, abdomen and pelvis indicated that in addition to a left adrenal nodule, there were also lesions in the lung, liver, bladder and adenopathy in the region of the seminal vesicles and pelvic floor. I-123 MIBG whole body scan was performed and findings were consistent with malignant pheochromocytoma involving the left adrenal gland, bladder wall and pelvic adenopathy. At a multi-specialty conference, a consensus was reached that the patient was not a candidate for surgical debulking given the significant morbidity that would result. An application to the FDA for use of MIBG in a non study patient was granted and the patient was scheduled to receive treatment.

**Discussion:** Pheochromocytomas are catecholamine producing neuroendocrine tumors with an incidence of 2 to 8 per million adults. Commonly, the presentation consists of paroxysmal hypertension, headache, palpitations, and diaphoresis. Recurrence has been described in 4.6% to 6.5%; frequency of malignancy approaches 10%. Sites of common metastasis include lymph nodes, bone, liver and lung with occurrence of up to 20 years after the initial presentation. There is no cure for malignant pheochromocytoma. Surgical debulking is the current favored intervention; however, the data suggests a successful reduction in hormonal activity does not improve survival. MIBG Radiotherapy and Chemo therapy have been used as an adjuvant therapy after debulking as well as an alternative to surgery.

I GOT PHIL+ ALL AND I HAVE FIFTEEN SIBLINGS

Narmala SK, Puligordum S, Boulmay BC. LSU-Health Sciences Center, New Orleans, LA.

**Case Report:** A 53 year male presented to an outside facility with 2 months of aching, non-radiating left upper quadrant abdominal pain. He was diagnosed with chronic myeloid leukemia (CML) and was prescribed hydroxyurea, allopurinol, and imatinib and discharged home. He never started imatinib due to high cost and returned five weeks later with bifrontal headaches, weakness, subjective fevers and dyspnea on moderate exertion. Laboratory work-up revealed anemia, thrombocytopenia and elevated white count at 74,000 per ml with 24% blasts noted in differential. He was then transferred to our facility for management of CML in blast crisis. A bone marrow biopsy and aspiration were performed that showed a 100% cellular marrow with trilineage aplasia. Peripheral blood (PB) flow cytometry was consistent with a pre B cell lineage. PB fluorescence in situ hybridization was positive for the BCR/ABL 1 translocation and PB cytogenetics showed 46,XY; (9; 22) (q34 q11.2). The patient was diagnosed with Philadelphia chromosome positive acute lymphoid leukemia (Ph+ ALL) and was started on Hyper CVAD (cyclophosphamide, vincristine, doxorubicin, and dexamethasone) chemotherapy with imatinib given on days 1-14 of each cycle. He has been referred for an allogeneic stem cell transplant (SCT); he has fifteen siblings who are being typed as potential donors.

**Discussion:** Philadelphia chromosome is the short chromosome 22 that results from the translocation of chromosomes 9 and 22. It incorporates BCR/ABL fusion complex that has enhanced tyrosine kinase activity and activates several proliferative and pro-signaling pathways resulting in leukemogenesis. It is the most frequent cytogenetic anomaly found in adult ALL patients and its incidence increases with age. Ph+ ALL is historically known to be the subtype with worst prognosis. SCT is the only curative procedure for adults with this subtype of ALL. When treated with traditional ALL chemotherapy regimens patients with Ph+ ALL have a very short period of complete remission (CR), and patients often do not survive to SCT. With the introduction of imatinib almost 100% of these patients attained a CR that was long lasting and up to 70% receive SCT. Imatinib and other tyrosine kinase inhibitors have revolutionized the management of the Ph+ ALL patients that otherwise had a very poor prognosis.
setting of TTP prompted hematology consultation on hospital day 3 and she was started on empiric therapeutic plasma exchange (TPE) at that time. Prior to initiation of TPE, a blood sample was drawn from her and sent for ADAMTS13 activity level. Quantitative analysis of this patient's plasma revealed an ADAMTS13 activity of 16% with an absence of ADAMTS13 inhibitor. After the first of five procedures, she recovered some of her neurologic deficits. After all five treatments, she was back to her baseline neurologic functioning capacity.

An atypical clinical presentation makes TTP diagnosis difficult, preventing prompt management of TTP. This case highlights the importance of early recognition of TTP in patients who may not have the expected clinical or laboratory findings.

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PERSISTENT FEVER IN CROHN'S DISEASE
Tay G, Haas A, Engel L, Lo-Blaise B LSU-Health Sciences Center, New Orleans, LA.

Case Report: A 36 year old African American female with history of severe Crohn's disease was previously admitted for partial SB obstruction. She was started on infliximab and prednisone and showed clinical improvement. Following a prednisone taper, the patient developed progressive nausea and vomiting, diarrhea, a 15 lb wt loss, and intermittent subjective fevers. At the time of admit, the patient was tachycardic, ill appearing, but abdominal exam was benign. Laboratory data showed WBC 10.1 x 10^3/mm^3, Segs 59%, Bands 2%, and H/H of 10.8 g/dl/32.1%. The patient had persistent fever throughout hospitalization despite receiving multiple courses of broad spectrum antibiotics and having an unremarkable infectious workup. CT abdomen showed bowel wall thickening, edema with a small focus of normal bowel in between, representing a skip lesion. Additionally, a dilated loop of bowel anterior to the uterus in the pelvis was identified with increased inflammatory changes since prior studies. Scattered mesenteric and retroperitoneal lymph nodes were also reported. Lymph node biopsy resulted in a diagnosis of mature T-cell lymphoma. The patient was started on chemotherapy with cyclophosphamide, vincristine, etoposide and prednisone (Adriamycin not given secondary to heart disease) but unfortunately, succumbed to her disease.

Discussion: A number of biological agents targeting specific molecules involved in gut inflammation including TNF-alpha and its receptors are now used in the treatment of Crohn's disease. Medications such as Infliximab have been successful used in inducing and maintaining remission in Crohn's disease in both short and long term time periods especially when used in combination with medications such as azathioprine and/or steroids. However, recent reports suggest that an excessive number of cases of T-cell lymphoma occur in patients with Crohn's disease who are treated with these agents.

This case highlights the need for continual studies to better understand the association between lymphoproliferative disorders and immune-modulating therapies.

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DON'T PLAY WITH MISMATCHES: ACUTE HEMOLYTIC REACTION DURING ALLOGENEIC STEM CELL INFUSION FOR HIGH RISK MYELODYSPLASTIC SYNDROME
Thigpen SC, Bridges JK, Elkins S University of Mississippi Medical Center, Jackson, MS.

Case Report: Allogeneic stem cell transplantation from an HLA matched donor is occasionally performed when there is an ABO mismatch with the recipient. We report a patient with high risk myelodysplastic syndrome (MDS) and high risk comorbidities who experienced an acute hemolytic reaction during stem cell infusion despite efforts to prevent this occurrence. A 63-year-old Caucasian man with an artificial aortic valve, MDS, and multiple cytogenetic abnormalities presented for conditioning chemotherapy and allogeneic stem cell transplant. The patient, who was maintained on full dose heparin throughout his transplant, was blood group O positive while his HLA matched unrelated donor was blood group A positive. Anti-A titer was 1:64 prior to admission. The patient underwent plateapheresis twice, which reduced the anti-A titer to 1:16. Also, red blood cell reduction was performed on the donor's stem cell product. Despite these measures, after 45 cc's of the stem cell infusion, the patient developed chest tightness, shortness of breath, back pain, pink urine, fever, and tachycardia. The infusion was stopped. Intravenous fluids and lasix were administered. Labs reflected active hemolysis. After 90 minutes, the stem cell infusion was resumed slowly and, 17 hours later, completed. The patient subsequently developed renal failure over the following week and eventually required renal replacement therapy. Additionally, his course was complicated by alveolar hemorrhage and respiratory failure, necessitating cessation of his heparin. He eventually recovered and was discharged to a long term acute care facility.

This case highlights several challenging scenarios: 1) infusion of stem cells from an HLA matched, but ABO mismatched, donor; 2) management of an acute hemolytic reaction when the patient must have, in order to survive, the product causing the reaction; 3) stem cell transplant in a patient with an artificial heart valve; and 4) management of the potential sequelae of an acute hemolytic reaction and of stem cell transplant. Continued improvements in processing and preparation of stem cell products offer hope for fewer complications with ABO incompatible transplantation in the years to come.

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SEVERE PEMPHIGUS ERYTHEMATOSUS RESISTANT TO SYSTEMIC CORTICOSTEROID THERAPY
Umuyarova E, Mallery K, Tijani I. TTUHSC, Lubbock, TX.

Case Report: Pemphigus erythematosus is a variant of superficial pemphigus with features of lupus erythematosus. We report a case of pemphigus erythematosus resistant to systemic corticosteroid therapy.

A 37 y.o. female presented with history of progressively worsening skin rash. Physical examination revealed well-demarcated, superficial, erosive lesions located on the face, abdomen, chest, back and all extremities (Figure 1). Laboratory tests were noncontributory and histopathological studies revealed pemphigus erythematosus.

Patient was started on Methylprednisolone and Azathioprine. She continued to deteriorate and Rituximab therapy was initiated, which resulted in complete regression of the disease.

Pemphigus erythematosus is a rare type of pemphigus that usually has mild manifestation, diagnosed by skin biopsy and responds well to systemic corticosteroids. Our patient presented with a severe manifestation of the disease characterized by multiple large lesions involving most of her trunk and all extremities without any response to systemic corticosteroids and azathioprine. This presentation highlights the possibility of another medication being added to the treatment list for pemphigus erythematosus.

Our patient probably represents a rare case of severe pemphigus erythematosus resistant to combination of systemic corticosteroids and azathioprine.
PYROPOLYKOCYTOSIS PRESENTING AS IRON OVERLOAD

Williams JC, Elkins S 
University of Mississippi Medical Center, Jackson, MS.

Case Report: When developing a working diagnosis for an African American who presents with anemia, the evaluation of hemoglobinopathies tends to be in the forefront of the differential with little else considered other than iron deficiency and blood loss. We present the case of a 50 yo African American man, who presented to UMC emergency room with a complaint of weakness. Through his initial workup, the patient was diagnosed with hyperglycemia and discharged home with follow up. The patient was seen 3 months later in family medicine clinic for management of newly diagnosed type II diabetes mellitus. During that initial visit, the patient was found to have hepatomegaly, anemia and mild transaminits. In light of having a negative hepatitis series, the patient was referred to the Gastrointestinal Clinic for further evaluation. In the course of the GI workup, repeat serum CBC, studies for hepatitis; iron panel; and HFE gene analysis were procured. Along with these studies, computer to-mography of the liver and biopsy were performed. Again, the patient’s hepatitis series resulted negative along with his HFE gene assay. His serum ferritin however was extremely elevated in the setting of anemia. The liver biopsy was intrahepatic and the patient having signs of hemochromatosis. As a result of the hemochromatosis diagnosis, empiric treatment of phlebotomy was initiated. Unfortunately, the patient did not tolerate the first session secondary to resultant symptomatic anemia. Hence, the patient was referred to the Hematology clinic for further evaluation. A peripheral smear was obtained and elliptocytes were seen. Subsequent to the finding of ellipto-cytosis, an osmotic fragility test and Band 3 assay were ordered. Both tests resulted positive which yielded the diagnosis of Hereditary Pyropolykocytosis in the setting of iron overload. The patient is currently managed on Exjade with a normal serum ferritin level.

The incidence of Hereditary Pyropolykocytosis is rare, however, it is a diagnosable and manageable disease. This case illustrates the importance of maintaining a wide differential when initial lab studies rule out initial considerations.

Joint Plenary Poster Session
Infectious Diseases, HIV and AIDS
5:00 PM
Thursday, February 9, 2012

A PILOT STUDY OF THE PHARMACOKINETICS OF ANTI-TUBERCULOSIS DRUGS IN TUBERCULOSIS PERICARDITIS PATIENTS IN CAPE TOWN, SOUTH AFRICA

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1University of Texas Southwestern Medical Center at Dallas, Dallas, TX; 2University of Texas Southwestern Medical Center at Dallas, Dallas, TX; 3Groote Schuur Hospital, University of Cape Town, Cape Town, South Africa and 4Groote Schuur University, University of Cape Town, Cape Town, South Africa.

Purpose of Study: In Africa, the burden of Tuberculosis (TB) has been heavily influenced by the HIV/AIDS epidemic. TB pericarditis is the most common cause of pericarditis in Africa. In South Africa, it is the most common cause of pericardial constriction. In patients with AIDS, the 6-month mortality for TB pericarditis patients is 40%. The standard treatment for TB pericarditis is a combination therapy of rifampicin, isoniazid, ethambutol, and pyrazinamide over 6 months. However, the pharmacokinetics of these anti-tuberculosis drugs within the pericardial fluid is unknown.

Methods Used: Patients with suspected TB pericarditis effusion, referred to Groote Schuur Hospital in Cape Town, were evaluated for evidence of TB pericarditis and started on anti-tuberculosis therapy. We applied optimal sampling theory to identify seven sampling time points, post-dosage of the combination anti-TB therapy, using the ADAPT II program. Pericardio-centesis was performed at each of these times and a simultaneous blood sample was obtained from each patient. All samples were processed in a Biosafety Level 3 facility and stored at -80°C.

Summary of Results: Optimal sampling times for serum and pericardial fluid were 0, 42, 1.76, 3.37, 10.31, 12.1, and 24 hours. Eight male patients and 3 female patients between ages 20 and 47 were screened. Pericardial fluid and serum specimens were obtained from 3 patients for each time point. The intended number of patients for the pilot is 18, and enrollment continues. Pericardial fluid and serum samples will be analyzed for drug concentrations at each time point to determine the concentration time curves for the four anti-TB drugs.

Conclusions: There is a dearth of information on the pharmacokinetics of anti-tuberculosis drugs in TB patients. Data from this pilot study will show the concentration time curves of the 4 standard anti-TB drugs. The results of this pilot study will be used to design a larger study.

ASSISTING HIV/AIDS PATIENTS IN TIMES OF DISASTER: POST-KATRINA INITIATIVES SUPPORT CONTINUITY OF CARE

Arrieta MI1,2, Icenogle ML1,2, Eastburn SL2, Brye WS2, Hansbery ST2, Bonner V2, Crook ED1,2 1University of South Alabama, Mobile, AL; 2University of South Alabama, Mobile, AL and 1University of South Alabama, Mobile, AL.

Purpose of Study: The collapse of the healthcare infrastructure along the Gulf Coast after Katrina raised concern regarding the interruption of care for HIV/AIDS patients. A previous study identified medication procurement and inability to communicate with regular provider as major challenges for displaced HIV/AIDS patients. This study investigated changes agencies and providers implemented to ensure continuity of care for patients with HIV/ AIDS after disasters.

Methods Used: This qualitative study interviewed key informants (KI), including health care providers, administrators, and HIV/AIDS service agency administrators in MS and AL. Transcripts of taped interviews were coded using qualitative software. Subsequent discussions between coders led to consensus in the interpretation of the information. Findings were summarized and returned to KI for validation. KI e-mailed and focus group comments provided confirmation and clarification of findings.

Summary of Results: To ensure uninterrupted supply of medications, state health departments in MS and AL allow patients to register to receive medications from the state regardless of location and provide 3-month supplies. Service agencies ask patients to sign release forms that enable agencies to help clients obtain services or medications when evacuated. Service agencies and clinics provide disaster preparation and medical awareness training, and ensure clients have cards or passports listing meds and dosages. Gulf Coast agencies partner with agencies outside the area to provide shelter if evacuation is needed and provide limited supplies for evacuation, along with registries of resources in the local and evacuation areas to help patients connect with support agencies. Emphasis is placed on the provision of mental health services post-disaster.

Conclusions: HIV/AIDS health providers and service organizations have made important changes to foster continued care for patients in times of disaster. The elements of a potentially strong network exist but the capacity of the network remains limited as a function of available resources.

AN ATYPICAL CASE OF LARYNGITIS: LARYNGEAL TUBERCULOSIS IN THE FIRST WORLD TRAVELER

Austin CA, Beahm D, Broering GH, St Cyr S, Lopez FA 
LSU-Health Sciences Center, New Orleans, LA.

Case Report: Case: A 47 year-old male with no significant past medical history presented to an outpatient otolaryngology clinic with a three month history of sore throat. Upon further questioning, he also related a one year history of hoarseness that preceded his recent sore throat. After a detailed review of systems, the patient revealed other symptoms, including a ten pound weight loss, night sweats, chills, easy fatigability, and non-productive cough of two months duration. His social history was significant for extensive travel to India, Southeastern Asia, and Haiti over the past twenty years, as well as an extensive smoking history of twenty-eight pack years. He also had been incarcerated multiple times over the past five years for three to four days at a time. His physical exam revealed a thin man with tachycardia to the 110s and a body mass index (BMI) of 18. He had bilateral temporal wasting, decreased muscle mass, submandibular lymphadenopathy (largest measuring 1.5 cm) and hoarseness upon speaking. Laboratory results included a total WBC count of 14.3 x103/uL, with 91% segmented neutrophils, hemoglobin of 10.2 g/dL, hematocrit of 32.1%, MCV of 78.8 FL, and an albumin of 2.6g/dL. The final labs revealed a total WBC count of 14.3 x103/uL, with 91% segmented neutrophils, hemoglobin of 10.2 g/dL, hematocrit of 32.1%, MCV of 78.8 FL, and an albumin of 2.6g/dL. The final diagnosis made via direct laryngoscopy, which revealed granulomatous disease that had destroyed the larynx and some of the surrounding structures, was consistent with laryngeal tuberculosis.

Discussion: A century ago, laryngeal tuberculosis was the most common chronic infection of the larynx. In the following decades the incidence of
laryngeal involvement of TB decreased, and several papers published in the 1960s and 1970s labeled the condition a "forgotten diagnosis" by physicians working in developing countries. Following the emergence of HIV and the dissemination of multi-drug resistant tuberculosis during the 1980’s, the disease underwent a world-wide resurgence. Since then, there has been a renewed interest in the various expressions of TB including laryngeal tuberculosis, highlighted by several papers that demonstrate changing trends in the epidemiology and presentation of upper airway tuberculosis. Currently, tuberculosis of the upper airway is found in approximately 1% of patients infected with TB.

187 A FAST GROWING MYCOBACTERIUM THAT GREW SO SLOW
Frerim K, Kumar S, Engel L, Morse S LSU-Health Sciences Center, New Orleans, LA.
Case Report: A 57 year old gentleman with a past medical history significant for end stage renal disease on continuous ambulatory peritoneal dialysis (CAPD) presented to the emergency department with complaints of abdominal tenderness, erythema around his peritoneal dialysis catheter site, and a 6 week history of a non draining skin lesion on his right lower leg. He also had nausea, vomiting, and fevers. He was initially suspected to have peritonitis; cultures were drawn from the peritoneal fluid; and he was empirically treated with peritoneal ceftazolin and cefazidime and discharged home. Two days later the patient returned to the emergency department with the complaint of “passing out”; in addition, he was noted to have continued fevers as well as abdominal tenderness. There was concern for possible sepsis induced hypotension and he was empirically placed on IV vancomycin and cefazidime. Peritoneal, blood, and urine cultures, including the initial peritoneal cultures, remained negative. He was again discharged home, although this time empirically taking peritoneal vancomycin and cefazidime. Almost one week post-discharge his peritoneal cultures grew out Mycobacterium chelonae and Mycobacterium abscessus. His catheter was surgically removed; he was converted to hemodialysis; and his antibiotics were de-escalated to gentamycin based on sensitivities.

Discussion: Peritonitis is a feared complication of peritoneal dialysis and is one of the most common reasons for conversion to hemodialysis. Frequent culprits in the non-tuberculous Mycobacterium are the fast growing Mycobacterium chelonae and Mycobacterium abscessus species; these organisms are ubiquitous and not typically found in immunocompetent patients. With proper incubation, growth is usually seen within 7-10 days on special media. Antibiotic therapy is not the same for both species; therefore sensitivity testing must be done to guide treatment. Our case was interesting because of the long incubation period required for growth with only the initial cultures becoming positive. These species require special media in order to expedite growth and identification; the diagnosis can be delayed if cultures are done on typical media. Therefore awareness of these mycobacterium species should warrant automatic culture whenever peritonitis in CAPD is suspected.

188 ROTA-VIRUS DIARRHEA:SUSPECT THE UNSUSPECTED
Gupta D, Macariola D East Tennessee State University, Johnson City, TN.
Case Report: A 14 year old female presented with a 4 day history of non bloody and non mucous diarrhea. It was associated with severe peri-umbilical non radiating sharp abdominal pain, bilious vomiting and fever up to 101 F. Past medical history was significant for an intentional 30 lb weight loss over the past 4 months by a healthy appearing girl. She was recently traveled to the Caribbean on a cruise ship but denied eating any local foods or seafood. She denied any sick contacts. Pertinent findings on physical exam were flat abdomen and mild diffuse tenderness in the periumbilical region. Complete blood count showed leukopenia and thrombocytopenia. Complete metabolic panel and urine analysis were normal. Stool studies for rotavirus were positive and negative for bacteria,ova and parasites. Beta HCG and Urine drug screen were negative. Monospot test and EBV titers were negative. Abdominal X-ray was unremarkable. She was diagnosed with rotavirus gastroenteritis and managed by intravenous rehydration and serial monitoring of blood counts. At outpatient follow-up in 1 week patient’s leucopenia and thrombocytopenia had resolved.

Discussion: Rotavirus is still the most common cause of acute gastroenteritis worldwide and by age 3 most children have developed immuni-
ty. Rotavirus gastroenteritis is uncommon in the adolescent population. While the gastrointestinal tract is the most common organ system affected by rotavirus there have been isolated case reports of extra-intestinal complications such as transient neutropenia, Henoch-Schonlein purpura, Raye’s syndrome, Hemolytic Uremic Syndrome, Disseminated intravascular coagulation and encephalitis. Our case highlights that thrombocytopenia and leucopenia can occur in combination as a complication of rotavirus infection. Therefore, clinicians should be cognizant to this when treating children with rotavirus, as serial monitoring and supportive management may be needed.

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189 UNUSUAL CASE OF HEPATITIS IN A NEONATE
Gupta D, Macariola D East Tennessee State University, Johnson City, TN.
Case Report: 8-day-old female presented to the ER with temperature of 96.3 F, bradycardia, shallow respirations, hoarse cry and emesis. She had good appetite and normal urinary output. Patient had a normal birth history. Physical examination showed a loss of 9.9% of birth weight, hypothermia, bradycardia and high pitched cry. Pertinent labs were thrombocytopenia, prolonged PT and PTT and elevated liver enzymes, normal electrolytes and ammonia levels. Lumbar puncture revealed bloody CSF with lymphocyte pleocytosis, low glucose and high protein and positive HSV PCR. EEG showed presence of sharp irritative and epileptiform waves in the left temporal-frontal head region, with normal brain imaging. Urine culture was positive for E. coli with a negative blood culture. She received treatment with 10 days of intravenous antibiotics and 21 days of high dose acyclovir (60mg/kg/day) for disseminated HSV and UTI sepsis. 10 days after completion of antiviral therapy patient presented with vesicular lesions on the chest consistent with recurrent herpes, with positive plasma HSV PCR and negative CSF HSV PCR. Patient then received 21 days of intravenous acyclovir and oral prophylaxis for 1 year with resolution of symptoms and no recurrence. Discussion: Incidence of neonatal herpes (HSV) is estimated at 9.6 per 100,000 births in 2006 with 75% of infants having a negative maternal history. Thus, when evaluating a neonate with hypothermia and hepatitis it is important to consider HSV in the differential diagnosis even with a negative maternal history and absence of vesicular lesions. This case report illustrates one of the rare and fatal complications of HSV which is disseminated disease accounting for 40% of neonatal herpes cases with 95-100% mortality rate without treatment and a 31-57% mortality with prompt treatment. The difficulties encountered in diagnosing disseminated herpes are presence of subtle symptoms and absence of vesicular lesions. Our case report highlights the good outcome that this patient had with prompt treatment thus advocating pediatricians to initiate acyclovir at the outset of such a presentation. In addition as cutaneous recurrence of HSV is an extremely common phenomenon pediatricians need to be vigilant of this complication.

190 CHRYSEOBACTERIUM INDOLEGENES:A REAL "DOWN"ER
Gupta D, Lawson K, Macariola D East Tennessee State University, Johnson City, TN.
Case Report: 4 month male with trisomy 21 and endocardial cushion defect with compensated heart failure was admitted for RSV bronchiolitis and suspected pneumonia. Within 2 days of admission patient had to be placed on mechanical ventilation. Empiric antibiotic treatment for suspicious infiltrates on chest x ray with azithromycin (5days), rocephin (9 days) and vancomycin (4 days) was given but no bacterial isolates on culture. On day 11 of hospitalization the patient developed indolent endocardial culture showed Chryseobacterium indologenes sensitive to only trimethoprim-sulfamethoxazole and cefepime & candida albicans. Appropriate treatment was initiated. Patient had received multiple invasive procedures: central lines for access, bronchoscopy & multiple endotracheal reintubation. Ventilator circuit culture was negative for chryseobacterium. The patient died on day 14 of hospitalization with autopsy revealing pulmonary alveolar hemorrhages & necrotizing pneumonia attributable to RSV bronchiolitis.
and C. indolgenes infection and signs of pulmonary hypertension with right heart dilatation and hypertrophy. C. indolgenes is a rare nosocomial human pathogen. Most common presentations are pneumonia and meningitis seen in immunocompromised patients especially elderly and rarely children. Infections are acquired from contaminated medical devices requiring fluids as C.indolgenes exists in water systems in the hospital. Risk factors for infection include use of invasive equipment in immunocompromised patients or long term broad spectrum antibiotics use. Typically this pathogen is known to be resistant to most antibiotics with >90% susceptibility to fluoroquinolones, piperacillin-tazobactam and 62% susceptibility to cephalosporin. This infection typically does not have a fatal outcome, unless patients have significant co-morbid conditions. There is established evidence that Down syndrome with congenital heart disease and RSV infection require prolonged hospitalization and can have poor outcomes. Infection with chryseobacterium in this case probably tilted the balance against this patient. Our case report aims to create awareness among pediatricians on considering this uncommon nosocomial infection in ICU patients and fatal outcome with Down’s syndrome and other co-morbid conditions. It is also a pointer for prudent antibiotic use.

191 MULTIPLE LIVER ABSCESSES DUE TO YERSINIA ENTEROCOLITICA UNCOVERING HEMOCROMATOSIS

Harris S1, Parasekakis F2 1LSU-Health Sciences Center, New Orleans, LA and 2Long Island College Hospital, New York, NY.
Case Report: A 69 yr old Caucasian woman with a history of type II diabetes mellitus and breast cancer presented to the emergency room with generalized weakness, poor appetite, weight loss, diarrhea and altered mental status. Initial vitals revealed hypotension, tachycardia and normal temperature. The exam was remarkable for a frail, ill-appearing woman with dry mucous membranes, tachycardia, absent left breast, hepatomegaly, and a stool with occult blood. Initial laboratory results revealed WBC 9800/mm3 (92% Neutrophils), mild thrombocytopenia, hypotremia, severe prenereal azotemia, hyperglycemia, hypoaalbuminemia and elevated liver function tests. She developed a fever of 103.4°F and was started empirically on vancomycin and piperacillin-tazobactam after cultures were sent. A CT scan of the abdomen demonstrated innumerable hepatic lesions thought initially to be metastases or multiple abscesses. Blood cultures eventually grew Y. enterocolitica. Colonoscopy was negative. Liver biopsy was consistent with pyogenic abscesses and tissue culture also grew Y. enterocolitica. Repeat CT scan after two weeks of piperacillin-tazobactam revealed shrinking hepatic lesions. A work up for hemochromatosis was initiated because Y. enterocolitica is known to have a predilection for iron overload states. She was homozygous positive for the hemochromatosis gene mutation (C282Y). Iron studies, transferrin saturation and liver biopsy were consistent with hemochromatosis.
Discussion: Y. enterocolitica is a well known cause of symptomatic, often self-limited gastrointestinal infections. Formation of extra intestinal abscesses is very rare and is usually associated with iron overload states such as hemochromatosis. Unlike most bacteria, Y. enterocolitica lacks siderophores to acquire iron and can therefore thrive only in locations where there is excess iron such as the gastrointestinal tract or extra intestinal locations in iron overload states. Although rare, Y. enterocolitica should be included in the differential diagnosis for patients with fever and multiple liver lesions even in the absence of gastrointestinal symptoms. Furthermore, when extra intestinal Y. enterocolitica abscesses are diagnosed, it is worth looking for underlying causes of iron overload states.

192 NEUROSYPHILIS IN A 50 YEAR OLD MALE

Hutchins K, Mezu-Patel N, Delahoussey R, Spera M, Engel L, Hull A. LSU-Health Sciences Center, New Orleans, LA.
Case Report: Introduction: Neurosyphilis is often considered a disease of the past. With early detection and the availability of treatment with Penicillin G, there should be no reason as to why anyone should suffer from the sequelae of Syphilis. Unfortunately this is not the case and although rare, neurosyphilis and its devastating side effects still do exist.
Case: The patient is a 50 year old Caucasian man with asthma who was diagnosed with neurosyphilis approximately eight months prior to presentation. The patient originally presented with mental status changes, confusion and memory loss. He was found to be serum RPR positive with a titer of 1:512, and CSF studies revealed a VDRL titer of 1:128. He was treated with two weeks of IV penicillin G, and his neurological symptoms slightly improved. However, over the next six months he developed increased confusion, ataxia, and unusual behaviors. He reported to us that time showed no abnormalities except for atrophy. His symptoms continued to worsen and he began to have episodes of psychosis. Two months later, he was re-admitted for a follow-up evaluation. His repeat serum RPR titer was 1:64, and his CFV VDRL titer had decreased to 1:16 indicating a successful treatment response with no need for further antibiotic therapy. His symptoms were nonexistent with the general paralysis form of neurosyphilis.
Conclusion: Neurosyphilis is a debilitating disease in all aspects of one’s existence, not only physically but mentally, socially, and emotionally. The natural history of the general parasyis form of tertiary Syphilis is progressive decline despite appropriate treatment with IV penicillin G at the time of diagnosis. Early diagnosis and treatment of syphilis at the primary or secondary stages of the disease and prevention of tertiary syphilis are the only effective tools that prevent the devastating consequences of general paresis.

193 MYCOBACTERIUM MUCOGENICUM AND FUSARIA IN A CASE OF GRANULOMATOUS LUNG DISEASE

Livett HK, Bariola JR UAMS, Little Rock, AR.
Case Report: A 26 year old woman presented with 3 months of dyspnea that began after she helped clean up tornado damage. She had pleuritic chest pain, dyspnea at rest, chills, fatigue, and night sweats. She denied weight loss, productive cough, or hemoptysis. Her mother has sarcoidosis and has been treated for an unknown fungal infection. She was afebrile and her lungs were clear to auscultation. Her chest x-ray showed a nodular opacity in her right lower lobe. CT scan revealed scattered tree-in-bud opacities in bilateral mid-lung zones, nodular consolidations, and multiple small pleural based nodules. There was lymphadenopathy in the paratracheal and subcarinal region but no hilar lymphadenopathy. Blood culture grew Mycobacterium mucogenicum/ Mycobacterium phocaicum and cultures from a resected nodule grew Fusarium species. Pathology from the nodule along with a mediastinal lymph node was significant for non-caseating granulomas with multi-nucleated giant cells and some patchy necrosis. When she presented, her WBC count was 3470 cells/ml, with 18% lymphocytes and an ALC of 600. Calcium was 8.5 (8.6-10.2 mg/dl), HIV, ANA, and ANCA were all negative. Angiotensin converting enzyme was normal. Two years prior, her ALC had been noted to be 600 cells/ml. An immunophenotyping evaluation revealed lymphopenia and decreased T lymphocytes, NK cells, and B lymphocyte subpopulations. These results raised the concern for Combined Variable Immune Deficiency or other immunodeficiency, and further evaluation is underway. She was started on therapy for the Mycobacterium and Fusarium. At follow up, her symptoms have all greatly improved, but her ALC is 500 (6%).
Concerning diagnosis: Granulomatous disease due to Mycobacterium or Mycobacterium mucogenicum is rare in immunocompetent individuals. Infection with one or more of these organisms in otherwise healthy individuals should prompt immunologic evaluation.

194 SARCOIDOSIS ASSOCIATED WITH MYCOBACTERIUM AVIUM-COMPLEX INFECTION

Loomba A, Palle S, Estrada B, Custodio H University of South Alabama, Mobile, AL.
Case Report: An 11 year old African American male presented with a history of fever associated with chills, night sweats and generalized myalgia for 2 weeks. His physical examination was significant for bilateral cervical lymphadenopathy and mild hepatomegaly. The initial white blood cell count was 18.2 thousand/mcl, platelet count 598 thousand/mcl, ESR 104 mm/hr and CRP 12.5mg/dl. His urine analysis, serum electrolytes, creatinine, urea and metabolic profile were unremarkable and the Chest radiograph revealed bilateral infiltrates. A computerized chest tomography (CT) of his neck, chest and abdomen showed a diffuse reticulo-nodular pattern within the lungs with associated supra-clavicular, axillary, mediastinal and mesentric lymphadenopathy and hypo attenuating foci within the right kidney. Given the duration of his fever and associated clinical and radio-graphic findings comprehensive laboratory workup aimed to rule out bacterial and fungal infections was performed. The results of these studies which included blood and urine cultures were negative except for three positive sputum cultures for Mycobacterium Avium Complex (MAC). Laboratory workup aimed to rule out autoimmune and...
immunodeficiency disorders was negative. In addition, given the abnormal appearance of his kidneys in the CT scan, a renal biopsy was performed which reported the presence of multiple granulomas and multinucleated giant cells without hyaline-like inclusions and some necrosis. An ophthalmological examination revealed signs of ongoing inflammation bilaterally which included anterior synechiae and nodules in the iris and early “candle wax dripping” (periphlebitis) appearance in both funds. Results of his ophthalmological exam and renal biopsy lead to the diagnosis of sarcoidosis. Therapy with prednisone and azithromycin for 6 months lead into complete resolution of his symptoms. He has remained asymptomatic after discontinuation of therapy and 6 month treatment regimen for MAC with azithromycin. Discussion: Sarcoidosis is a systemic inflammatory disease of unknown etiology rarely observed in children. An association between sarcoidosis and infection with MAC has been recently reported in adults. Our case report illustrates the possibility of this association in pediatric patients.

195 ABNORMAL ECGS IN A WOMAN WITH HUMAN IMMUNODEFICIENCY VIRUS AND MEDICATION-INDUCED FANCONI SYNDROME

Mabry C1, Kleinpete M A2, Engel L1, Glancy DL1, LSU-Health Sciences Center, New Orleans, LA and Tulane Health Sciences Center, New Orleans, LA.

Case Report: Case: A 19-year-old woman with congenital human immunodeficiency virus (HIV) presented to the hospital with nausea, vomiting, and diarrhea for one week. Her HIV was being treated with tenofovir disoproxil fumarate. Serum electrolyte concentrations in mEq/L at that time were: potassium 1.4, sodium 139, chloride 119, and bicarbonate 14. The electrocardiogram recorded at admission showed changes suggestive of severe hypokalemia including sagging ST segments, low T waves, and prominent U waves. The hyperchloremic, hypokalemic acidosis (Fanconi Syndrome) was thought to be due to the tenofovir. After five weeks in the hospital the patient had improved and her electrocardiogram normalized. She was discharged on medications including potassium chloride 60 mEq three times per day by mouth, in an attempt to correct her chronic hypokalemia. Six days after discharge the patient was readmitted with confusion and profound weakness. The patient was found to have a creatinine of 1.6 mg/dL (baseline 2 months previously was 0.6) and a potassium of 10.5 mEq/L. She had ECG changes consistent with hypokalemia, an intraventricular conduction defect (QRS duration of 0.20 seconds) and tall, peaked T waves. Discussion: Vertical transmission of HIV continues to be a serious health problem in developing countries with over 95% of congenital HIV occurring in these areas. The widespread use of highly active antiretroviral therapy has decreased this transmission rate from 25% (no treatment) to 2%. Tenofovir is a Nucleotide Reverse Transcriptase Inhibitor which prevents replication of the virus by competing for incorporation into its DNA. Fanconi Syndrome is a known complication of this drug that occurs in about 1.6% of patients who use it. The nephrotoxicity of tenofovir is due to mitochondrial dysfunction. This causes a significant decrease in the energy used by the Na+K+ pump in the proximal tubules. This disruption allows for electrolytes and small molecules that would normally be reabsorbed to be lost in the urine. The result is a proximal renal tubular acidosis with hyperphosphatemia, glycosuria, and aminoaciduria.

196 ACUTE DIVERTICULITIS WITH EOSINOPHILIA MASQUERATED BY STRONGYLOIDES STERCORALIS

Mankongpiaisamrong C, Limswat C, Desai V Texas Tech University Health Sciences Center (TTUHSC), Lubbock, TX.

Case Report: Strongyloides stercolaris (SS) is one of the intestinal nematodes found worldwide specifically in developing countries but occasionally seen in developed country e.g. US more rarely in Texas. Transmission mode is from skin penetration and its life cycle can complete in human or soil. Infected person spreads the organism by cell-mediated immunity defect (CMI), e.g. HIV infection, malnutrition, transplant, steroid use and hematologic malignancy can increase the risk of SS infection, lead to autoinfection and hyperinfection. Clinical spectrum can be varied from being asymptomatic to disseminated infestation, depending on host’s CMI. Of interest, SS patients having eosinophilia appear to have better prognosis. An 88-year-old Hispanic lady, barefoot gardener, with HTN, colon cancer and COPD with recent acute exacerbation treated with 40-mg prednisone for 7 days 10 weeks ago presented with LLQ abdominal pain, loose stool and fatigue. Her abdomen revealed LLQ tenderness without guarding or rebound tenderness. For initial workup, CBC showed leukocytosis and markedly elevated eosinophils 26% compared to 9.8% 10 weeks ago. Her abdominal CT scan showed diverticular changes in sigmoid colon without inflammation. She was diagnosed with early acute diverticulitis and treated with Levofloxacin and Metronidazole since admission. Afterwards, stool culture grew nothing but many SS larvae found in stool O&F, not previously seen, and not seen in the sputum. A diagnosis of SS hyperinfection was made. Therefore, Ivermectin was initiated for 2 days and eventually she was discharged without complication on day 5 of admission.

In this case, we underscore that short course of steroid use could compromise patient’s immunity and might suppress eosinophil and lymphocyte function against parasitic infestation. SS patient might be asymptomatic. Hence, stool O&F obtained to rule out obscure parasite infestation is justified prior to steroid treatment given in order to avoid triggering hyperinfection. Given SS pain and hypereosinophilia with history of steroid use, parasitic infestation such as SS should not be overlooked. Clinical suspicion should be remained high despite living in non-endemic area due to growing number of immunosuppressed patients.

197 A CASE OF VIRAL MYOCARDITIS CAUSED BY INFLUENZA A

Nguyen L, Jordan M, Engel L LSU-Health Sciences Center, New Orleans, LA.

Case Report: A 73-year-old woman with a history of hypertension presented with complaints of productive cough with clear sputum, dyspnea on exertion, pleuritic chest pain, and subjective fevers and chills for approximately two weeks. The patient denied any exertional chest pain, orthopnea, paroxysmal nocturnal dyspnea, or lower extremity edema. The patient reported that her granddaughter had been recently hospitalized for treatment of confirmed Influenza A. On admission, the patient was noted to be febrile with a temperature of 106.8°F, heart rate of 117 bpm, blood pressure of 78/45, and pulse ox of 75% on room air. On physical exam, the patient appeared to be in acute heart failure with crackles at bilateral bases and an elevated jugular venous pressure of 9cm. Pertinent labs on presentation included a white blood cell count of 12.7 x103/mm3, mildly elevated LFT’s, and a troponin of 12.38 with EKG showing ST elevations in the inferior leads and CXR showing moderate pulmonary congestion. A transthoracic echocardiogram revealed left ventricle ejection fraction <10% and global hypokinesis. Because of the EKG and echo findings, the patient was emergently taken for left heart catheterization which showed normal coronaries. The patient was placed on broad spectrum antibiotics for sepsis, furazolidone for heart failure, and oselatinavir for possible influenza. Blood, sputum, and urine cultures all remained negative, but nasal swab for Influenza PCR was positive for Influenza A, H3. The patient was worked up extensively for other possible causes of her acute heart failure which included an ANA, HIV, acute hepatitis panel, ferritin, TSH, all of which were negative. Repeat echo after treatment demonstrated an improved LVEF of 30-35%.

Discussion: Myocarditis can be caused by a variety of infectious and noninfectious causes, including viral infections. The most common viral cause prior to the 1990’s was Coxsackie virus; however, Parvovirus B19 and Human Herpes Virus 6 are now more prevalent. Other viral causes include Influenza, which was noted in this patient. While the exact mechanism is unknown, experimental models with the Coxsackie virus suggest direct viral toxic effects to myocytes, perforin-mediated cell lysis, and cytokine expression.
obtaining cultures from blood, urine & cord tissue. Likewise, placentary culture was also obtained. Prevotella bivia was isolated from blood, cord tissue & placenta. The patient presented with hemodynamic instability and vasodilator therapy. She was treated with multiple normal saline boluses along with dopamine & dobutamine to maintain her blood pressure & renal function. She developed multiple episodes of seizures which were refractory to levetiracetam, phe- nobarbitol & fosphenytoin. MRI illustrated diffuse supratentorial encephalomalacia with both central & peripheral perfusion abnormalities. Marked thinning of the Thalamic caudum was also demonstrated along with areas of leukomalacia. EEG on day of life 11 showed low voltage activity. Due to the clinical and radiographic presentation, the parents opted for a DNR order. The infant was the removed from mechanical ventilation & inevitably suc-cumbed to septic shock.

Neonatal bacteremia is a prevalent issue occurring after delivery of the newborn. Around 5% of vaginal deliveries are complicated by neonatal bacteremia with higher risk in neonates with history of premature rupture membranes for ≥4 hours. Prevotella bivia is a normal flora of female geni- torinary tract and oral cavity. As such clinicians should be cognizant that this pathogen can cause neonatal sepsis as depicted in our case.

199 STREPTOCOCCUS PNEUMONIAE SPINAL EPIDURAL ABSCESS IN AN HIV POSITIVE PATIENT Spera M, Hutchins K, Mezu-Patel N, Delahoussaye RM, Graugnard W, Hull A LSUSc Health Sciences Center, New Orleans, LA.

Case Report: A 51 year old Haitian male with HIV (CD4 percentage of 23% and CD4 count of 310) presented with 7 days of constant, diffuse back pain that radiated down his anterior thighs bilaterally. The patient also complained of fever, chills, generalized weakness and numbness with tingling in his lower extremities. He denied bowel or bladder incontinence. He denied history of recent trauma, recent illness or IV drug abuse. The patient was diagnosed with HIV in 2007 and he is non-compliant with ART. The patient was febrile with a temperature of 101.3°F and tachycardia. Physical exam revealed no neurologic deficits. His WBC count was 21,100/mm3 and ESR was 114 mm/hr. Blood cultures were positive for streptococcus pneumoniae. An MRI of the lumbar region showed a spinal epidural abscess at L4-L5 causing stenosis of the spinal cord and crowding of the cauda equina. The patient was admitted for antibiotic therapy and neurosurgical evaluation. The decision was made to treat the patient with medical therapy alone for a minimum duration of 6 months of antibiotic therapy. The patient was started on IV Cef- triaxone. The patient’s blood cultures were clear of streptococcus pneumoniae several days later and his WBC count began to trend down. Repeat MRI was performed 8 days later and continues to show spinal epidural abscess.

Discussion: Streptococcus pneumoniae is a rare cause of spinal epidural abscess (SEA). There is no common presenting symptoms of epidural abscess are fever, back pain, and paraesthesia. A delay in treatment can result in irreversible paralysis. MRI of the spine is instrumental in diagnosing SEA. Treatment consists of antibiotic therapy alone or in conjunction with surgical intervention. A high clinical suspicion is necessary to diagnose SEA.

200 MRSA BACTEREMIA SECONDARY TO PELVIC ABSCES S Spera M, Mezu-Patel N, Hutchins K, Delahoussaye R, Graugnard W, Engel L, Hull A LSUSc Health Sciences Center, New Orleans, LA.

Case Report: Introduction: Staphylococcus aureus is the leading cause of bacteremia in adults. Patients who have undergone recent hospitalization or procedures are at increased risk for healthcare associated methicillin resistant S. aureus (HA-MRSA).

Case: A 54 y/o man with morbid obesity, recent treatment for cellulitis, degenerative disk disease, and grade I spondylolisthesis presented with 2 weeks of worsening back pain and difficulty walking. The patient had experienced chronic back pain for three years and received an epidural steroid injection 5 months prior to presentation. Labs drawn upon patient presenta-tion revealed elevated WBC count of 16,900/mm3 and blood cultures were positive for MRSA susceptible to vancomycin. Thus the patient was started on Vancomycin. He remained febrile with blood cultures positive for MRSA and an elevated WBC count after seven days with appropriate vancomycin dosing. A TEE showed no vegetations. Unable to obtain an MRI due to the patient’s body habitus and severe pain, he underwent CT imaging of the lumbar spine with contrast which was non-diagnostic. The patient developed acute renal failure secondary to IV contrast and his vancomycin dose was adjusted accordingly. With concern for an undiagnosed abscess, rifampin was added to improve intracellular penetration. Blood cultures became negative after 24 hour of rifampin therapy. Due to the patients worsening kidney function, vancomycin was discontinued and daptomycin was added. After several days on this regimen the patient displayed clinical improvement, his WBC count began to trend down, blood cultures showed no growth and the patient became afebrile. Open MRI was eventually performed and several pelvic/psoas/iliacus abscesses were noted. The patient was taken to the operating room for abscess drainage and a prolonged course of antibiotics was recommended.

Discussion: Rifampin has been shown to penetrate abscesses is com-monly used only in combination or as an adjunctive therapy for MRSA infection; resistance develops rapidly when used as a single agent. Although sensitivity studies showed our patient’s strain of MRSA to be susceptible to vancomycin, the patient showed no clinical improvement until rifampin was added to his regimen.

201 AN ‘INTERROGATIVE’ CASE. Toliver HL Tulane University, New Orleans, LA.

Case Report: The patient is a 46 year old Honduran man who presented to the hospital with complaints of four days of sudden onset fever, chills, dry cough, nausea, vomiting, and diarrhea. He had no recent travel history. He is a construction worker and also noted the increased presence of rats on the upper levels of the house. He endorsed decreased oral intake, abdominal pain, and decreased urine output during the previous four days. The patient initially was febrile to 102.7°F, blood pressure of 82/37 mm of Hg, heart rate of 130, and respirations of 26. There was scleral icterus and jaundice. He had crackles at both lung bases bilaterally and tachycardia. There was moderate, diffuse tenderness on abdominal exam without any masses. Initial labs revealed markedly abnormal liver function tests including aspartate aminox-transferase (AST) ≥ 710 IU/L, alanine aminotransferase (ALT) ≥ 220 IU/L, and alkaline phosphatase (ALKP) ≥ 74 IU/L, total bilirubin≥ 13.0 mg/dl and albumin< 1.6 g/dL. The patient’s international normalized ratio (INR) was within normal limits. Other significant labs on admission were total white blood cell count (WBC) of 12,000/mm3, hemoglobin 7.1 mg/dL, platelets 59,000/mm3 and creatinine kinase (CK)- greater than 8,000 mg/dL. Hepatitis panel, urine cultures, blood cultures, stool cultures, Human Immunodeficiency Virus se-rology, and urine drug screen were all negative. Serum chemistries were sig-nificant for a blood urea nitrogen-108 mg/dl and creatinine-7.5 mg/dL and lactate-4.4 mg/dL. Urinalysis was significant for 50 protein, large amount of blood, 6 white blood cells, 2-5 red blood cells’ high-powered field, and rare amorphous phosphate crystals. The urine sodium was 67. Computed tomog-raphy of the patient’s abdomen and pelvis revealed only sludge in the gall-bladder and a noncalcified left lower lobe nodule. A chest radiograph revealed normal lungs. Abdominal ultrasound revealed an enlarged, echogenic liver. In lieu of the patient’s history of working in an abandoned building in the presence of rodents, Leptospirosis was added to our differential which was confirmed with a positive Leptospira IgM-ELISA.


Case Report: Introduction: Polyclonal hypergammaglobulinemia is associated with heterogeneous group of conditions. Chronic liver diseases, especially viral hepatitis C, are well recognized and represent the largest proportion in this cohort. We report an interesting case of polyclonal gammopathy in a patient with HCV.

Case report: A 55 years old male with past medical history of HCV (genotype 1B) presented with a month history of foamy urine and back pain. Physical examination revealed trace pitting edema of both lower extremities. Routine blood tests showed signs of impaired kidney function, elevated total protein and calcium level, as well as normal liver function tests and albumin level. Urine chemistry tests were significant for high urine protein. Further ordered serum protein electrophoresis showed elevated total protein and gamma fraction with elevated serum free light chains (table 1) and immunofixation was consistent with a polyclonal pattern.
Case Report: Hypergammaglobulinemia is a condition that results from overproduction of immunoglobulins by plasma cells and can be divided into polyclonal or monoclonal gammopathy. Various renal diseases are frequently encountered in monoclonal plasma cell dyscrasias and thought to be related to paraprotein-mediated kidney injury, although this correlation is less transparent in patients with polyclonal hypergammaglobulinemia. Our patient had a polyclonal pattern determined by immunofixation, although he also had elevated serum kappa and lambda light chains, which may resist degradation, precipitate and cause proximal tubule dysfunction, as well as to form casts and obstruct the flow of tubular fluid and rupture the tubular epithelium.

Conclusion: Polyclonal hypergammaglobulinemia is a result of diffuse activation of plasma cells and reflects underlying clinical conditions, like hepatitis C. Occasionally, patients present with kidney damage.

Case description: A 52 y.o male presented with inability to urinate and bilateral lower extremity palpable purpura appeared and progressively worsened two days ago. Patient had a medical history significant for non-treated hepatitis C (genotype 1 A) and rapidly progressive glomerulonephritis. 4 days ago he was discharged from the hospital after being treated for acute renal failure, associated with RPGN. Tests for serum cryoglobulins were negative at that time. Physical examination revealed non-blanching purpura and hematuria and proteinuria and repeated cryoglobulin test turned out to be positive. Patient underwent hemodialysis, 7 day course of plasmapheresis and was started on oral terbinafine and topical miconazole. Skin biopsy showed florid acute and chronic inflammation, subepidermal vesicle formation, spongiosis, and intraepidermal neutrophils. His lesions showed significant improvement and he was subsequently discharged to finish a 4-week course of oral terbinafine. Later on, fungal culture grew E. floccosum.

E. floccosum is an anthropophilic dermatophyte that is particularly associated with tinea cruris. This fungus may also cause tinea pedis but infections elsewhere have been rarely reported. E. floccosum has been recovered from towels and undergarment but has not been recovered from soil. There are 2 reported cases of E. floccosum animal infection in the literature. An association between the patient’s fungal infection and the sick cattle he handled earlier could not be established. E. floccosum is a rare cause of tinea barbae. Annular scaly skin patches should raise suspicion of dermatophytosis. The inappropriate application of corticosteroid cream causes tinea incognito with significant delay in diagnosis and treatment.

Discussion: Cryoglobulinemia is characterized by the presence of cryoglobulins in the serum. These are single or mixed immunoglobulins, undergoing red cell aggregation at low temperatures. Several types of cryoglobulins have been identified. Despite ongoing investigations, the mechanisms of cryoprecipitation are still poorly understood. It appears to be partially related to the structure of component immunoglobulin heavy and light chains and the ratio of antibody to antigen in circulating cryoglobulin aggregates. Our patient’s first serum cryoglobulin test result was false negative, apparently happened due to processing in a colder temperature, which further led to changes in treatment strategy. This presentation highlights importance of strict compliance to proper sample collection and handling, non-adherence to which can contribute to late diagnosis and increased morbidity.

Conclusion: Overall, cryoglobulinemia is thought to be rare. Although it may be underestimated, due to false-negative test results.

Introduction: Sarcoidosis is an inflammatory disease affecting multiple systems characterized by the presence of noncaseating granulomas. Neurosarcoidosis occurs in 5-10% of sarcoidosis patients affecting cranial nerves, anterior hypothalamus and basal meninges. Among cranial nerves, seventh nerve paralysis can be transient and can be mistaken for Bell’s palsy.

Case: A 59-year-old African American women with a past medical history of hypertension, depression and GERD presented to the emergency room with 4 month history of subjective fevers, night sweats and 2 day history of difficulty closing her left eye. Vital signs on admission were unremarkable except for pulse rate of 117. Physical examination was significant for difficulty closing her left eye, left facial droop, and a 2 centimeter, firm mobile mass in front of her left tragus. The rest of her examination was unremarkable. The patient’s symptoms were consistent with Bell’s palsy. MRI of the brain was negative and CXR demonstrated perihilar lymphadenopathy. The patient had an elevated angiotensin converting enzyme level and fine needle aspiration of preauricular lymph node Revealed naked granulomas with multinucleated giant cells consistent with granulomatous lymphadenitis. The patient was diagnosed with neurosarcoidosis and was sent home on steroids. The patient had complete resolution of symptoms during her follow up appointment.

Conclusion: Neurosarcoidosis can affect any part of central or peripheral nervous system. Extra neurologic manifestations including lung, skin, eye, lymph node involvement if present can help in pointing diagnosis towards Sarcoidosis. Diagnosis is usually made if a noncaseating granuloma is seen in the lungs or an extra pulmonary organ in a patient whose clinical presentation is consistent with Sarcoidosis without other identified cause for the granulomas.

Case: A 35-year-old man with a past medical history of psoriatic arthritis and hypertension presented to the ED with new onset headache that worsened two days ago. He had a medical history significant for hypertension, depression and GERD. He also had nausea and vomiting. There was no history of trauma or infection, but he had seen a chiropractor on and off for one year for chronic neck and low back pain. On physical exam, he had no papilledema or tenderness of the frontal and maxillary sinuses. His neurological examination was normal. A MRI with contrast of the head showed diffuse pachymeningeal enhancement consistent with intracranial hypotension. Myelogram showed abnormal contrast extravasations into the dorsal epidural space along the length of T3-T8 due to a tear. Anesthesia was consulted for an epidural blood patch. After the patch, the patient’s headache resolved.

Case Report: A 21 year-old previously healthy white male admitted with a 2-week history of progressively enlarging and inflamed pustular lesion over Vasylyeva O, Smalligan R, Chua M, Khasawneh F

EPIDERMOPHYTON FLOCCOSUM INFECTION
Case Report: University of South Alabama, Mobile, AL.
SYMPTOM OF SYRINGOMYELIA IN A PEDIATRIC PATIENT

208 VERTEBRAL ARTERY DISSECTION AFTER CHIROPRACTOR VISIT
Jones J TTUHSC, Lubbock, TX.

Case Report: Vertebral artery aneurysms/dissections occur in both men and women at an average age of 48. They are more common in patients with a history of connective tissue diseases, such as Marfan's Syndrome or Ehlers-Danlos. They are also associated with neck trauma or manipulation, such as chiropractic maneuvers, sports, yoga, coughing, falls, and ceiling painting. One in 20,000 spinal manipulations results in an aneurysm/dissection and cerebrovascular accident. There is coexistent subarachnoid hemorrhage in 50-60% of adult cases. We present the case of a young woman with a vertebral artery dissection after a chiropractor visit. A 38-year-old woman with a past medical history of Poland’s Syndrome presented with complaints of headache, nausea/vomiting, blurry vision, diplopia, dizziness, and ataxia for two to three weeks which developed after a recent visit to her chiropractor. Her level of consciousness was also decreased. She was not taking any medications on admission and denied tobacco, alcohol, and illicit drug use. On physical exam, vital signs stable. The patient was drowsy but aroused to sternal rub. She was not oriented and followed simple commands poorly. She demonstrated nystagmus to the left and left sided weakness. CBC and electrolyte panel were normal. Urine drug screen and a hypercoagulable workup were negative. CT showed an acute left cerebellar process with extensive edema, mass effect, obstructive hydrocephalus, and possible tonsillar herniation. A VP shunt was placed. Subsequent MRI showed an acute left cerebellar infarct, involving the posterior inferior cerebellar artery territory and the anterior inferior cerebellar artery territory with hydrocephalus and pons-midbrain tegmentum, as well as a relative resistance to ischemia of the small cerebral arteries. MRA of the head and neck showed low flow and severe narrowing at the intracranial segment of the left distal vertebral artery near the basilar artery. The patient received mannitol for 7 days and gradually became more alert and responsive. At discharge, her limb strength and sensation were at baseline, but had some residual left-sided facial weakness and impaired sensation. Vertebral artery aneurysms/dissections are known complications of spinal manipulation procedures. The differential diagnosis for patients who present with headache, nausea, diplopia, and ataxia should always include vertebral artery aneurysms, especially if there is a recent history of a chiropractic visit.

209 OPTHALMOPLEGIA OF THE SWEET EYE
Martinez R, Vidal G LSU Health Sciences Center, New Orleans, LA.

Case Report: A 63 year old Caucasian female with a past medical history of type 2 diabetes mellitus, hypertension, hyperlipidemia, migraines and fibromyalgia presented with a three day history of progressively worsening double vision, dizziness, right eyelid droop and right temporal headache, which was unlike her typical migraine headaches. Physical examination revealed pupils that were equally reactive to light and accommodation, diplopia, partial right third cranial nerve palsy with right upper gaze difficulty and right eye ptosis. The rest of the physical examination was unremarkable. Laboratory studies were significant for hyponatremia and elevated triglycerides. Echocardiogram suggested mildly enlarged left atrium with an EF of 60%. MRI of the brain revealed hypertensity and a diffusion abnormality in the medial aspect of the right cerebral peduncle. These findings suggested an acute infarction involving the oculomotor nerve fascicle, consistent with diabetic third nerve palsy.

DISCUSSION: Cranial nerve mononeuropathy has an incidence of 1% within the diabetic population. This rare entity is typically seen in individuals over 50 years of age with a long-term history of diabetes. The classic clinical manifestations are sudden onset and include intense retro-orbital pain or headache, diplopia, unilateral ptosis, and restriction of extraocular muscles. Sparing of pupillary reaction is a distinctive diagnostic feature in diabetes. MRI is highly valuable in the midbrain tegmentum, as well as a relative resistance to ischemia of the small unmyelinated pupillary fibers are two mechanisms postulated to explain pupil sparing. Our case is unique in that it is very uncommon to exhibit isolated involvement of one muscle from idiopathic fascicular oculomotor nerve lesions. Moreover, diabetic third nerve palsy is typically attributed to peripheral nerve ischemia and not to brain stem infarction. MRI is highly valuable in this setting since it is able to examine the entire course of the oculomotor nerve and exclude these two pathophysiological processes.

210 PERIODIC LATERALIZED EPILEPTIFORM DISCHARGES INDUCED BY REPERFUSION INJURY
Oblin I,2, Ramsey E,1 LSUHSC, New Orleans, LA and O'Chesney, New Orleans, LA.

Case Report: PLEDs are EEG abnormalities consisting of repeated spike or sharp wave discharges that are focal or generalized to certain areas of the brain. Patients with PLEDs usually manifest with clinical seizures. These EEG waveforms are caused by acute destructive lesions that can be due to infection such as HSV encephalitis, anoxic brain injury, trauma, subarachnoid hemorrhage, or ischemic stroke. PLEDs present in a constant periodic interval between discharges that vary between 0.5 and 3 seconds. This abnormal wave pattern is usually transient. As the underlying etiology is treated, the PLEDs waveform decreases on EEG recording. In this case report, we
investigate PLEDs in a patient who suffered a reperfusion injury shortly after he underwent a left carotid endarterectomy. Edema and increased cerebral blood flow was noted on imaging studies. However, there was no evidence of ischemia related to the reperfusion injury. This abstract will cover the hospital course, including imaging studies, ECGs, and anti-epileptic drugs used as well as his management at discharge.

The literature will focus on case reports and published literature about PLEDs presentation in similar cases. Management will be discussed. In addition, the clinical relevance for this case report is to emphasize the need to recognize and treat PLEDs when discovered by treating the underlying etiology in addition to utilizing anti-epileptic medicines aggressively. By doing so, the patient benefits from a more favorable prognosis.

### 211 LET US SPARE THE AMBIGUITY: A CASE OF WALLENBERG SYNDROME WITH SPARING OF NUCLEUS AMBIGUUS

**Wooliscroft L, Ahmed J, Chua M**

**Texas Tech University Health Sciences Center, Amarillo, TX.**

**Case Report:** A 58-year-old male with history of DM2, HTN and previous TIA and stroke presented with left-sided headaches, nausea, vomiting, blurry vision, gait imbalance and vertigo for 48 hours. He also had left-sided facial numbness and numbness of the contralateral side of the body. His BP was 176/93mmHg, HR 76 /min, RR 15/min, and O2 sat of 99% on 3L. Exam revealed normal speech, nystagmus on left gaze, and no visual field deficits. Pupils were reactive to light, but there was a left-sided Horner’s syndrome and right gaze weakness. His uvula was midline and gag reflex was intact. Decreased sensation was noted on his left face and the right side of his body. Joint position sense was preserved. Motor strength was 5/5 in all extremities. Plantar responses were downgoing. There was a left finger-to-nose dysmetria, along with truncal and gait ataxia. CT scan of head w/o contrast showed no acute intracranial process and evidence of old ischemia. He was started on aspirin, statin and continued on clopidogrel. MRI of the brain showed left lateral medullary infarction. He also had diffuse white matter changes from ischemia related to the reperfusion injury. This abstract will cover the hospital course, including imaging studies, ECGs, and anti-epileptic drugs used as well as his management at discharge.

Wallenberg syndrome is a rare syndrome involving the lateral part of the medulla oblongata with consequent dysfunctions of vestibular nuclei (nausea, vomiting vertigo), inferior cerebellar peduncle (ataxia), central tegmental tract (palatal myoclonus), lateral spinohalamic tract (contralateral sensory deficit), trigeminal nucleus and tract (ipsilateral facial sensory deficit), nucleus ambiguous (dysphagia, dysarthria) and descending sympathetic fibers (Horner’s syndrome). Most are caused by an arteriosclerotic-thrombotic occlusion of the homolateral intracranial vertebral artery or PICA, but other causes include hemorrhage, mass, a demyelinating lesion, neuro-syphilis or encephalitis. In our case, the nucleus ambiguous and central tegmental tract were spared due to the limited size of the infarct, hence the patient did not present with dysarthria, dysphagia, hoarseness, palatal myoclonus or paralysis. The prognosis depends upon the size and location of the area of the brain stem damaged by the stroke.

**Joint Plenary Poster Session**

**Nutrition**

5:00 PM

Thursday, February 9, 2012

### 212 FACTORS ASSOCIATED WITH RAPID INFANT WEIGHT GAIN

**Rademacher S1, Halloran D1, Guild C1, Sandoz E1, Kanafani N1**

1Saint Louis University, St. Louis, MO and 2Saint Louis University, St. Louis, MO.

**Purpose of Study:** Studies suggest that rapid infant weight gain is a risk factor for obesity in early childhood. This study explored factors associated with rapid infant weight gain including feeding practices, sleep duration, and maternal attitudes about infant feeding.

**Methods Used:** Sixty normal birth weight term infants and their mothers were recruited from a single academic pediatric practice in the Midwest. Participants completed surveys at each of the infants’ well-child visits from birth to six months of age, and infant recumbent weight and length were obtained. We calculated change in weight-for-length z-score between birth and six months of age; rapid infant weight gain was defined as an increase of ≥0.67 standard deviations. Fisher’s exact test or Wilcoxon-Mann-Whitney were performed to determine statistical significance, as appropriate.

**Summary of Results:** Of the 51 (85%) mother-infant pairs remaining in the study at six months, 82.4% were African-American, and 84.3% used Medicaid as their primary insurance. By six months of age, 43.1% experienced rapid infant weight gain, and 29.4% were at or above the 95th percentile for weight-for-length. Duration of breastfeeding, infant television exposure, consumption of juice and sweet beverages at four months, sleep duration, and maternal depression were not associated with rapid infant weight gain. Infants who consumed baby cereal at four months were five times more likely to have rapid infant weight gain (95% CI 1.3,18.4). Mothers of infants with rapid weight gain were more likely to be concerned about their infant becoming overweight or overeating (z=−3.255, p=0.001).

**Conclusions:** Consumption of cereal at four months of age was associated with rapid infant weight gain. Mothers of infants with rapid infant weight gain were appropriately concerned. While other studies have shown early feeding of baby cereal to be a risk factor for childhood obesity, this suggests that this association of early baby cereal consumption and rapid infant weight gain is evident by six months of age.

**Joint Plenary Poster Session**

**Pediatric Clinical Case**

5:00 PM

Thursday, February 9, 2012

### 213 CORRELATION OF FETAL ECHOCARDIOGRAPHY, POSTNATAL ECHOCARDIOGRAPHY, AND POSTNATAL ELECTROCARDIOGRAPHY IN PATIENTS WITH AND WITHOUT CONGENITAL HEART DEFECTS

**Anand T, Daigle H, Lutin W**

**Georgia Health Sciences University, Augusta, GA.**

**Purpose of Study:** Echocardiography (ECHO) can be used to diagnose congenital heart defects (CHD) in fetuses and infants. The purpose was to measure the relationship between diastolic flow and PR interval in infants and to determine the normal AV interval of the fetus. Specifically, we studied developmental changes in active atrial filling in the fetus measured with ECHO and its correlation with PR interval in young infants.

**Methods Used:** Data from ECHO and electrocardiography (ECG) were reviewed from patients seen in the GHSU pediatric cardiology clinic from June 2010 to June 2011. Fetal Doppler ECHOs of 50 fetuses of gestational ages 20 to 30 weeks with (7) and without (43) CHD were measured. Postnatal Doppler ECHOs of 39 infants of ages 0 to 8 weeks with (18) and without (21) CHD were also identified. The AV and VA intervals and heart rate of 3 heartbeats from each ECHO were measured from inflow of blood through the mitral valve. ECGs from the same day as the postnatal ECHOs were reviewed. The PR and RP intervals and heart rate of 3 heartbeats from each ECG were measured.

**Summary of Results:** AV and PR intervals were measured accurately and reproducibly (coefficient of variation for interobserver variability: 7.14%; concordance correlation coefficient for intraserver variability: 0.840-0.998). Collected data was similar to observations made by other investigators. Regression analysis was done on variable pairs of interest. Our analysis for the fetus showed AV interval is inversely proportional to gestational age in patients without CHD. VA interval is directly proportional to gestational age in patients with CHD. Postnatally, PR interval is directly proportional to AV interval in patients without CHD. RP interval is directly proportional to VA interval in patients with CHD. Heart rate is inversely proportional to AV interval in patients with CHD.

**Conclusions:** Interpretation of data showed that with gestational age, the AV interval decreases toward term. Postnatally, there is a fixed relationship between atrial depolarization and active ventricular filling time. Postnatally, increased heart rate is associated with decreased active ventricular filling time. Further steps include increasing sample size to ensure the significance of the data and better comparing normal values to those with CHD.

**Joint Plenary Poster Session**

**Pediatric Clinical Case**

5:00 PM

Thursday, February 9, 2012

### 214 PERFORMANCE ON EXERCISE STRESS TEST DOES NOT PREDICT 24-HOUR BLOOD PRESSURE PATTERNING IN PATIENTS WITH TETRALOGY OF FALLOT

**Beavers M, Harshfield GA, Lutin W**

**Georgia Health Sciences University, Augusta, GA.**

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Purpose of Study: Patients with repaired Tetralogy of Fallot experience hemodynamic complications later in life due to conditions such as residual pulmonic stenosis or pulmonary insufficiency. Among these, some develop significant cardiac symptoms. We hypothesize that some patients with repaired Tetralogy of Fallot may have poor hemodynamic regulation overall, as reflected in systolic blood pressure response to exercise and sleep.

Methods Used: Twenty subjects with Tetralogy of Fallot (≤ NYHA Class II Heart Failure), aged 10-30, were recruited from the OHSU Pediatric Cardiology Clinic. Subjects performed an exercise treadmill test (modified Bruce protocol) in clinic. Blood pressure was measured 30 minutes after finishing the exercise test. Subjects then wore an ambulatory blood pressure monitor (Space Labs) for 24 hours. Measurements were taken every 20 minutes during the day (08:00 to 22:00 hours) and every 30 minutes at night (22:00 to 08:00 hours). Analysis was performed without transition periods: wake = 08:00 to 21:00 hours; sleep = 00:00 to 06:00 hours.

Summary of Results: Of the 20 subjects studied, over half showed an abnormal pattern of systolic blood pressure change from wake to sleep ("dipping"). Specifically, 11 displayed non-dipping (change of 0 to 10%), with 2 displaying reverse dipping (increases of 3% and 13%); 9 displayed normal dipping (10 to 20%). This pattern was not predicted by performance on exercise stress tests. As expected, the change in blood pressure with exercise (Max Exercise SBP - Base SBP) correlated with recovery of blood pressure after 30 minutes of rest (Max Exercise SBP - Recovery SBP) for both dippers, r=0.941 (p=0.001) and non-dippers, r=0.894 (p=0.001).

Conclusions: Some patients with repaired Tetralogy of Fallot have impaired systolic blood pressure regulation over 24 hours. Impaired regulation was not predicted by performance on exercise stress test. This impaired regulation could lead to premature development of cardiovascular disease, including heart failure.

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SULCA2 MUTATION RELATED MITOCHONDRIAL DEPLETION SYNDROME ASSOCIATED WITH HYPOPLASTIC AORTIC ARCH, COARCTATION OF THE AORTA AND SEVERE LACTIC ACIDOSIS

Cejas DM, Unger KR, Singh D, Akingbola O, Frieberg E, El-Dahr S, Recto M, Yeh T, Anderson HC Tulane University, River Ridge, LA.

Case Report: ABSTRACT

Objective: Succinate-CoA ligase (A-SUCL) is a mitochondrial enzyme that catalyses the reversible conversion of succinyl-CoA in the Krebs cycle. SULCA2 gene encodes the β subunit of ADP to form A-SUCL. SULCA2 related mitochondrial depletion syndrome (MDS) is a rare autosomal recessive condition with predominant neurological involvement. In this case, a neonate who presented with severe lactic acidosis & multiple congenital anomalies was ultimately found to have SULCA2 related MDS.

A term male infant was delivered to a GHA/P Hispanic mother who had a previous history of neonatal death during the 1st week of life. Within 24hrs, he was noticed to be mottled and cyanotic needing emergent intubation. He had severe acidosis (pH 6.88, HCO-3 5.2, B.D -27.3) with elevated serum lactate (>20mmol/L) & high lactate to pyruvate ratio. Urinary methylmalonic acid & 3-hydroxyisovaleric acid were elevated. He had normal karyotyping & chromosomal microarray. Acylcarnitine profile showed elevated C3/C2 ratio. Muscle biopsy showed increased intramyofiber lipid content & mitochondrial ultrastructural abnormalities. Respiratory chain enzyme analysis showed a deficiency of complex I & IV, with normal complex II activity. Molecular genetic testing showed SULCA2 gene mutation. MIR (Brain) showed multiple areas of ischemic lesions. Echocardiogram showed normal aortic arch & coarctation of the aorta. Ultrasound showed right pelvic kidney. He was treated with intravenous, protein, antibiotics, multivitamin cocktail but after the confirmation of diagnosis care was withdrawn as per parental request. This is, to date, the only reported case of SULCA2 related MDS associated with congenital anomalies such as a hypoplastic aortic arch, coarctation of the aorta, pelvic kidney, cleft palate, & multiple ischemic lesions in the brain.

Keywords: Mitochondrial depletion syndrome, SULCA2 mutation, coarctation of the aorta

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DO NOT SKIP A BEAT

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Mentors: Erica Liebelt, MD Jason Hartig, MD

Learning Objectives:
1) Recognize complete heart block as an initial presentation of myocardiitis Case:
2) Recognize the occurrence of myocarditis in an unusual setting

Methods Used: 29 year-old female presents to the Emergency Department during a viral respiratory illness. She has been in the hospital for 3 days and has become increasingly tachycardic. Her labs show elevated CK-MB and troponin. She has a history of chronic paroxysmal atrial fibrillation that is managed with a left atrial appendage occlusion device. On exam, she is noted to be dyspneic and tachypneic. Her heart rate is 130 bpm and blood pressure is 100/70. She is planning to be discharged in 2 days. On the evening of her discharge she develops complete heart block requiring temporary pacing. She is transferred to the ICU for further management. Upon further review of her laboratory studies, she is noted to have an elevated C3/C2 ratio. Muscle biopsy shows increased intramyofiber lipid content consistent with myocardiitis. Complete heart block is a rare presentation of myocarditis, and there is a paucity of literature describing it. Prompt recognition by clinicians is imperative in order to maintain cardiac output and organ perfusion.

Discussion:
Myocarditis is inflammation of the myocardium. The incidence of myocarditis is uncertain because it is a cause of sudden cardiac death and likely underdiagnosed. Viral infections are the most common cause of myocarditis in the United States. While coxsackievirus is the virus that most commonly causes myocarditis, others include parvovirus, HHV-6, influenza, parainfluenza, and adenovirus. Definitive diagnosis is made by endomyocardial biopsy. However, initial diagnosis is based on the clinical picture, which is often heart failure or arrhythmia preceded by a flu-like prodrome. Complete heart block is a rare presentation of myocarditis, and there is a paucity of literature describing it. Prompt recognition by clinicians is imperative in order to maintain cardiac output and organ perfusion.

References:

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PHENOTYPIC VARIABILITY OF DIGEORGE AND WAARDENBURG SYNDROMES IN ONE FAMILY

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Purpose of Study: To evaluate the genetic etiology in a four generation African-American family with hearing loss, white forelock, heterochromia, congenital heart defect, developmental delay and ADHD. DiGeorge syndrome is caused by deletions at chromosome 22q11.2 resulting in variable clinical presentation including heart defects, cleft lip and palate, developmental delays, recurrent infection and characteristic facial features. Waardenburg syndrome (WS) presents with sensorineural deafness and pigmentation abnormalities of the hair, skin, and eyes. Both are autosomal dominant disorders.

Methods Used: Clinical evaluation, chromosomal microarray analysis, fish for 22q and genetic testing of PAX3, a gene causing WS.

Summary of Results: The proband had congenital hearing loss, characteristic facies with dystopia canthorum, blue irises, hypopigmented areas of skin and strands of white hair consistent with Waardenburg syndrome. His mother had facial features suggestive of WS with dystopia canthorum, broad nasal bridge, epicanthal folds and white forelock. In addition, she had congenital heart defect, and developmental delays and had 22q11.2 deletion causing DiGeorge syndrome. History and evaluation of other family members revealed variable degree of hearing loss, premature graying and congenital heart defects. Fish for 22q and molecular genetic testing of PAX3 was negative in the proband. Two rare AD genetic syndromes can occur together in the same family rarely and should be considered when there are overlapping clinical features. Deletion of chromosome 22q11.2 accounts for DiGeorge syndrome in the proband’s mother and his half sister. Mutation in a gene other than PAX3 likely causes the Waardenburg syndrome in this family. Additional genetic testing of MITF and SOX10 are underway to determine the exact etiology for WS syndrome. The absence of the 22q deletion in the proband
and his brother as revealed by Fish studies help in providing personalized care and optimal medical management by avoiding additional testing for possible heart defects, developmental delays and immune dysfunction associated with 22q syndrome.

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DRESS SYNDROME AND SEPSIS IN A FIVE-YEAR-OLD FEMALE WITH SEIZURE DISORDER AND MOSAIC TETRASOMY: A CASE REPORT

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Case Report: BACKGROUND: DRESS syndrome is a multi-system reaction, which is characterized by at least three of the following: fever, lymphadenopathy, rash, and internal organ involvement. Symptoms usually occur after exposure to medications with sulfonamides, allopurinol, and anticonvulsants being among the most common sources. DRESS syndrome can be difficult to recognize and diagnose due to its wide range of presentations and multi-organ involvement.

CASE DESCRIPTION: 5 year-old female with history of mosaic tetrasonomy and seizure disorder who initially presented with a 10 day history of fever and rash. Diagnosed with strep pharyngitis at her PCP and given amoxicillin, cefdinir, and ceftriaxone. Also started on phenobarbital recently due to a increase in seizures. On presentation, she had a maculopapular rash involving the trunk and all 4 extremities with significant swelling of the hands and feet. She was initially diagnosed with Kawasaki Disease and started on IVIG and aspirin; however the fever persisted and she remained anemic and thrombocytopenic. Differential at this time included Kawasaki, Stevens-Johnson, DRESS syndrome, and HLH. Skin biopsies and ECHO were obtained, HLH and LFTs labs sent, and phenobarbital was discontinued. She showed moderate improvement after discontinuation until 10 days into admission when she developed hypotension, tachycardia, and seizures. Sent to PICU and intubated. Blood cultures were positive for MRSA. She was stabilized over several days and sent home on steroids, fluconazole, and linezolid.

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INCIDENTAL DIAGNOSIS OF SACRAL AGENESIS ON VCUG

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Case Report: Sacral agenesis is a rare congenital disorder, with an estimated incidence of 1 to 5 per 100 000 live births. Although the disorder is defined by the absence of at least two lower vertebral bodies, sacral agenesis can affect numerous other organ systems depending on the severity of the anomaly. When described, the disorder is typically diagnosed in young children, with a mean age at diagnosis of 2.2 years, and one-fifth of diagnoses not occurring until three to four years of age. Here we describe the case of a 9-year 7-month old girl presenting to the radiology department as a referral from her primary care provider for a voiding cystourethrogram (VCUG). The provider had requested this study because of recurrent febrile urinary tract infections (UTI), and little else was known about the patient at the time of the initial study. During the VCUG, the patient was found to have a multi-trabeculated, conical shaped bladder and grade IV vesicoureteral reflux on the left. On the lateral view, she was noted to have absence of the coccyx and distal sacrum, consistent with sacral agenesis. On further questioning, it was revealed that the patient had never attained urinary continence, with near-continuous dribbling of urine during both day and night, though she reported a normal stooling pattern and had normal gait, sensation, and strength. Urinary incontinence and recurrent UTIs are typical presenting symptoms in patients with sacral agenesis, although this case highlights a particularly late age of diagnosis and unusual method of initial detection. This disorder has been reported to result in end-stage renal disease in some patients, and this case highlights the importance of a high level of suspicion, as early diagnosis and evaluation can prevent devastating sequelae.

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A RETROSPECTIVE CHART REVIEW ON CASES OF LEMIERRE’S SYNDROME IN A TERTIARY CARE CHILDRENS HOSPITAL

Meles K, Hopkins A, Rathone M University of Florida, Jacksonville, FL.

Purpose of Study: The purpose of this study was to review clinical presentations and laboratory abnormalities that will aid in earlier diagnosis of Lemierre’s syndrome.

Methods Used: Charts of patients admitted between January 1, 2001 until June 30, 2011 to a tertiary care children’s hospital with diagnosis code of 481.89 were reviewed and yielded 3 patients with Lemierre’s Syndrome. The project was IRB approved.

Summary of Results: All three patients were female, previously healthy, and age 15-17. They presented 5-6 days from onset of symptoms with chief complaint of fever and difficulty breathing with a history of pharyngitis. All three had elevated CRP and ESR at admission with derangement of marrow cells. All had thrombocytopenia with bandemia while two had leukocytosis
and the third, leukopenia. All three had low albumin, normal LFT and normal PT/INR.

Two of the patients were seen in the ER on the day prior to admission and discharged home. One patient was admitted to the PICU and the other to two pediatric inpatient service. Two were suspected of having pneumonia and the third had pneumonia with pleural effusion and a positive blood culture. Lemièrre’s syndrome was not suspected at admission. Diagnosis of Lemièrre’s occurred 1, 5 and 6 days after admission with radiologic evidence of thrombus in Internal Jugular vein (2) and submandibular vein. One had a peritonsillar abscess which was drained yielding growth of F. necrophorum and another had blood culture positive for F. necrophorum. F. necrophorum was sensitive to clindamycin, penicillin and flagyl. Pediatric ID specialists were consulted in all cases. All had pulmonary involvement with two having pleural effusions and the other with multi-focal consolidations.

Hematology was consulted in all cases and two had anticoagulation therapy initiated with Lovenox. All patients were discharged home on a 6-8 week antibiotic regimen. All had follow up imaging with complete resolution of the thrombus.

Conclusions: All patients were previously healthy adolescent females with initial complaint of pyrexia that presented for admission 5-6 days from the onset of symptoms with pulmonary involvement. All had elevated ESR and CRP. F. necrophorum was the pathogen in two cases. All had venous thrombus with normal coagulation factors and liver function.

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THROMBOCYTOPENIA ASSOCIATED WITH COW’S MILK PROTEIN ALLERGY: A CASE REPORT

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Case Report: Introduction: Cow’s milk protein allergy (CMA) is the third most common food allergy in pediatrics with a prevalence of 2.2% to 2.8% at 1 year of age, and it presents with various IgE and non-IgE mediated mechanisms. Thrombocytopenia as a manifestation has been sparsely described in infants and children with CMA.

The case: 2 month old african american male infant with a 1 month history of subjective fevers and diarrhea which was getting worse for the past 2 weeks infant presented with lethargy and severe dehydration. Initial labs revealed hypotension, hyperkalemia, hypoalbuminemia, anemia, leukocytosis with bandemia and thrombocytopenia. Appropriate rehydration therapy initiated with Lovenox. All patients were discharged home on a 6-week antibiotic regimen. All had follow up imaging with complete resolution of the thrombus.

Conclusions: All patients were previously healthy adolescent females with initial complaint of pyrexia that presented for admission 5-6 days from the onset of symptoms with pulmonary involvement. All had elevated ESR and CRP. F. necrophorum was the pathogen in two cases. All had venous thrombus with normal coagulation factors and liver function.

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CASE OF A NOVEL MUTATION OF TUMOR NECROSIS FACTOR RECEPTOR-1 ASSOCIATED PERIODIC FEVER SYNDROME ASSOCIATED WITH RECURRENT INCOMPLETE KAWASAKI DISEASE

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Case Report: We present the first reported case of Tumor Necrosis Factor Receptor-1 Associated Periodic Syndrome (TRAPS) associated with recurrent incomplete (atypical) Kawasaki disease (KD) and coronary ectasia. TRAPS is a rare inherited autosomal dominant periodic fever syndrome. An association between KD and periodic fever syndromes in general has recently been reported. Cardiac sequelae have been described in cases of recurrent KD. It is clinically challenging in patients with history of KD who develop prolonged fever to distinguish between recurrent KD and periodic fever syndrome. Our 7-year-old female patient developed incomplete KD at age 2 ½ years with fever and a 4mm secular proximal left main coronary aneurysm treated with 2 doses of intravenous immune globulin (IVIG) and aspirin with subsequent documented resolution of her coronary aneurysm.

The patient was admitted recently due to prolonged persistent fevers, arthralgia, migratory rash, conjunctivitis, elevated inflammatory markers and leukocytosis. In concern of recurrence of KD we were consultaed to rule out recurrent ectasia of left main coronary (3.7mm) & treated with 2 doses of IVIG followed by rituximab. Due to strong family history of recurrent fevers, she had genetic testing for TRAPS that revealed a novel C81G mutation (a glycine for cysteine substitution in exon 3) of the TNFRSF1A gene which has been associated with TRAPS. This case report expands the spectrum of TNFRSF1A mutations associated with TRAPS, and alerts clinicians to consider the association between KD and periodic fever syndrome that perhaps share a common pathway of immune dysregulation.

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BACILLUS ALVEI MENINGOENCEPHALITIS IN NEONATE

Shanmugam H, DeLeon M University of Oklahoma Health Science Center, Oklahoma, OK.

Case Report: Sepsis evaluations in neonates are common pediatric occurrence with predictable pathogens. We present a case here of a one month old with bacillus alvei meningoencephalitis, which has not previously been reported in literature.

HR was a one month old Caucasian female ex33 weeker born by CS for maternal indications with a brief NICU stay who presented to an outside facility with a one day history of refusing feeds and lethargy. A full sepsis evaluation was done. CSF analysis showed 2300 WBCs and protein 231, and she started on ampicillin and cefotaxime for presumed meningitis. She subsequently developed GTC seizures and respiratory failure and was transferred to the ICU.

Blood and CSF cultures from initial hospital became positive for bacillus species, and her antibiotic coverage was broadened to vancomycin, meropenem and ampicillin. She stabilized initially but had an increasingly full fontanelle, and developed decretebrate posturing, nystagmus, and LE clonus. A head CT demonstrated enlarged ventricular size.

Her seizures were controlled with keppra and fosphenytoin, and antibiotics were changed to vancomycin and gentamicin per ID recommendations. Brain MRI showed extensive bilateral encephalomalacia, large cystic formations in frontal lobes, smaller cysts in right parietal and temporal lobes, and ex vacuo dilaterion of ventricles. Neurosurgery decided against an EVD given her age and extent of cystic structures but eventually drained the frontal cysts via her open anterior fontanelle. Studies showed WBCs 235 and protein 1723. Given the elevated protein, VP shunting was not deemed an option at that time. Parents were given the option of continued fontanelle taps with goal of eventual shunt placement. Given HR's overall poor neurological prognosis the family chose to discharge home with hospice care.

HR's original blood and CSF samples were sent to the state health department for final identification, which was bacillus alvei susceptible to vancomycin. B alvei is usually isolated from soil and honeybee larva, to which HR had no exposure. While few case reports about infections exist for this bacterium, none have had as devastating an outcome as our patient. Although likely an extremely rare cause of neonatal sepsis, consideration should be given if a patient fails to respond appropriately to antibiotics.

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CONGENITAL LEFT VENTRICULAR ANEURYSM: PRENATAL DIAGNOSIS AND MANAGEMENT

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Case Report: Congenital left ventricular aneurysm (LVA) is a rare congenital cardiac malformation with poorly understood etiology and unknown incidence. The LVA is characterized by a bulging of a ventricular wall segment with wide neck. We report a fetal case with congenital LVA. The mother was a 19 year old primagravida who was referred at 18 weeks pregnancy to evaluate for fetal pericardial effusion. The fetal echo cardiogram revealed a tiny pericardial effusion; a 5 x 7 mm extra chamber was communicating with the left ventricle (LV) via ventricular wall defect. The communication was located at the LV base near the mitral valve (MV). There was a mildly decreased LV systolic function. Color and pulsed Doppler demonstrated flow inside the structure and confirmed the continuity with the LV. Follow-up studies revealed increased MV regurgitation. When close to delivery, the fetus had severe
with mild or atypical disease; hence the importance for continued follow up. It is imperative for parents of newborns to consult appropriate CF centers for definitive diagnosis and early intervention. It is important to thrive. Primary care pediatricians play crucial roles in following up NBS led to early detection through newborn screening. The incidence of lactobezoar has been found to have. Lactobezoar is a rare and well-recognized GI complication. Lactobezoars are associated with intolerance to milk proteins, especially lactose. The typical presentation is a gastrointestinal obstruction, often occurring in the first days of life, with symptoms such as abdominal pain, vomiting, and failure to pass stools.

**Case Report:**
An asymptomatic adolescent male athlete was incidentally found to have ventricular preexcitation on electrocardiogram (ECG) during a sports preparticipation physical. A transesophageal electrophysiology study (TEEPS) was performed after an exercise stress test failed to delineate the patient’s risk of sudden cardiac death. The TEEPS was favored in this case over a transvenous electrophysiology study (TVEPS) due to reduced invasiveness. The goal of the TEEPS was to place the patient into atrial fibrillation (AFib) and evaluate the shortest preexcited R-R interval during AFib, thereby assessing the risk of his accessory pathway (AP). The patient was treated with oral beta-blockers and was scheduled for ablation if the preexcited R-R interval shortened with exercise. A subsequent DNA analysis was performed due to normal initial and repeat NBS. A subsequent DNA analysis revealed no mutations in genes known to cause atrial fibrillation, such as the atrial natriuretic factor (ANF) gene and the atrial natriuretic peptide (ANP) gene. The patient was managed medically for atrial fibrillation with beta-blockers and was scheduled for ablation if the preexcited R-R interval shortened with exercise.

Further testing for parents and older brother may be necessary to determine if CFTR mutations are on different chromosomes. The family has been referred for genetic counseling.

**228 SEPTO-OPTIC DYSPLASIA IN AN INFANT PRESENTING WITH JAUNDICE**

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**Case Report:**
Diagnosis of septo-optic dysplasia (SOD) includes optic nerve hypoplasia, congenital hypopituitarism and abnormal development of brain midline structures which can occur along a broad spectrum of severity. This syndrome is the result of proencephalon malformation during embryologic development. Our patient is a 1 month old female who presented with jaundice. She was transferred to our facility for workup of jaundice and hypothyroidism; possible seizure activity and mild hyponatremia were also present. On exam, patient was small with normal facial features, jaundice, mild hypothyroidism, intermittent tremulousness, and non-reactive equal pupils without sustained mydriasis. Routine labs and a complete septic work up were obtained. Labs were significant for hyponatremia and mild hypoglycemia, which became more severe during hospital course. Liver US was normal. Metabolic workup and chromosomal testing were sent. MIBI scan was consistent with absent septum pellucidum, and right frontal/persylvian polymicrogyria. Optic disc hypoplasia was confirmed on fundoscopy. EEG showed diffuse cortical dysfunction but no seizure activity. A thorough endocrine work up was performed due to suspected hypothalamic-pituitary dysfunction. She was found to have partial hypopituitarism manifesting as central DI, growth hormone and cortisol deficiency. Thyroid function and gonadotropin hormones were normal. Hormone replacement was initiated with growth hormone injections and hydrocortisone.

Her DI was managed with a thiazide diuretic, as her thirst mechanism was intact, with plans to later transition to DDAVP with growth. Her hyponatremia was significantly improved after hormone replacement, and she had no further apnea. Of note, chromosomal deletion was found on long arm of chromosome 4, q21.31 estimated at 401.4 kb involving 2 genes, MAP9 and NPY2R. This case was chosen because SOD is rare and presented classically as described in literature. Our patient has an identified chromosomal abnormality of unknown significance. Although mutations in several transcription factors involved in pituitary development have been identified, this syndrome is still not well characterized on a genetic basis.

**Joint Plenary Poster Session**
Perinatal Medicine
5:00 PM
Thursday, February 9, 2012

**229 LACTOBEZOAR IN A NEONATE**

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**Purpose of Study:** Lactochoza or undigested milk concretion is a rare but well recognized GI complication. Lactochozae are associated with perforation or obstruction and usually occur over days of life 4 to 10. Since 1969 there have been ~70 cases reported, most of which involved infants on prematere formulas with high concentrations of calcium and phosphorus, 80% casein caseinate, and calorie density of ~24 cal/ml. There has been a marked decline in the incidence of lactochozae following the development of whey predominant formulas. Predisposing factors for lactochozae also include low birth weight, prematurity, prolonged gastric emptying and low gastric acidity. We present here a case of lactochozae and E.coli sepsis.

**Methods Used:**
Chart Review

**Summary of Results:** We report a case of a 31wk gestation baby with birth weight of 1465gms via c-section. The pregnancy was complicated by PROM of 26days for which the mother received antibiotics. APGARS were 8 and 9 at 1 and 5 minutes. The patient was on antibiotics for 48hrs with negative cultures. Enteral feeds of preterm formula 20 cal/oz were begun on DOL 2 and advanced to full feeds by DOL 5. On DOL 6 the baby had an apneic event and a distended abdomen. A KUB revealed pneumoperitoneum. The patient also required fluid boluses and pressor support. The patient was

**Case Report:** A 31wk gestation baby with birth weight of 1465gms via c-section. The pregnancy was complicated by PROM of 26days for which the mother received antibiotics. APGARS were 8 and 9 at 1 and 5 minutes. The patient was on antibiotics for 48hrs with negative cultures. Enteral feeds of preterm formula 20 cal/oz were begun on DOL 2 and advanced to full feeds by DOL 5. On DOL 6 the baby had an apneic event and a distended abdomen. A KUB revealed pneumoperitoneum. The patient also required fluid boluses and pressor support. The patient was
transferred for surgery. The outside facility’s blood culture later grew E. Coli. The patient underwent ex-lap with subtotal gastrectomy and repair of posterior wall perforation. Large amounts of curd like material were removed from the stomach, indicating a lactobezoar. Subsequent contrast study revealed a gastrocolic fistula.

Conclusions: Lactobezoar formation is increasingly rare. This case is significant for many reasons. Reports of lactobezoar have declined significantly following the introduction of whey predominant formulas in the 1980s. Lohn et al. state that there were 43 cases of lactobezoar up to 1980, but only 2 in the next 2 decades. Also, this case occurred in an infant being fed a 20 cal/oz formula, with a low casein content. Lastly, this case had the development of a gastrocolic fistula. Lactobezoar sequence usually are restricted to obstruction and perforation. We report this case for clinicians to consider lactobezoar as a possibility in infants who are on standard formulas, but may have other factors such as sepsis or prematurity.

230 HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS (HLH) PRESENTING WITH LIVER FAILURE IN TWO NEWBORN INFANTS: OVERLAP WITH NEONATAL IRON STORAGE DISORDER

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Case Report: HLH is a potentially fatal disorder characterized by uncontrolled activation of macrophages and histiocytes which phagocytose other hematopoietic cells. Clinical and biochemical features such as hepatic failure and very high serum ferritin are common for both HLH and neonatal hemochromatosis which makes it difficult for clinicians to differentiate these two disorders. We report following 3 cases of hepatic failure with severe hyperferritinaemia. One newborn was diagnosed as neonatal hemochromatosis whilst the other two were diagnosed as HLH. Case 1: A 5 day old male born at 36 weeks was referred for cholestatic jaundice, ascites, hepatomegaly and cytopenia. Evaluation revealed a very high serum ferritin, very low fibrinogen levels and elevated ESR. A soluble IL-2R level was normal. A lap biopsy and MRI of the liver confirmed the diagnosis of neonatal hemochromatosis. Exchange transfusion and chelation therapy resulted in the improvement of liver function and normalization of the ferritin level. The infant was discharged with GI clinic follow-up. Case 2: A one month old female was transferred for evaluation of persistent pancytopenia, hepatomegaly, liver dysfunction, coagulopathy and history of nonimmune hydrops. Laboratory evaluation revealed marked elevation of serum ferritin, persistently low fibrinogen and very low ESR. Markedly elevated soluble IL-2R level and further genetic testing confirmed the diagnosis of familial HLH. Chemotherapy as per HLH-2004 protocol was initiated. She developed sepsisemia and died due to severe respiratory failure. Case 3: A female infant born at 30 weeks was transferred with nonimmune hydrops, severe anemia, coagulopathy and hepatic failure. Serological evaluation confirmed congenital syphilis. Persistent elevation of ferritin, low ESR, low fibrinogen level and poor response to standard treatment for syphilis were consistent with macrophage activation syndrome. The infant died due to severe hypoxic failure in spite of specific treatments. Hence, strong clinical suspicion and specific laboratory testing are required to differentiate HLH from neonatal hemochromatosis as presentations for both disorders are similar while management and prognoses are different.

231 A PROSPECTIVE, OBSERVATIONAL STUDY ON THE PATHOGENESIS OF ACQUIRED CYTOMEGALOVIRUS (CMV) INFECTION IN PREMATURE INFANTS LESS THAN 30 WEEKS’ GESTATIONAL AGE

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Purpose of Study: Postnatally acquired CMV infection, typically acquired through own mother’s milk (OMM), is mostly asymptomatic in term infants but may cause significant disease in the preterm infant. We set out to evaluate the frequency of acquired CMV infection in the smallest preterm infants and to compare clinical outcomes in those infants who acquired CMV infection with those infants who were not infected with CMV during their Neonatal Intensive Care Unit (NICU) stay.

Methods Used: All inborn infants less than 30 weeks of gestational age admitted to the NICU were eligible for enrollment. Maternal CMV serology and infant surface cultures were performed to control for active maternal CMV infection and fetal antenatal or intrapartum CMV exposure. The clinical personnel and the parents were blinded to the mother’s CMV status. During the NICU stay, breast milk and infant’s urine were regularly tested for CMV by shell vial and culture. Furthermore, infants were prospectively followed for clinical symptoms consistent with CMV infection (i.e. thrombocytopenia or elevated liver enzymes). Clinical outcomes are compared between infants at high risk (mother CMV IgG positive) and those at low risk (mother CMV IgG negative) and between the infants who become infected (urine positive) and those apparently not infected (urine negative) with CMV.

Summary of Results: About 50% of the mothers in our study population are CMV IgG positive and half of these women have a positive CMV breast milk culture. Live CMV virus was detected in the milk as early as one week and as late as six weeks into lactation. As enrollment is ongoing, with 1/3 goal participants reached, we have not observed any positive urine CMV shell vial culture or infant’s urine culture. Over 80% of mothers were CMV IgG positive at the time of the infant’s birth. Additional risk factors such as sepsis or prematurity.

232 A CASE OF NEONATAL CRANIAL SINUS THROMBOSIS – INVESTIGATING AN ASSOCIATION WITH CENTRAL LINE placement

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Case Report: Peripherally Inserted Central Catheters, or PICCs, are a popular choice for central intravenous access in children and infants. They offer ease of placement at the bedside with need for minimal or no sedation, a low rate of complications, and infrequent need for replacement. While offering advantages over surgically placed central lines, PICCs are not free from risk. One widely reviewed complication of PICC lines is large vein thrombosis. In children, thrombosis related to PICC placement is reported to be between 14 and 18% with symptomatic thrombosis occurring at a significantly lower frequency.

This case describes a 37-week gestational age infant admitted to the NICU of a tertiary center with respiratory failure and pulmonary hypertension. On the day of admission (day of life 7), a PICC line was placed as the infant needed central access for blood pressure support, medication delivery and intravenous nutrition. On PICC day 9 (day of life 16), the patient developed seizure activity affecting his left side. Bedside CT and a follow-up MRI confirmed extensive bilateral dural venous sinus thromboses. During investigation into the etiology of the seizures, it was noted that the PICC traversed an unusual course. The PICC was inserted into the right posterior auricular vein which normally runs superficially along the scalpel, inferiorly behind the ear, and joins the external jugular vein. Routine CXR confirmed the PICC placement centrally. However, on CT, the scalp PICC catheter was seen passing medially through the sigmoid sinus and into the internal jugular vein.

While there is no evidence that the PICC line caused the thrombosis, it is worrisome that PICC lines are associated with thrombosis and that this particular line took an aberrant course through the cranial sinuses where a thrombus was documented. The incidence of scalp PICC’s traversing an intracranial course via emissary veins into the dural venous sinus is unknown. Further study is needed to determine the incidence of this aberrant path for scalp PICC lines. Our practice has changed to include a simple lateral skull film in addition to the routine CXR upon scalp PICC line placement to confirm that the line remains superficial.
Conclusions: Although we are still enrolling dyads, we expect infants re-

Prospective study of inborn infants (BW LESS THAN 30 WEEKS' GESTATION AT BIRTH)

Purpose of Study: To determine if education for mothers re: the benefits of maternal human milk (MHM) for premature infants will result in increased visitation and decreased length of neonatal ICU (NICU) stay.

Methods Used: Prospective study of inborn infants (BW <1500g) ad-

mitted to Oklahoma University's IIIc NICU and their moms approved by the IRB. After informed consent, dyads were randomized into 1 of 2 groups (control vs. education) within 48 hrs of NICU admission. All moms were interviewed re: their intentions of providing MHM to their infants and medical conditions affecting MHM provision, and they completed the State-Trait Anxiety Index (STAI) form. Moms in the education group were shown a short video about the benefits of MHM for preterm infants. No other interventions were performed, but moms completed a second STAI form during the infant's discharge. A blinded investigator then collected data retrospectively. Maternal visitation hours and the length of NICU stay were analyzed as the primary outcomes. Secondary outcomes included morbidity rates, mortality rates, and the amount of MHM received at 2 weeks, 4 weeks, and discharge.

Summary of Results: Of ~100 dyads to be enrolled by study completion, 18 have been enrolled and 9 have completed the study to date. See table for interim results.

Conclusions: Although we are still enrolling dyads, we expect infants re-

ceiving higher amounts of maternal human milk will have more maternal

visitation, resulting in increased participation in the infant's care with a shorter length of NICU stay and lower discharge state STAI scores.

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UNUSUAL CASE OF SEVERE ICH IN TERM NEWBORN

Khambaty M, Shah DS Quillen COM, East Tennessee State University, Johnson City, TN.

Case Report: A 40 5/7 term AGA female infant born via C section at Johnson City Medical Center. Infant's Apgar score was eight and nine at one and five minutes. Infant was transferred to NICU due to irregular respirations, bulging anterior fontanelle, possible seizure activity (twitching of mouth and asymmetry of face), and hypotonia.

Prenatal History: Mother is a 42G2022 who had a total of 16 prena-

tal visits. Maternal labs were positive HPV and HSV. Mother denied any smoking, alcohol, or drug use. Medications included Valacyclovir.

Clinical Course: At NICU, on initial exam, infant was found to have wide open bulging anterior fontanelle, coarse respirations bilaterally with-

out hypoxia, severe head lag, decreased reflexes, and severe hypotonia. Ini-
tial workup included lactate, ammonia, CRP, and neonatal panel. No skin rash or vesicula on examination. Lumbar puncture was not done because of suspected increased ICP. Due to the clinical presentation of the infant, an immediate CT scan was also obtained. It revealed a large posterior fossa subdural hemorrhage with mass effect of the cerebellum and upward herni-

ation. The fourth ventricle was completely effaced with dilation of the lateral and third ventricles. Infant was transferred to tertiary critical care unit with Pediatric Neurosurgery facility for possible surgical intervention in case of worsening mass effect.

Discussion: Typical locations for intracranial hemorrhage (ICH) in the term newborn are the falx and the tentorium cerebelli. Intracranial hemorrhage is term newborns has a much lower incidence than in preterm newborns. Risk factors for intraventricular hemorrhage in term newborns include maternal drug use, pregnancy induced hypertension, abruptio placenta, birth trauma, low Apgars, AVM, hematological abnormalities, prolonged labor, cesarean section and forceps delivery. Manifestations of ICH include sei-

zures, respiratory distress, apnea and increased intracranial pressure. Imaging may reveal extensive hemorrhage, but outcomes of ICH can be surprisingly good. However, ICH also can lead to devastating disability, with recurrent seizures needing multiple anti-epileptics being negative prognosticators. However, no factors have been completely shown to predict outcome.

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TRANSFUSION-RELATED ACUTE GUT INJURY (TRAGI) CARRIES A HIGH MORTALITY RATE IN INFANTS LESS THAN 30 WEEKS' GESTATION AT BIRTH

Lawrence SM, Williams P, Nandyal R, Halford G University of Oklahoma, Oklahoma City, OK.

Purpose of Study: Transfusion-related acute gut injury (TRAGI) is a rec-

ognized disease process and is characterized by the onset of necrotizing enterocolitis (NEC) within 48 hours of completing a packed red blood cell (PRBC) transfusion in otherwise healthy neonates. Our objective is to test the following hypotheses: (1) neonates afflicted with TRAGI at the Children's Hospital at the OU Medical Center have similar characteristics to previously published studies; and, (2) the diagnosis of TRAGI, like NEC, is inversely proportional to the gestational age of the infant.

Methods Used: A retrospective chart review was completed from all in-

born neonates from 2007 to 2010. TRAGI was designated in those neonates who were relatively healthy prior to a PRBC transfusion but developed Bell Stage II or higher NEC within 48 hours following the procedure.

Summary of Results: The overall prevalence of TRAGI was 21% (reported 27-35%) among infants diagnosed with NEC Bell Stage II or greater. Pre-

mature infants born with a gestational age of less than 30 weeks had a higher prevalence of TRAGI (17% versus 4%), a higher Bell Staging of NEC, and greater case fatality rate (64% versus 10%).

Conclusions: Neonates diagnosed with TRAGI share similar characteristics to those already described in the scientific literature. A strong correlation is demonstrated between disease occurrence and severity and gestational age. Our findings thus support the hypothesis that a maturational change within the gut or immune system might be associated with development of TRAGI.
376 Medical Sciences/Arkansas Children’s Hospital, Little Rock, AR.

377 Case Report: Meena C, Burke B, Palmer K, Nesmith C

378 Summary of Results: Methods Used: Lawrence SM, Williams M, Deschamps D, Swenson S, Hallford G

379 STREPTOCOCCAL DISEASE

380 Southern Regional Meeting Abstracts

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382

383 would result in an immediate decrease in postnatal antibiotic use, in our

384 unit. This number reached 100% for those infants required to verify these possibilities.

385 Summary of Results: Preliminary results indicate that > 80% of infants born less than 29 weeks’ gestational age (GA) received postnatal antibiotics in our unit. This number reached 100% for those infants < 26 weeks’ GA. Based on these figures, full implementation of the new 2010 CDC guidelines would result in an immediate decrease in postnatal antibiotic use, in our patient population, of more than 50%.

386 Conclusions: Implementation of the 2010 CDC Guidelines should greatly decrease the use of prophylactic antibiotics for early onset sepsis in our population. This would result in significant cost savings and possibly decrease in the risk of necrotizing enterocolitis. A prospective study will be required to verify these possibilities.

387

388 NEONATAL HERPES SIMPLEX (HSV)-AN UNCOMMON PRESENTATION

389 Meena C, Burke B, Palmer K, Nesmith C University of Arkansas for Medical Sciences/Arkansas Children’s Hospital, Little Rock, AR.

390 Case Report: Meena KC, Burke B, Palmer K, Nesmith C. University of Arkansas for Medical Sciences, Little Rock, Arkansas/USA.

391 A 36 week gestation infant was born to a woman with a 4 day history of fever, chillis, body aches, cough, abdominal pain, nausea, and vomiting. Maternal serologies were normal; Group B Streptococcal Disease (GBS) remains an important pathogen in the neonatal intensive care unit (NICU) and the leading cause of early onset sepsis in neonates. The objective of this study is to retrospectively review patient information from all newborns admitted to the Children’s Hospital at the OU Medical Center from January 2008 through December 2010, thereby quantitatively determining how the use of antibiotics in our nurseries would be impacted following 2010 guideline implementation.

392 Methods Used: All babies born at the Children’s Hospital at the OU Medical Center will have their patient information retrospectively reviewed. These data will be gathered from computer charting in the NICU via NeoData (Isoprine Corporation, Lisle, IL) and MediTech (Medical Information Technology, Inc., Westwood, MA), and from Labor and Delivery via OB TraceVue (2011 Koninklijke Philips Electronics N.V.). Those who received antibiotics will be identified by the common use of ampicillin as the standard first line therapy. Data will be reviewed among those who received antibiotics to determine if they would meet current guidelines for the initiation of antibiotics, including adequate maternal therapy > 4 hrs prior to delivery, CBC and ET ratios, clinical status, and blood culture results.

393 Conclusions: The current status of NAS management by US physicians in order to identify key areas of variation.

394 Methods Used: An anonymous electronic survey of 26 questions regarding management of NAS was sent to 383 NICUs across the country and is open for response from 9/5/11 until 10/24/11.

395 Summary of Results: In this ongoing survey, 163 responses (42.6% response rate) have been collected as of 10/12/11. Of the institutions surveyed, 27 (16.6%) and 135 (82.8%) identified themselves as level II and level III NICUs, respectively. Among the responders, 75% have a written protocol that serves to standardize NAS management amongst care providers. Prenatal counseling for at-risk mothers is available in 66% of institutions. Over 95% of units routinely use supportive care like swaddling, low-stimulus environment, and pacifiers. GI symptoms are managed through smaller feedings and more frequent diaper changes in 56.6% and 42.1% of institutions, respectively. Morphine (56.3%), methadone (25.4%), and tincture of opium (11.3%) are the most common first-line pharmacotherapy agents reported for opiate withdrawal, whereas morphine (51.5%), methadone (19.7%), and phenobarbital (14.4%) are most commonly used in first-line polydrug withdrawal. Clonidine has been shown to reduce length of stay when used as adjunct therapy in clinical trials, but less than 20% of NICUs report its use. Breathing tubes for opiate replacement therapy is recommended by 71.6% of institutions. Responses show length of hospitalization to range from 1 to 50 days, with 28.7% of institutions reporting average stay to be 11-15 days. Home treatment programs are offered by 35.8% of NICUs.

396 Conclusions: There is significant diversity in the management of NAS infants among NICUs nationwide, which may influence length of hospitalization and developmental outcomes. Evidence-based guidelines may help in reducing these disparities and improving overall patient care.

397 POLYHYDRAMNION AND FETAL ASCITES DUE TO CYTOMEGALOVIRUS INFECTION

398 Palaczky JI, Hisey J University of Texas, San Antonio, TX.

399 Purpose of Study: We describe the case of a 31 4/7 weeks gestation female neonate weighing 1950g with porencephaly, pulmonary hypoplasia, hepatomegaly, and severe ascites. Mother began prenatal care at 2 months gestation and at 5 months fetal ascites was noted and she was referred to a maternal fetal medicine specialist. Mother was induced at 31 4/7 weeks gestation due to concern of new onset polyhydramnios and risk for uterine rupture. Mother had negative serologies and denied any illness during pregnancy but was diagnosed with chorioamnionitis late in labor. At delivery infant was found to be minimally active with a heart rate greater than 100 but there was no respiratory effort so she was intubated. Physical exam was noteworthy for severe ascites, scattered petechiae, and a small chest. Peritoneal fluid was drawn off and sent for initial studies including cell count, gram stain, and culture along with serum IgM, Parvovirus DNA PCR, and urine for viral culture including cytomegalovirus.

400 Initial labs were concerning for metabolic acidosis, thrombocytopenia, coagulopathy, and severe anemia. Babygram revealed pulmonary hypoplasia, a centralized abdominal gas pattern consistent with ascites, with no abdominal calcifications. Head Ultrasound was extremely abnormal and concerning for open lip schizencephaly

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versus porencephaly. Abdominal Ultrasound showed a large amount of ascites but no organ abnormalities. The extremely poor prognosis was discussed with the family and they elected to withdraw care on day of Life 2.

Methods Used: The differential diagnosis for fetal ascites with polyhydramnios includes, but is not limited to, viral etiologies due to cytomegalovirus or parvovirus, chromosomal abnormalities, or gastrointestinal obstruction which would usually show signs of meconium peritonitis with either particular matter in ascitic fluid or abdominal calcifications radiographically. Fetal urinary obstruction causing ascites would typically present with oligohydramnios.

Summary of Results: In our patient with fetal ascites, urine was positive for cytomegalovirus and serum IgM>21. Autopsy revealed multiple abnormalities including marked pulmonary hypoplasia, hepatomegaly and prominent ascites.

Conclusions: Our patient suffered these above severe abnormalities due to a cytomegalovirus infection.

241 EARLY VS. LATE USE OF RESCUE INHALED NITRIC OXIDE IN INFANTS LESS THAN 36 WEEKS DOES NOT INFLUENCE OUTCOME

Patil RP, McCoy MD, Anderson MP, Sekar K OUIJSC. Oklahoma City, OK.

Purpose of Study: The aim of this study was to compare mortality and Bronchopulmonary dysplasia (BPD) outcomes of infants who received inhaled nitric oxide (iNO) as a rescue therapy for hypoxic respiratory failure (HRF).

Methods Used: A retrospective study based on chart review from 01/2005 to 04/2011 was completed using neonatal intensive care database. Data regarding birth weight, gestational age less than 36 weeks, date to start iNO, delay of iNO use, Length of stay, number of ventilator days, type of ventilation, BPD outcomes, mortality and comorbidities like pulmonary hypertension, necrotizing enterocolitis, grade 3 and 4 intraventricular hemorrhage were collected (n=120). Patient with insufficient data were excluded from the analysis. Infants were grouped into three strata; one who received iNO early (started and stopped within 7 days of birth, n=52), late (started > 7 days, n= 40) and cross over group (started on nitric oxide ≤ 7 days but continued to receive after 7 days n= 28). Analyses consisted of Mann Whitney U test and logistic regression to compare the outcomes.

Summary of Results: The demographics did not vary between the groups. Overall, incidence of BPD (oxygen requirement at discharge or 36 weeks PMA) was 64 % in the surviving group and mortality was 51 %. There was no difference in the BPD incidence or mortality among the three groups controlling for birth weight and comorbidities (Mortality: p=0.864, Odds ratios for Early vs. Late 1.17, 95% CI 0.49, 2.78). Mortality and BPD Outcomes

<table>
<thead>
<tr>
<th>Comparison Group</th>
<th>Mortality</th>
<th>BPD</th>
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<tbody>
<tr>
<td></td>
<td>Odds Ratio</td>
<td>95% CI</td>
</tr>
<tr>
<td>Crossover Vs Late*</td>
<td>0.932</td>
<td>(0.338,2.571)</td>
</tr>
<tr>
<td>Early Vs Late</td>
<td>1.177</td>
<td>(0.498,2.785)</td>
</tr>
<tr>
<td>Birth Weight</td>
<td>0.760</td>
<td>(0.458,1.259)</td>
</tr>
<tr>
<td>Co-Morbidity (No Vs Yet)</td>
<td>1.215</td>
<td>(0.586,2.522)</td>
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Conclusions: Early or late use of iNO as rescue therapy for HRF has no influence on BPD or mortality. Routine use of iNO in preterm infants requires further studies.

242 PROBABLE CONSEQUENCES OF CONSANGUINITY?

Pickell J, Shah D ETSU Quillen College of Medicine, Johnson City, TN.

Case Report: CC:

Feeding intolerance with cyanosis
HPC: A 39 week SGA female born to a 20 yo G1 by SVD at an outlying facility. Delivery was uncomplicated with normal Apgar scores and minimal resuscitation required. Initial PE was unremarkable except for lumbosacral cleft dimple. X-ray showed possible deviation of the coccyx to the right and US revealed possible tethered cord with Arnold-Chiari malformation. When feeds were advanced, patient experienced poor suck/swallow coordination and cyanotic episodes with feeding. Patient was transferred on DOL 4 for further evaluation.

Prenatal History:
Mother denied smoking, alcohol, or illicit drug use during pregnancy and took prenatal vitamins. History revealed consanguinity. Prenatal labs were normal and number of prenatal visits was unknown.

Clinical Course:
At JCMC, PE was normal except for slight sacral cleft with dimple. Head ultrasound showed questionable small size of posterior fossa and foramen magnum, but MRI revealed normal cerebellum without ectopia and normal posterior fossa. Pulmonology was consulted due to cyanosis with feedings. Bronchoscopy showed mild/moderate laryngomalacia. Barium swallow study confirmed aspiration with feeds. G-tube was eventually placed for inability to take full PO feeding after 3 weeks of OG feeding and speech therapy consult. Nissen fundoplication was done for GERD documented by Ph probe along with G tube.

Neurology was consulted for hypertonia, fluctuating tone, and irritability. Repeat MRI was normal with no change compared to admission image. EEG was normal. Karyotype showed normal 46XX chromosomes without abnormalities and microarray was also normal. Urine organic acid assay revealed mild elevations of phenylketones and pyruvic acid, but were interpreted as benign. After a 35 days, patient was discharged home on G tube.

Discussion: We emphasize that it is abnormal for a term newborn to be unable to tolerate PO feeds, and especially abnormal for difficulties to persist at one month of age. In light of several negative tests, we suspect that the constellation of symptoms of this newborn is due to documented consanguinity, and not the result of neurologic, chromosomal, or metabolic abnormalities. We are open to speculation about other potential causes and plan on following the development of this child through several outpatient clinics.

243 LIVER ARTERIOVENOUS MALFORMATION, HYDROPS, AND?

Pryor J, Gibson J, Shah D East Tennessee State University, Johnson City, TN.

Purpose of Study: To investigate the association of fetal hydrops and hepatic arteriovenous malformations (AVM) with associated syndromes.

Methods Used: The clinical and radiographic features of a newborn with fetal hydrops and hepatic arteriovenous malformations (AVM) with associated syndromes.

Summary of Results: A term female neonate diagnosed with fetal supra-ventricular tachycardia and hydrops in utero was shown to have a hepatic AVM via abdominal ultrasound and CT arteriography. Celiac arteriography further demonstrated the malformation. Abnormal urinary elevation of glycine, cystinuria, and beta-glucuronidase in leukocytes strengthened suspicion. Confirmation of the diagnosis was ascertained by molecular testing which revealed a mutation in the GUSB gene.
**Conclusions:** The presence of fetal hydrops in conjunction with hepatic AVM should raise concern for certain genetic conditions, including Sly Syndrome. Urinary testing for GAGs, as well as leukocyte examination for diminished beta glucuronidase, is vital for investigating Sly Syndrome as a potential diagnosis.

**244**

**EBSTEIN'S ANOMALY AND CONGESTIVE HEART FAILURE IN BEAL'S SYNDROME: CASE REPORT WITH AUTOPSY FINDINGS IN A LIVE BORN NEONATE**

Reddy R, Iverson R, Youn-Gaylor L. University of Mississippi Medical Center, Jackson, MS.

**Case Report:** Beal’s syndrome or Congenital contractual arachnodactyly (CCA) is an autosomal dominant disorder caused by a mutation in the fibrillin-2 gene on chromosome 5q23. Patients have marfanoid habitus, arachnodactyly, multiple contractures, camptodactyly, and crumpled ears without significant cardiac or ocular anomalies. Occasional cases have been associated with mitral regurgitation and rarely, mild and stable aortic dilatation. Severe valvar and cardiac anomalies that may lead to congestive heart failure and early neonatal or in-utero death are extremely rare. We report the autopsy findings in a 2-day-old male neonate, born to a 23-year-old female with a history of mild pre-eclampsia. She underwent emergent cesarian section due to elevated blood pressure and non-reassuring fetal surveillance. Following birth, the baby had low Apgar scores, multiple congenital anomalies and a grade IV systolic murmur. Echocardiogram showed an Ebsteinoid tricuspid valve and primary pulmonary hypertension. Later, he quickly desaturatated, developed metabolic acidosis, shock and subsequently died. At autopsy, his crown-heel length was >90th percentile for age. He had arachnodactyly, camptodactyly, bilateral ulceration deviation of the fingers, flexion contractures of the knees and elbows, external rotation of the hips, moderate talipes equinovarus, and crumpled ears. Internal examination showed cardiomegaly with dilatation of the left atrium, right atrium and right ventricle, patent foramen ovale with a small ostium secundum atrial septal defect, pulmonary hypertension, pericardial and bilateral pleural effusions. The tricuspid valve was enlarged, redundant and slightly displaced towards the apex by 1.5 cm, consistent with an Ebstein’s anomaly. Histopathology showed signs of acute fetal/neonatal distress. Cytogenetics of the fetus revealed 46, XY karyotype. The placental findings included focal hemorrhagic endovascularitis, focal villous immaturity and increased nucleated red cells. To our knowledge, Ebstein’s anomaly with congestive heart failure as a cause of death has never been reported in CCA. Obstetricians and pathologists should be aware of such rare associations as severe cardiac anomalies leading to congestive heart failure in CCA.

**246**

**ROLE OF AORTIC THROMBUS IN ISOLATED INTESTINAL PERFORATION(HP) IN PRETERM INFANTS?**

Shelata M, Shah D. ETSU, Johnson City, TN.

**Case Report:** BMH is a 540 grams, 24weeks PMA with uneventful delivery and no maternal risk factor was doing fine till day of life 5. He was on HFNC ventilatory support and trophic enteral feeding prior to development of acute abdomen. She was found to have isolated ileal perforation. Her abdominal ultrasound showed thrombus in distal aorta.

BMH is a 540 grams, 24 weeks PMA with uneventful delivery and no maternal risk factor was doing fine till day of life 5. He was on HFNC ventilatory support and trophic enteral feeding prior to development of acute abdomen. She was found to have isolated ileal perforation. Her abdominal ultrasound also showed aortic thrombus.

**Conclusions:** EES in both dosing regimens, HD and LD, resulted in improved feeding tolerance. The success rate was similar on HD and LD therapy. Both dosages were well tolerated and appeared reasonably safe.
Both infants had UAC at T-5 position. Both infants had conservative treatment with removal of UAC with subsequent dissolution of arterial thrombus formation. Both infants went home on po feeding without any intraventricular hemorrhage (IVH).

**Discussion:** Isolated intestinal perforation (IP) isn’t uncommon in extreme preterm infants who receive early Indomethacin treatment at 12 hours of life for prevention of IVH. It’s also very common practice to place high UAC in these infants for management. We speculate role of ‘abdominal aortic thrombus’ in development of IP with prophylaxis Indocin. Role of abdominal ultrasound in monitoring of UAC is not established.

### 247

**INITIAL OBSERVATIONS AND LIMITATIONS OF VEVO2100 HIGH RESOLUTION ULTRASOUND IMAGING IN NEONATES**

Ymalay RR,1,2 Sadanala UK,1,2 Raymon S1,2, Tinney JP1,2, Krisis VM,1, Keller BB1,2 (University of Louisville, Louisville, KY); 2University of Louisville, Louisville, KY and 3 Kosair Children’s Hospital-NHC, Louisville, KY.

**Purpose of Study:** Premature infants require frequent ultrasound imaging. One limitation of ultrasound imaging is the inverse relationship (trade off) between resolution (determined by frequency) and depth of penetration. The Vevo2100 is a pre-clinical research ultrasound imaging system with higher axial resolution (up to 30 um) but limited maximum penetration (30 mm) versus current clinical ultrasound systems.

**Objective:** Evaluate the feasibility of Vevo2100 imaging in premature to term infants who have undergone standard ultrasound imaging.

**Methods Used:** Cross-sectional comparison of high resolution (Vevo2100: 20 to 40 MHz probes) to standard clinical imaging. Recruited subjects underwent cranial and/or renal ultrasound (8.5MHz) for clinical indications then Vevo2100 imaging using standard ultrasound techniques. The Vevo2100 system acquired 2D images and movies, pulsed-wave and color-Doppler velocity waveforms. 2D images were compared for image clarity and velocity waveforms were analyzed for peak velocity and resistive index. Data are summarized as mean ± SD and analyzed versus gestation by linear regression.

**Summary of Results:** We enrolled n=42 subjects and completed n=85 scans (n=69 cranial, n=16 renal). No adverse effects of Vevo2100 scanning were noted. Vevo2100 scans provided higher CNS and renal resolution compared to standard imaging. Vevo2100 CNS scanning depth was limited to the lateral ventricles. Color-Doppler blood flow imaging aided the identification of inter- and intraparenchymal CNS vessels for velocity recording. Peak anterior cerebral arterial flow velocity increased from 110.5 mm/sec at 24 wks gestation to 145.7 mm/sec at 41 weeks (31.9%, p=0.02). Average arterial resistive index (0.73) was unchanged with gestational age. Renal Vevo2100 imaging revealed higher image resolution including the detection of renal cysts and calcification.

**Conclusions:** Mobile, high resolution CNS and renal imaging is feasible in premature to term infants. Ongoing studies can now explore changes in velocity parameters in high-risk subsets of premature to term infants.

### 248

**BRONCHOLITHIASIS: AN UNUSUAL CAUSE OF LUNG ABSCESS**

Ergen W, Kadaria D, Waqas M, Villaneuva M, Yataco JS University of Tennessee HSC, Memphis, TN.

**Case Report:** Introduction: Broncholithiasis is defined as the presence of calcified material within the tracheobronchial tree. It is usually found in association with bronchial granulomatous infections. Patients usually present with chronic cough, hemoptysis and recurrent pneumonia. Rarely, patients can have laryngitis or “gritty” or sandy sputum. We report a case of broncholithiasis presenting as a lung abscess.

**Case report:** 46 year-old male presented with complaints of shortness of breath, fever, night sweats and cough with yellowish sputum for two weeks. Vital signs were stable except for heart rate 105 beats/min and respirations 28/min. Lung examination revealed decreased breath sounds on right side. Initial laboratory results were within normal limits. Chest X-ray followed by CT scan was done which showed a large, heterogeneous mass with central necrosis in area of right middle lobe (RML) and moderate right-sided pleural effusion. Thoracocentesis showed empyema for which a pigtail catheter was placed. Patient was started on broad spectrum antibiotics. Bronchoscopy showed a broncholith occluding the opening of the RML. It was found to be friable, so was pulled with help of bronchoscope. It was sent for evaluation, which revealed a thrombus, fibro vascular connective tissue and calcification.

**Discussion:** Broncholithiasis is presumed to be caused by injury to the bronchial tree by the compressive or erosive effects of calcified peribronchial lymph node. Lymph node calcification results usually from infectious etiologies, with histoplasmosis being the most common cause in United States.

**Management:** We administered empiric antibiotics and broncholiths were removed with flexible bronchoscopy with the help of bronchoscopic biopsy forceps.

**Conclusions:** Broncholithiasis is an uncommon cause of lung mass and needs to be kept in mind when evaluating patients with chronic cough, fever, night sweats and right-sided pleural effusion. The etiology should be sought, and treatment is different depending on the etiology.

### 249

**CHRONIC SHORTNESS OF BREATH AND CHYLOTHORAX**

Haas J, Engel L (LSU-Health Sciences Center, New Orleans, LA.

**Case Report:** A 76 y/o white male with history bladder cancer (status post chemotherapy and transurethral resection), coronary artery disease (status post CABG years prior), and COPD presented to the emergency department with 1 month of progressive cough and dyspnea. A chest x-ray revealed a left sided pleural effusion which was drained and found to be negative for malignancy. A diagnosis of costochondritis and worsening COPD was suggested. Despite further therapy for COPD, the patient did not improve and he began to develop bilateral lower extremity swelling. One day prior to admission, the patient had a repeat chest x-ray and visual findings suggested a recurrence of bladder cancer. At the time of admission, the chest x-ray revealed bibasilar crackles, dullness to percussion and 3+ pitting edema of the lower extremities. Initial laboratory data demonstrated a normocytic anemia, a D Dimer of 515, and a BNP of 130. Urinalysis showed mild proteinuria of 30mg/dl. A blood gas revealed an elevated A-a gradient with a pH of 7.35, Pao2 of 55, PaO2 of 86. CXR showed bilateral pleural effusions. A CT scan ruled out pulmonary embolism but did reveal exfoliative larynx, retroperitoneal, and mediastinal adenopathy. A thoracentesis removed 1.5 liters of milky effusion which was exudative with a predominance of lymphocytes, total cholesterol level of 71mg/dl, a triglyceride level of 266 mg/dl, CEA 4.6, lipase 21, and negative cytology. An anemia workup revealed iron deficiency anemia and although colonoscopy failed to reveal a source of bleeding, multiple randomly arranged 10mm nodules lining the colon were noted: Biopsies demonstrated atypical lymphoid infiltrates.

**Discussion:** The patient’s findings were consistent with a chyllothorax. The differential diagnosis for a lipid effusion, classically described as a “milky pleural effusion”, includes both a chyllothorax and a cholesterol effusion. Gross appearance of the fluid is not a sensitive diagnostic criterion for a lipid effusion. The pleural fluid triglyceride content appears to be the most helpful measurement in differentiating a chyllothorax from a cholesterol effusion. In a non-fasting patient, a pleural fluid triglyceride level greater than 110mg/dl strongly supports the diagnosis of a chyllothorax. Once a chyllothorax is identified, the etiology should be sought.
of heat stroke with significant troponin elevation without underlying cardiac disease.

Case Description:
Case 1: 32 y/o male found down with initial temperature measured as > 41.4°C. The patient’s initial troponin level was 1.26 which increased to a maximal level of 14.1 within the next 30 hrs. The Patient’s EKG initially showed diffuse ST elevation but normalized in repeat one. Echocardiogram was normal. His troponin normalized and there were no other features of cardiac damage.
Case 2: 63 y/o male presented with a temperature of 41.1°C, stable vitals and a troponin of 0.48. The patient had no complaints of chest pain, shortness of breath or palpitations. EKG showed ST wave depressions suggestive of anterolateral ischemia with sinus tachycardia. His troponin increased to 3.53 within 6 hrs. Cardiac catheterization showed normal coronary vessels and function fraction.
Case 3: 18 y/o female presented with weakness and dizziness while participating in a soccer game. Her temperature on arrival was 40.0°C. No complaints of chest pain, shortness of breath, or palpitation. Her troponin at presentation was < 0.05 which increased to 1.27 within 6 hrs. Her initial EKG showed sinus tachycardia with an RSR’ appearance and ST wave depressions in II, III, V4-V6. Repeat EKGs returned to normal. Her troponin normalized over the next 2 days.

Discussion: Troponin elevation is seen in diseases which directly affect the heart, including ischemia, infections, autoimmune diseases and tumors. It can also be seen in sepsis, gastrointestinal bleeding, intracranial hemorrhage, seizures etc. Thus, troponin elevations may not always reflect coronary artery lesions. It is possible to hypothesize that in severe heat stroke, as in sepsis, a mixture of increased cardiac demand and release of inflammatory mediators promotes release of troponins.
As we have shown above, in patients presenting with heat stroke, troponin elevation can occur with or without EKG abnormalities. Unless there is other evidence suggestive of cardiac disease, additional cardiac workup may not be necessary.

251
ATYPICAL PRESENTATION OF CYSTIC FIBROSIS IN A PRE-ADOLESCENT AFRICAN AMERICAN FEMALE
Henderson N, Morton RL, O’Hagan A University of Louisville, Louisville, KY.

Case Report: Whereas the typical clinical presentations for cystic fibrosis (CF) (poor growth, malabsorption, recurrent sinopulmonary disease) in the Caucasian population present early in life, atypical CF clinical presentations (i.e. asthma symptoms) are much more common in patients of African American (AA) ethnicity. We describe an 11 year old AA female with asthma symptoms since age 6 years. She presented to the outpatient Pulmonary clinic with worsening fatigue and cough over two months duration. Initial spirometry performed in the outpatient office showed an FEV1 40% predicted and she was admitted for further management. She was initially started on the inpatient asthma protocol. However, her lung exam failed to improve by hospital day number 2 and repeat spirometry showed mixed obstructive/restrictive pattern (FEV1 37%, RV 317%). Her clinical course worsened with increased tachypnea and rales and she was transferred to the Pediatric ICU on hospital day #4. Chest radiograph obtained prior to transfer showed bilateral fluffy opacities. Sputum culture subsequently grew Pseudomonas aeruginosa. Sweat chloride results showed sweat chloride 47 and 54. Computerized chest tomography (CT) revealed multiple pulmonary nodules from 1 to 4 cm. in size, with cavitation within a nodule in the left upper lobe. HRCT was done which showed bilateral moderate paranasal sinus disease. Further CF genetic investigation revealed two deleterious mutations (c.1679+1634 A>G and c.3849+101kbC>T), confirming the diagnosis of CF. Our patient’s pancreatic function was normal (fecal elastase > 500) despite significant respiratory findings. Both parents were African American, but nevertheless, the father was positive for the same genetic mutation as the patient, c.1679+1634 A>G. We will explore the atypical clinical manifestations, implications of CF newborn screening and long term prognosis in African American patients.

252
IT’S THE ARNOLD’S WHICH CAN SLOW US DOWN
Joshi HK, Patel M, Roy T, Byrd R East Tennessee State University, Johnson City, TN.

Case Report: Introduction
An infection can present with a rare combination of syncope and transient ischemic attack
Learning objectives
Infection of mastoid and temporal bones can result in irritation of Vagus nerve which eventually presents with sinus bradycardia, followed by syncope.
Case
A 61 year old male with chronic mastoiditis presented to the Ear, nose and throat (ENT) clinic with chief complaint of dizziness, passing out spells followed by inability to speak. He also had chronic cheezy ear discharge. Following irrigation of ear canal, a high resolution CT scan (HRCT) of temporal bone was ordered. Awaiting CT scan, he experienced syncope, followed by aphasia. Physical examination/ECG revealed a heart rate of 36 beats per minute (BPM) and normal sinus rhythm. The serum glucose was within normal limits as was other laboratory parameters. CT angiogram of brain revealed high grade stenosis of left middle cerebral artery. Neurology, cardiology and ENT consults were done after admission to a monitored environment. He had several episodes of sinus bradycardia(lowest 35 bpm) exacerbated by movement and manipulation of ear or temporal bone. HRCT was done which showed acute on chronic mastoiditis extending anterior to the posterior part of External Auditory Canal(EAC) and posterior to temporal bone, cholesteatoma. Echocardiogram was within normal limits. After 3 days of antibiotic therapy, bradycardia improved. Considering acute infection as an etiology, pacemaker placement was not considered appropriate. Corrective mastoid surgery was proposed after the acute infection has resolved. Patient was discharged on oral antibiotics. After that no further episodes of bradycardia or syncope occurred.
Discussion: The posterior/inferior part of the EAC is supplied by auricular branch of the Vagus nerve (Arnold’s nerve). It is very well known that Vagus nerve stimulation is a cause of vasovagal syncope. It is well documented in the medical literature that certain maneuvers/ procedures can stimulate the vagus nerve and produce syncope. In our patient, it is likely that the infection of the ear canal and mastoid bone contributed to his syncope as his bradycardia and syncope resolved after starting on antibiotics. Our patient developed aphasia due to poor perfusion through a high grade middle cerebral artery stenosis during bradycardia.
Its effects are similar to that of stimulants like cocaine, hallucinations similar to LSD, and intense euphoria. Management is usually supportive including intubation, ventilation, and correction of acidosis if present. Physicians need to be aware of this new substance of abuse and keep it in the differential diagnosis of the acutely agitated patient.

254 PERSISTENT BRONCHOPLEURAL FISTULA: A CHALLENGE TO PULMONOLOGIST
Kadaria D1, Smith CB2, Sarva ST1, Mabie M2

Case Report: Introduction: Persistent bronchopleural fistula (BPF) is an undesirable situation faced by pulmonologists. If a patient is not a surgical candidate, there are few treatment alternatives apart from waiting for spontaneous resolution. We report a case of successful closure of persistent BPF in a young man on chronic mechanical ventilator support with the use of a fibrin sealant.

Case Report: A 22-year-old cachectic male with a history of Duchenne muscular dystrophy on chronic ventilator support was admitted to hospital with pneumonia. While hospitalized, the patient developed a right sided pneumothorax. Placement of a chest tube improved his symptoms but the BPF persisted. The patient was not considered a candidate for pleurodesis or video assisted thoracic surgery. One month after chest tube placement a decision was made to attempt closure of BPF with the use of a fibrin sealant. Fiberoptic bronchoscopy was performed with a balloon catheter. In each segment of the right lung, the balloon was inflated until the location of the air leak was identified. Upon occlusion of the anterior segment of right upper lobe (RUL), cessation of the air leak was noted. At this time, ten milliliters of fibrin sealant was injected into the anterior segment of the RUL. The balloon was kept inflated to maintain occlusion of the segment for two minutes after injection of the fibrin sealant. No further air leak was observed. Twenty-four hours after the procedure the chest tube was clamped and removed after an additional 48 hours. The patient was discharged home in stable condition.

Discussion: BPF is an abnormal connection between a bronchus and the pleural cavity. Management of persistent BPF can be challenging. For high-risk surgical patients who are mechanically ventilated, endoscopic procedures may be the only option. In our patient who was both a non-surgical candidate and on chronic mechanical ventilator support, use of fibrin sealant resulted in immediate and complete cessation of the air leak. We believe this is one of the few cases of successful closure of BPF with fibrin sealant in a chronically ventilator dependent patient. We recommend physicians to consider fibrin sealant to treat persistent BPF, especially if a patient is a non-surgical candidate.

255 ACUTE RESPIRATORY FAILURE IN CHIARI MALFORMATION TYPE I
Kjiirishareachahi K, Limsuwat C, Mankongpiaisamrong C, Nugent K

Case Report: Chiari Malformation Type I (CM I) is a congenital disorder defined as the caudal elongation of cerebellar tonsils through the foramen magnum into the cervical canal. Respiratory compromise has been reported as rare presentation, usually associated with central obstructive sleep apnea. Acute respiratory failure leading to chronic ventilator dependence is very unusual.

A 49-year-old Hispanic man presented with a 2-week history of shortness of breath and cough with purulent sputum. He had a history of epilepsy of unknown type and was on phenytoin without seizures in the past year. He was hospitalized and treated for community-acquired pneumonia. On the first day of admission, he became apneic requiring bagging and then intubation. Initial blood gas showed severe acute respiratory acidosis with hypoxemia. After completion of antibiotics and three days of ventilatory support, 3 attempts at extubation were made without success. He required reintubation due to apneic episodes soon after endotracheal tube was removed. Computed tomography of the head was essentially normal. Magnetic resonance imaging of the brain revealed severe CM1 with cerebellar tonsils projecting 3 cm below foramen magnum and a cervical cord syrinx at C2-C3 levels. Neurosurgery recommended surgery after the patient stabilized. He later underwent tracheostomy but still required assist-control ventilation most of the day and at night. He was eventually transferred to a long-term care facility.

Patients with CM I often have central and/or obstructive sleep apnea. Possible neurological damage from stretching cranial nerves IX and X results in absence of gag reflex, decreased mobility of pharyngeal muscles and vocal cord paralysis, and denervation to chemoreceptors in the carotid body; direct compression of respiratory center by protruding cerebellar tonsils could lead to respiratory dysfunction as well. The acute respiratory infection in this patient could have compromised his limited respiratory reserve, and he developed an acute near-fatal event in the hospital. This patient emphasizes the importance of respiratory complications in CM1 patients which can lead to fatal respiratory failure and significant morbidity from chronic ventilatory failure.

256 COMMON OVER THE COUNTER MEDICATION CAUSES SHOCK
Knudson M, Kleinman J, Singh D, Akingbola O, Frieberg E

Case Report: A 15-year-old boy with no past medical history presented with altered mental status. He was found vomiting, unable to answer questions, and thrashing about his room. He had no loss of consciousness or incontinence. He was afebrile, pulse 140, blood pressure 60/30, and respiratory rate 18. He was arousable to painful stimuli, localized pain, and occasionally responsive but not following commands. Lungs were clear bilaterally, a 3/6 systolic ejection murmur was heard over left lower sternal border, peripheral pulses were bounding, extremities were warm with brisk capillary refill. Complete blood count revealed a slightly elevated white blood cell count, normal platelets and hemoglobin. The initial metabolic panel only revealed decreased bicarbonate and increased glucose, with an elevated anion gap. The cerebral spinal fluid studies were normal. Urine toxicology was negative. Acetaminophen, blood alcohol, and salicylate levels were zero. Mass spectrometry was run on urine revealing naproxen and ibuprofen. He became acidic with a pH of 7.0 with lactic acid peaking at 15. He required high dose dopamine, epinephrine, and vasopressin for hemodynamic stabilization, and required intubation. After 36 hours he became more responsive, the acidosis had resolved and he was extubated. Then he admitted that he had taken about 150 pills of naproxen and 50 of ibuprofen in an attempt to end his life.

Discussion: There are few case reports of naproxen overdoses. The common problems with naproxen and ibuprofen overdose are gastrointestinal or central nervous system complications. Rarely, they cause severe acidosis, acute renal failure, hepatic dysfunction, respiratory depression, coma, and cardiovascular collapse. The mechanism by which it causes both acidosis and hypotension are not well known. There is speculation that both the acid metabolites of ibuprofen and naproxen contribute to the acidosis. The treatment is supportive as the naproxen is protein bound and difficult to remove through dialysis. There have been a couple of case reports that support the use of extracorporeal membrane oxygenation or plasmapheresis. It is important to know the half-life of the non-steroidal anti-inflammatory and continue to provide support until the drug level has come down.
Respiratory bronchiolitis is an inflammatory lesion of the respiratory bronchioles that occurs mainly in cigarette smokers producing clinical, physiologic, and imaging features of interstitial lung disease. This clinicopathologic syndrome, is called respiratory bronchiolitis-associated interstitial lung disease (RB-ILD). A very few cases have been reported in the literature.

A 54-year-old white male, with a 40 pack-year history of smoking presented with a 2-year history of dyspnea worsened over 2 months with increased cough and blood-streaked sputum. On exam, obese male with BMI of 35 kg/m², in respiratory distress with a rate of 22/minute and pulse ox of 95% on 2 L of Fo2. Lung exam revealed crackles in the left lung. Labs were unremarkable. CXR demonstrated the bilateral interstitial infiltrates. As the patient failed the treatment for COPD exacerbation secondary to pneumonia, hence further workup done. PFT’s revealed a mixed picture of obstructive and restrictive pattern. High-resolution computed tomography (HRCT) revealed centrilobular nodular opacities and patchy ground-glass opacities. Differential at this point included RBILD, desquamative interstitial pneumonitis (DIP), usual interstitial pneumonia (UIP) and idiopathic pulmonary fibrosis. He then underwent bronchoscopy which reported no intra-bronchial abnormalities or malignant cells and was negative for AFib & fungal stain, smear, & cultures. Biopsy showed fibrotic bronchial walls and the collection of smoker’s macrophages. With the above clinical features, bronchoscopy and HRCT findings patient was diagnosed of RBILD. Patient was encouraged to stop smoking and was started on oral steroids: Smoking cessation with steroids was beneficial and resulted in improvement of symptoms and PFT’s. A follow up HRCT after 1 year showed remarkable improvement.

Diagnosis of RBILD is a nebulous gestalt of clinical, functional, and HRCT findings and needs a high index of suspicion. Failed therapy for COPD/Pneumonia intrigued us for further workup. It remains unclear whether smoking cessation and corticosteroid therapy favorably alters the natural history of RB-ILD. Physicians should be alert to the potential diagnosis of RB-ILD.

ANAPHYLAXIS TO INTRAVENOUS ACETAMINOPHIN, A CASE REPORT
Rhodes L, Winkler M, Tofil N University of Alabama, Birmingham, Birmingham, AL.
Case Report: Purpose: To report a possible side effect of a commonly used drug.
Methods: Single case report
Results: 15 year old female history of Klippel Feil syndrome and developmental delay was admitted to the pediatric intensive care unit after anaphylactic shock thought to be secondary to intravenous acetaminophen. The patient was initially admitted to the hospital for her fifth routine dental rehabilitation. The surgery lasted approximately 90 minutes. At the beginning of the case the patient’s gums and teeth were rubbed with Next Prophy Paste C (fluoride and blue dye #1, #2. During the procedure the patient received propofol, sevoflurane, fentanyl, ondansetron, and subcutaneous lidocaine. No antibiotics were given. The patient had stable vital signs throughout the case. At the completion of the procedure the patient was given intravenous acetaminophen. An estimated 30 seconds to 2 minutes after the acetaminophen, the patient’s tongue became swollen and dark purple, and she developed hypotension and systemic flushing. The patient required 6 boluses of epinephrine, 2mg/kg diphenhydramine, decadron, ranitidine, and 60cc/kg fluid boluses prior to stabilization. The patient was transferred to the intensive care unit on an epinephrine drip at 0.05mg/kg/min, which was titrated off within 3 hours. Upon arrival to the PICU she was started on scheduled ranitidine, solumedrol, and Benadryl. The patient continued to have significant tongue and lip swelling for approximately 96 hours after the event, but had no more hemodynamic instability. She had previously undergone 4 dental rehabilitation procedures without any adverse events, but had never received intravenous acetaminophen. Upon review of the patient’s case, no other etiologies of the patient’s anaphylactic reaction could be found.
Conclusion: This case is important because intravenous acetaminophen was FDA approved recently (November, 2010). Currently its clinical utility is being evaluated throughout the country, and any life-threatening side effects should be reported. It is only approved for use in the operating room at our institution. Further investigation of the potential allergic components of intravenous acetaminophen should be undertaken.

FAIRED COPD/PNEUMONIA TREATMENT: WHAT NEXT?
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Case Report: Respiratory bronchiolitis is an inflammatory lesion of the respiratory bronchioles that occurs mainly in cigarette smokers producing dyspnea.

ASSESSING THE SAFETY OF A MASK DESIGNED FOR EFFICIENT DELIVERY OF AEROSOLS TO INFANTS
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Purpose of Study: Respiratory syncytial virus (RSV) is the most frequent cause of lower respiratory infection in children. Young infants suffer severe disease. An RNA-interference-based antiviral drug for the treatment of RSV in populations that may include young children is currently designed to be administered directly into the respiratory tract via an aerosol. Delivery of an aerosol to very young infants requires a facemask. The carbon dioxide (CO2) concentration accumulated within an inhalation facemask mask over time could affect the quality of the mask-sustained breathing process but has not been evaluated.
Methods Used: We investigated the simulated flow phenomena and the CO2 concentrations accumulated over time within a new inhalation face-mask designed for infants and young children by PARI Pharma (PARI SMARTMASK® Baby). A simple one-dimensional model was first examined, followed by a 3-dimensional unsteady computational fluid dynamics analysis. Patterns representing both infant’s normal breathing and respiratory distress were simulated.
Summary of Results: Model analysis showed that the maximum average concentration of CO2 in the mask reached steady state concentrations after approximately the 5th respiratory cycle. After steady state, the maximum average CO2 concentrations within the mask were 3.2% and 3.3% for the normal and distressed breathing patterns respectively. After steady state, the mean CO2 concentration of inspired air at the level of the nostril was 2.24% and 2.26% for the normal and distressed breathing patterns respectively.
Conclusions: The mask is predicted to cause minimal CO2 retention and re-breathing. Infants with normal and distressed lungs should tolerate the mask intermittently delivering aerosols over brief time frames.
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CHRONIC KIDNEY DISEASE RISK FACTORS IN A NURSING HOME POPULATION OF LOUISIANA: A CROSS-SECTIONAL STUDY

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Purpose of Study: This study was designed to determine the prevalence of CKD and its associated risk factors in nursing home residents and to determine associations if any among these risk factors and CKD. Methods Used: A cross-sectional descriptive study was conducted in a university affiliated-nursing home population where 103 charts were reviewed. The study was approved by the Louisiana State University Health Sciences Center in New Orleans Institutional Review Board. The information retrieved was de-identified and stored electronically. Chi square statistics and t-test were used to compare proportions and group means.

Summary of Results: 66% of the population was African-American and 34% Caucasian; mean age was 64 years (range 30-94). Prevalence of CKD was 23%. The mean age for eGFR <60 mL/min/1.73m2 was 67±14. The most frequent co-morbidities were hypertension (75%), GERD (40%), obesity (39%), dyslipidemia (35%), depression (34%), anemia (32%) and diabetes (32%). In those older than 75 years of age, the leading comorbidities were DJD (80%), cancer (60%), PVD (57%), ESRD (50%), COPD (50%), CHF (50%) and dementia (45%). Higher number of medications per subject significantly correlated with a lower level eGFR (p<0.05). Logistic regression analysis showed that age above 65 years (p=0.01), male gender (p=0.06), positive history of CV disease (p=0.05), and obesity (BMI>30) (p=0.05) were statistically associated with low eGFR.

Conclusions: Management targeted at CKD risk factor reduction may play a vital role in controlling CKD magnitude in the nursing home setting.

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THE SAFETY AND EFFICACY OF PERCUTANEOUS RENAL BIOPSY BY PHYSICIAN-IN-TRAINING IN AN ACADEMIC TEACHING SETTING

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Purpose of Study: The safety and efficacy of percutaneous renal biopsy (PKB) is relatively little studied in a purely training setting. We performed a retrospective cohort review of our consecutive 3-year renal biopsy experience (01/2007 - 12/2009) at the University of Mississippi Renal Fellowship Program. Methods Used: We collected data on numerous baseline and procedure related variables, as well as complication rates. All biopsies were performed exclusively by Renal Fellows under real-time ultrasound (US) visualization within a framework of structured US-PKB training course. Data was analyzed with PAWS Statistics 18 and the results expressed as either percents or means with standard deviation (±SD).

Summary of Results: 70 patients underwent PKB during the index period, 50 (71.4%) of native kidneys. Age was 40.4 ±(±13.7) years, blood pressures 140/84.7 ±(±20.8/14.6) mmHg and biopsied kidneys measured 11.7 ±(±1.6) cm. Serum creatinine was 1.0 ±(±0.30) mg/dL, random urine protein/creatinine ratio 5.22 ±(±7.16) and urine sediments showed 12.9 ±(±24.8) RBC and 10.7 ±(±20.7) WBC/high-power fields. Specimens appeared “Sufficient” in 64 (91.4%), “Borderline” 4 (5.7%) at bedside inspection. We recovered 18.6 ±(±11.4) glomeruli per procedure (range: 0-72; median 17.5); 2 biopsies (2.8%) remained unsuccessful. There was a very close correlation between preceding history and recovered diagnoses of diabetic changes (r 0.580; p=1.74 10-7) and lupus nephritis (r 0.847; p=5.04 10-20). Only 3 specimens returned with “No diagnostic changes.” Initial Hemoglobin of 10.7 ±(±1.8) g/dL dropped by 0.5 ±(±0.7) after PKB (NS). Three (4.3%) patients needed transfusion; 1 patient experienced persistent urine leakage, but no one needed surgical or radiological intervention or died.

Conclusions: In the setting of well-structured training environment, US guided PKB performed by relatively inexperienced operators in-training is safe and an should remain an essential component of renal fellowship training.

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RENAL HYPOURICEMIA IN A CHILD WITH CROHN’S DISEASE

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Case Report: We present the rare case of renal hypouricemia in a child with Crohn’s Disease (CD). Our patient is a 12 year-old Caucasian boy with a past medical history of CD, which was diagnosed at 10 years of age, who presented to the emergency room with dysuria, recent passage of stones with urination for several days, and intermittent inability to produce urine. He was receiving azathioprine for CD. The patient’s family history is significant for the presence of nephrolithiasis of unknown composition in both parents, paternal uncle, and grandfather.

Urinealysis revealed a specific gravity of 1.000, pH of 6.5, and the absence of proteinuria, hematuria or any signs of a urinary tract infection. Spot urine calcium (Ca) to creatinine (Cr) ratio was normal at 0.15. A 24-hour urine collection showed <2 mg/dL of urinary calcium, 403 mg of urinary citrate, 97 mg of urinary cystine, 38 mg of oxalate, and increased uric acid (UA) of 1,458 mg. Serum chemistry demonstrated normal Cr of 0.55 mg/dL, Ca of 10.5 mg/dL, magnesium of 2.1 mg/dL, phosphorus of 4.5 mg/dL and a decreased uric acid of 1.6 mg/dL.

Renal ultrasonography (US), computed tomography (CT), X-ray, voiding cystourethrogram and cystoscopy demonstrated normal anatomy of the kidneys and lower urinary tract and absence of calculi. Azathioprine was discontinued and therapy was started with abundant fluid (2 L/m2 BSA/24 hours), limited sodium intake, Urocrit-K to alkalize the urine and decrease UA solute saturation, pyrazinamide to decrease renal UA excretion, and analgesics for pain control. Stone analysis demonstrated the presence of 90% calcium carbonate and 10% of calcium phosphate, but not UA or Ca oxalate. Repeat US demonstrated the presence of a 4 mm nonobstructing calculus in the left kidney.

Despite subsequent normalization of serum and urinary UA levels, the patient continues to intermittently pass stones with urination. This observation illustrates a rare case of renal hypouricemia in a child with CD. Moreover, this case highlights the need to maintain a high index of suspicion for occurrence of renal stones in children with CD, and in children who are receiving medications which can potentially lead to nephrolithiasis.

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ALL THE INFILTRATES ARE NOT PNEUMONIA

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Case Report: Anti-glomerular basement membrane (GBM) antibody disease is a type of RPGN. The infrequency with which it is encountered and the variety of presentations make it a formidable condition to diagnose. A 39 year old previously healthy male was transferred from an outside hospital with a two month history of fatigue, hemoptysis, dyspnea, myalgia, cough, night sweats and a 25 lb unintentional weight loss. He had been previously diagnosed with pneumonia on two occasions and treated most recently with doxycycline. On each occasion, after he finished treatment, the symptoms would again worsen. He had no significant PMH and did not take any medications. He had worked as an asphalt paver for 20 years and had a history of crack cocaine and heavy tobacco use. On examination he was tachycardic, tachypneic and had bronchial breath sounds at the base of both lungs. CXR and CT Chest showed diffuse, bilateral, nod and lower lung field alveolar and interstitial infiltrates. Initial HB was 6.4 g/dL, sCr was 383
2.1 mg/dl, and BUN was 17. UA showed RBCs, 300 mg/dl protein, and RBC casts. Over the course of hospitalization his iCr continued to rise and breathing worsened. Tests for TB, fungal infections, and ANCA were all negative. A kidney biopsy showed crescentic GN with 56% crescents and immunofluorescence staining was positive for anti-GBM Ab so, a diagnosis of Anti GBM disease was made. The patient was started on plasmapheresis, cyclophosphamide and glucocorticoids. His pulmonary symptoms improved, but renal function got worse and dialysis was required. At the time of discharge he remained on dialysis and Anti GBM Abs were decreasing as a result of treatment.

This case illustrates the need for a high index of suspicion in recurrent bouts of hemoptysis and cough. Patients who present with primarily pulmonary symptoms are less common than those presenting with renal insufficiency. Initial presentation of anti-GBM antibody disease with lung involvement is more common in individuals who smoke and work with hydrocarbons. It is important to make the diagnosis of anti-GBM disease as quickly as possible to reduce the long-term complications and need for RRT.

### 265 PROTEIN ABUNDANCE OF UREA TRANSPORTERS AND AQUPORIN 2 CHANGE DIFFERENTLY IN NEPHROTIC PAIR-FED VERSUS NON-PAIR-FED RATS

**Bou Matar R, Sands J, Klein J**
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**Purpose of Study:** Salt and water retention is the hallmark of nephrotic syndrome. We previously demonstrated a marked reduction in the abundance of urea transporters, AQP2 and thick ascending limb sodium channels in doxorubicin-treated nephrotic rats fed ad libitum. In this study, we test for changes in the abundance of urea transporters, AQP2, NKCC2 and NCC in pair-fed nephritic animals.

**Methods Used:** Male Sprague Dawley rats (n = 10) were injected with 7.5 mg/kg doxorubicin via the femoral vein. Rats were pair fed and followed in metabolism cages to allow for monitoring of daily water, intake and urine output. Urinary excretion of osmoles, protein, sodium and urea was measured periodically. The development of salt retention (defined as a 20% reduction in urinary sodium excretion) was utilized as the primary end-point indicator. Kidney inner medulla, outer medulla, and cortex tissue samples were dissected and analyzed for the abundance of UT-A1, UT-A3, AQP2, NKCC2 and NCC using SDS-PAGE and western blot.

**Summary of Results:** Three weeks following doxorubicin injection, all treated rats developed features of nephrotic syndrome, with an average 8-fold increase in urine protein excretion (from 144 ± 21 to 1107 ± 165 mg/day; p < 0.001) and reduced urinary sodium excretion (from 0.17 to 0.12 mg/day; p<0.001). Urine osmolalities were significantly reduced in the nephrotic animals (1057 ± 37, treatment vs. 1754 ± 131, control), but total daily excretion of urinary osmole was similar between the two groups. Unlike animals fed ad libitum, UT-A1 protein abundance was similar between the two groups in pair-fed animals. AQP2 protein abundance was significantly reduced (52 ± 9%; p < 0.05) in inner medullary base in the nephrotic group, but similar between the two groups in inner medullary tip. Nevertheless, abundances of NKCC2 and NCC were consistently reduced (71 ± 7% and 33 ± 13%, respectively) in both nephritic pair-fed animals and animals fed ad libitum.

**Conclusions:** Reduced abundance of NKCC2 and NCC was consistently seen in pair-fed nephritic rats. However, changes in UT-A1 and AQP2, previously seen in nephrotic animals fed ad libitum, were not reproduced after controlling for dietary intake.

### 266 A NEWBORN WITH BILATERAL MULTICYSTIC KIDNEY DYSPLASIA AND CEREBELLAR HYPOPLASIA

**Chong E, El-Dahr S, Yosipiv I**
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**Case Report:** Antenatal fetal ultrasonography performed at 20 weeks of gestation in a primigravida 20 year-old female with pregnancy-induced hypertension demonstrated the presence of multiple macroscopic cysts in both kidneys of single male fetus. Other antenatal findings included oligohydramnios, intrauterine growth retardation (IUGR) and possible cerebral hypoplasia. Following counseling, mother decided not to terminate the pregnancy. Following birth at 36 and 27 weeks of gestation, the following anomalies were observed: IUGR, low-set ears without ear tags, microphthalmia, micrognathia, high arch palate, no cardiac murmur, and undescended testes bilaterally, generalized hypotonia, bilateral talipes equinovarus and palpable kidneys bilaterally. 2 umbilical arteries and 1 vein were present. Vital signs were as follows: HR 160, RR 42, BP 82/52 mmHg, oxygen saturation of 98% on room air. Echocardiography demonstrated a muscular ventricular septal defect (VSD) and moderate patent ductus arteriosus (PDA). CT of the head showed agenesis of corpus callosum and enlarged cistern magna. Renal US performed on day 1 of life showed the presence of 2 kidneys of normal size in normal anatomical location with near complete replacement of the renal parenchyma bilaterally with macroscopic cystine output was normal. Laboratory investigations showed serum creatinine of 0.7 mg/dL. Family history revealed the presence of Miller-Dicker and Wolf-Hirschhorn (WHS) syndromes in patient’s two half siblings on paternal side. A clinical diagnosis of a multorgan syndrome associated with bilateral MKD and targeted investigations were commenced. Microarray analysis revealed deletion at 4p16.3p16.1 which includes WHSC1 gene, mutations in which are associated with WHS. WHSC1 gene encodes H3K36me3-specific histone methyltransferase which functions as transcriptional regulator of developmental genes. This case illustrates a rare case of bilateral MKD associated with WHS and emphasizes the critical role of epigenetic chromatin modifications in pathogenesis of congenital birth defects. Because the underlying molecular mechanisms that cause birth defects are largely unknown, development of new strategies aiming at their prevention, preservation of renal function and avoidance of associated cardiovascular morbidity is needed.

### 267 SALT-DEFICIENT DIET DOES NOT ATTENUATE THE DEVELOPMENT OF SLOWLY PROGRESSIVE ANG II-DEPENDENT HYPERTENSION IN CYP1A1-REN2 TRANSGENIC RATS

**Collins A, Howard CG, Mitchell KD**
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**Purpose of Study:** Dietary sodium restriction results in activation of the renin-angiotensin system and augmentation of circulating and intrarenal angiotensin (ANG) II levels. However, despite the elevation in ANG-II levels, rats maintained on a low salt diet do not develop hypertension or protein excretion. In contrast, induction of the mouse Ren2 renin gene in Cyp1a1-Ren2 transgenic rats [TGR(Cyp1a1Ren2)] results in similar increases in ANG II levels, but with elevated arterial blood pressure and increases in urinary protein excretion. The present study was performed to determine the effects of dietary salt restriction on systolic blood pressure (SBP), urinary protein excretion, and urine flow in Cyp1a1-Ren2 rats with ANG-II dependent hypertension.

**Methods Used:** Male rats (n=6-8/group) were fed either a normal salt (0.6%) or salt-deficient diet (≤0.01%) containing indole-3-carbinol (I3C; 0.15%, wt/wt) to induce slowly progressive ANG II-dependent hypertension. SBP was measured daily by tail-cuff plethysmography. Rats were periodically placed in metabolic cages for measurement of 24-hour urine output and urinary protein, sodium and ANG II excretion.

**Summary of Results:** Both normal salt and salt-deficient groups fed an I3C-containing diet showed increases in SBP by day 4 of treatment (134±3 to 162±4 mmHg, P<0.01) and reached similar SBP levels by day 16 (207±9 to 219±14 mmHg, P<0.01) when compared to rats on normal salt diet. Urinary protein excretion, and urine flow in Cyp1a1-Ren2 rats with ANG-II dependent hypertension.

**Conclusions:** These findings demonstrate that dietary salt restriction does not attenuate the development of slowly progressive hypertension in Cyp1a1-Ren2 transgenic rats.

### 268 ALDOSTERONE MODULATES NCC INVOLVING MAPK ERK1/2 SIGNALING PATHWAY

**Feng X, Wang Y, Delpierre E, Gu D, Cai H**
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Purpose of Study: To investigate the role of aldosterone-mediated MAPK ERK1/2 signal pathway in regulation of NCC protein expression in response to dietary salt change.

Methods Used: We used western blot analysis in mDCT cells and SPAK KO mice knocked out mice.

Summary of Results: We found that aldosterone 1μM treatment enhanced ERK1/2 phosphorylation at 15 min, but decreased in 1 hr and lasted 24 hr, but does not affect SPAK phosphorylation at 373T site. We found that NCC protein expression is decreased with increased ERK1/2 phosphorylation without change of total ERK1/2 in SPAK KO mice. When the SPAK KO mice were fed with different dietary salts, we also found that aldosterone level is lower and ERK1/2 phosphorylation is increased with decreased total NCC protein expression in high sodium diet group compared to normal salt diet group.

Conclusions: These results suggest that aldosterone-mediated MAPK ERK1/2 signal pathway is involved in modulating NCC expression independent on SPAK signal pathway.

269 URINARY NEUTROPHIL GELATINASE ASSOCIATED LIPOCALIN (N-GAL) IN EXPERIMENTAL DIABETES

Fuenmayor-Cardozo FE, Ramesh G, Pollock DM, White JJ

Journal of Investigative Medicine &

Purpose of Study: Recent studies suggest an increased role of tubulointerstitial injury in diabetic kidney disease. However, there are no validated biomarkers of tubulointerstitial injury in diabetes. We hypothesized that urinary N-gal, a tubular injury biomarker useful for studying acute kidney injury, would be elevated in experimental diabetes.

Methods Used: SD rats were made diabetic using i.v. streptozotocin (STZ) (n=7). Controls (CTL) received normal saline (n=9). Rats were placed in metabolic cages at baseline, 4 weeks, and 10 weeks. Urinary N-gal was measured by ELISA. Urinary protein excretion was measured by the Bradford assay.

Summary of Results: As expected, blood glucoses were increased in STZ rats (485 ± 22mg/dL, P < 0.05 vs. CTL, DOCA). Urinary protein excretion was not different between STZ and CTL at weeks 4, but it was increased in DOCA rats (29 ± 7.6 vs. 25.1 ± 7.7 vs. 31.5 ± 51.8 mg/24h, P < 0.05) suggesting worse damage in the DOCA group. By 10 weeks urinary protein had increased in STZ vs. CTL (77.5 ± 13.4 vs. 32.3 ± 6.4 mg/24h, P < 0.05). N-gal excretion was increased in STZ vs. CTL and vs. DOCA at 4 and 10 weeks (409 ± 72 vs. 142 ± 18 vs. 830 ± 146, P < 0.05). There was strong correlation between urinary N-gal and protein excretion (r2 = 0.663 p < 0.0001).

Conclusions: N-gal is increased early in experimental diabetes, and is strongly correlated with proteinuria. Our data suggest that N-gal may be a useful marker for evaluating changes in tubulointerstitial injury in experimental models of chronic kidney disease.

270 OVERLAPPING OF MICROSCOPIC POLYANGITIS AND HENOCH SCHONLEIN PURPURA IN A CHILD WITH RENAL INVOLVEMENT

Hasanah S, Vasylyeva T

Purpose of Study: To study the role of aldosterone-mediated MAPK ERK1/2 signal pathway in regulation of NCC protein expression in response to dietary salt change.

Methods Used: We used western blot analysis in mDCT cells and SPAK KO mice knocked out mice.

Summary of Results: We found that aldosterone 1μM treatment enhanced ERK1/2 phosphorylation at 15 min, but decreased in 1 hr and lasted 24 hr, but does not affect SPAK phosphorylation at 373T site. We found that NCC protein expression is decreased with increased ERK1/2 phosphorylation without change of total ERK1/2 in SPAK KO mice. When the SPAK KO mice were fed with different dietary salts, we also found that aldosterone level is lower and ERK1/2 phosphorylation is increased with decreased total NCC protein expression in high sodium diet group compared to normal salt diet group.

Conclusions: These results suggest that aldosterone-mediated MAPK ERK1/2 signal pathway is involved in modulating NCC expression independent on SPAK signal pathway.

271 ACUTE CALCINEURIN INHIBITION WITH TACROLIMUS INCREASES PHOSPHORYLATION OF UT-A1 AT SERINE 486

Ilori TO, Wang Y, Blount MA, Sands J, Klein JD

Purpose of Study: UT-A1, the urea transporter, on the apical membrane of the inner medullary collecting duct (IMCD), is crucial for urine concentration in the kidney. Phosphorylation of UT-A1 on serines 486 and 499 is important for plasma membrane trafficking since phosphomutants without these sites are unable to traffic or transport urea. The impact of UT-A1 dephosphorylation on the urea transporter activity has not been studied.

Methods Used: We used Tacrolimus, a calcineurin inhibitor, to determine whether UT-A1 is dephosphorylated by calcineurin. IMCDs from Sprague Dawley rats were labeled with 32P-orthophosphate and treated with tacrolimus to inhibit calcineurin. INDs were probed with a phospho-specific antibody to pser486-UT-A1 to determine whether serine 486 is hyperphosphorylated by calcineurin inhibition with tacrolimus. Chronic treatment of rats with tacrolimus resulted in a polyuria that was partially corrected with water deprivation. The intracellular localization of pser486-UT-A1 in rats treated acutely and chronically with tacrolimus before and after a 24 hr water deprivation was determined using immunohistochemistry.

Summary of Results: Acute inhibition of calcineurin with tacrolimus showed a 108% increase in phosphorylation at serine 486 (n=15/group, P < 0.01). Inhibition of phosphatases 1 and 2A with calyculin increased total UT-A1 phosphorylation by 500% (n=6/group, P < 0.001 but no increase in pser846-UT-A1). IMCDs from acutely treated rats showed increased apical membrane association of pser486-UT-A1 while chronic treatment reduced its membrane association. After a 24 hr water deprivation, chronically treated animals appeared to redistribute pser486-UT-A1 to the apical plasma membrane and improve urine concentration.

Conclusions: We conclude that UT-A1 is likely a substrate for multiple phosphatases and that the PKA-phosphorylated serine 486 is dephosphorylated by calcineurin. This is the first documentation of the role of phosphatases in regulating UT-A1 activity and the first data suggesting that Tacrolimus may influence kidney function by affecting urea transport.

272 PREDICTORS OF HYPERKALEMIA AND DEATH IN PATIENTS WITH CARDIAC AND RENAL DISEASE

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Purpose of Study: Predictors of hyperkalemia in patients with cardiovascular disease (CVD, defined as patients with hypertension and heart failure) and chronic kidney disease (CKD) stages 3-5 are not well established, as advanced CKD patients were generally excluded from large randomized trials of heart failure treatment due to concerns for safety. The aim of this study was to ascertain risk factors of hyperkalemia (defined as serum potassium concentration >5.0 mEq/L) and associated all-cause mortality in 15,803 CVD patients treated with anti-hypertensive drugs (AHD) that impair potassium homeostasis.

Methods Used: Logistic regression

Summary of Results: Mean estimated glomerular filtration rate (eGFR) and mean serum potassium concentration were 55.6 ml/min and 4.0 mEq/L, respectively. Hyperkalemia was observed in 24.5% of study participants and 1.7% of the total hospital admissions. Compared to those with normokalemia, hyperkalemic patients had higher percentages of death (6.3% vs. 2.9%, p = 0.0001) and admissions (7.8% vs. 5.0%, p = 0.0001). Predictors of hyperkalemia were CKD stage (OR=2.14, 95% CI 2.02-2.28), diabetes mellitus (OR=1.59, 95% CI 1.47-1.72), coronary artery disease (OR=1.32, 95% CI 1.21-1.43) and peripheral vascular disease (OR=1.55, 95% CI 1.36-1.77). Predictors of all-cause mortality were CKD stage (OR = 1.26, 95% CI 1.12-1.43), hyperkalemic event (OR =1.56, 95% CI 1.30-1.88), age (OR =1.04, 95% CI 1.03-1.05) and hospitalization (OR =1.04, 95% CI 1.04-1.05).

Conclusions: In conclusion, hyperkalemia is encountered frequently in patients with established CVD on AHD and is associated with increased all-cause mortality and hospitalizations. Presence of CKD stages 3-5 is an independent predictor of both hyperkalemia and mortality. Future large trials should address safety and efficacy of anti-hypertensive agents that impair potassium homeostasis in heart failure patients with advanced CKD.

274 CHEST X-RAYS NOT RELIABLE FOR DIAGNOSING PNEUMONIA IN HEMODIALYSIS PATIENTS

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Purpose of Study: Both pneumonia (PNA) and pulmonary edema occur commonly in hemodialysis patients. Chest x-rays (CXRs) are used routinely in clinical practice to assist the differential diagnosis and guide management decisions, however their reliability has not been evaluated in this patient population. This study assessed the reliability of the CXR in diagnosing PNA in hemodialysis patients.

Methods Used: We retrospectively identified 122 hemodialysis patients admitted with the diagnosis of PNA from the emergency department of a large university hospital during a one-year period. After excluding 54 patients (37 with missing dialysis records, 15 requiring continuous renal replacement therapy, and 2 without initial chest x-rays), the remaining 68 patients were analyzed. Two experienced radiologists who were blinded to the patients’ clinical course and subsequent imaging studies independently interpreted the admission CXRs for the presence of PNA or pulmonary edema. Two internal medicine-trained physicians independently determined the presence of PNA and pulmonary edema after reviewing the entire hospitalization record. We assessed the level of agreement among the observers.

Summary of Results: The two radiologists agreed on 40 out of 68 CXRs (58.8%) regarding the presence or absence of PNA, and 38 out of 68 CXRs (55.9%) regarding the presence or absence of pulmonary edema. The two independent clinical reviewers agreed on the diagnosis of PNA in 41/68 patients (60.3%) and the diagnosis of pulmonary edema in 52/68 patients (76.5%). Complete agreement on PNA and pulmonary edema among all 4 observers was seen in 17.6% (12/68 patients) and 32.3% (22/68 patients), respectively. The incidence of PNA reported by the 4 reviewers ranged from 34-44%.

Conclusions: There is substantial disagreement between experienced radiologists on the CXR diagnosis of PNA and pulmonary edema in hemodialysis patients, perhaps reflecting uncertainty about the etiology of the pulmonary infiltrate in this population. Clinicians more frequently agreed on the diagnosis of pulmonary edema than of PNA suggesting that PNA is more difficult to diagnose clinically. The admission diagnosis of PNA in hemodialysis patients may frequently be incorrect.

275 URINARY BIOMARKERS IN PREDICTING PAINTE OUTCOME AND RENAL RECOVERY IN EARLY ACUTE KIDNEY INJURY

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Purpose of Study: Acute Kidney Injury (AKI) is commonly seen in critically ill patients and is associated with increased mortality. Elevation of Cr, and decreased urine output cannot predict patient outcome and renal recovery in medical intensive care unit (MICU) patients early in AKI. We studied urine biomarkers concentrations for predicting renal recovery and outcome in ICU patients.

Methods Used: Urine samples were collected from any patient who had AKI; Cr >0.3 mg/dl from baseline with in the first 24 hours of the initial diagnosis of AKI. Urine biomarker concentrations were measured using ELISA assays.

Summary of Results: 32 patients were included in this study, 6(18.7%) needed CRRT, 12 (37.5%) died in the hospital and 14 (43.75%) had renal recovery or survived without needing CRRT. The mean urine NGAL concentration in patients who had a combined outcome of CRRT and death in the hospital was 792±146 ng/dl compared to 119±89 ng/dl in patient who had renal recovery or did not need renal replacement therapy (p<0.001). A NGAL value of ≥282.4 ng/ml had a sensitivity 72.2%, specificity 92%; AUC 0.801 for predicating CRRT or mortality in these patients. Other urine biomarkers (cystatin C, HGF and IL18) concentrations did not correlate with the clinical outcomes.

Conclusions: Urine NGAL concentration appears to be very useful in predicting outcomes in ICU patients on the day of initial diagnosis of AKI.
Conclusions: ESRD is associated with increased serum K and K/Tr ratio. K is cleared by the kidney and correcting for GFR may simplify comparing K/Tr in patients with different levels of kidney function. Serum K and K/Tr may be useful surrogate markers for gauging IDO activity in vivo.

Purpose of Study: Indoleamine 2,3-dioxygenase (IDO) degrades tryptophan (Tr) to kynurenine (K). Through the depletion of lymphocyte Tr, IDO may contribute to the development of host tolerance to alloantigens, including kidney transplants. Harnessing the potential immunomodulatory effects of IDO requires the ability to non-invasively monitor its activity in vivo. ESRD patients are the pool for kidney transplantation, thus defining IDO activity in this group is relevant. To address this question, we assessed serum Tr and K levels from hemodialysis patients and compared the results to individuals with normal renal function.

Methods Used: This project was approved by the GHSU Human Assurance Committee. Sera from 9 patients with normal renal function (NL), and 10 individuals with normal renal function.

Summary of Results: When compared to NL, HD had significantly greater K level (3.2±1.5 vs 1.8±0.5 μM, mean±SD p < 0.05 for HD vs NL respectively) and K/Tr ratio (0.17±0.06 vs 0.04±0.01, p < 0.01 for HD vs NL, respectively). Tr levels were higher in NL than HD patients (46.9±6.7 vs 19.8±7.8 μM, p < 0.001 for NL vs HD respectively). Creatinine levels were 0.9±0.12 and 5.4±2.1 mg/dl (p< 0.05 for NL and HD respectively).

Conclusions: ESRD is associated with increased serum K and K/Tr ratio. K is cleared by the kidney and correcting for GFR may simplify comparing K/Tr in patients with different levels of kidney function. Serum K and K/Tr may be useful surrogate markers for gauging IDO activity in vivo.

Purpose of Study: This study is to determine the signaling pathways and transcriptional regulatory networks downstream of p53 in the developing kidney.

Methods Used: Data from Microarray and Chromatin immunoprecipitation followed by next generation sequencing (ChIP-Seq) were analyzed by Ingenuity Pathway Analysis (IPA) and DAVID Bioinformatics. Immunofluorescent microscopy, Western blot and RT-qPCR were also applied.

Summary of Results: We performed a comprehensive analysis integrating the transcriptome regulated by p53 with the p53-binding cistrome during nephrogenesis. Microarray analysis was performed on RNA derived from E15.5 p53 wild-type and knockout embryos. ChIP-Seq was performed in E15.5 mouse kidneys to detect direct p53 target genes in vivo. IPA was applied to compare our microarray results (3,146 genes) and ChIP-Seq data (6,880 genes). 1,463 genes were common to both microarray and ChIP-Seq, which would be considered as potential p53 direct targets. We also compared these databases with published microarray data sets representing different kidney developmental compartments (Brunskill et al., Dev. Cell 2009). To determine the distribution of p53 target genes in the developing nephron, the direct target gene list was used for DAVID functional cluster analysis and KEGG pathway analysis, which indicated that 24% of GO terms were involved in Development and Morphogenesis clusters, and that Wnt signaling pathway was ranked at 6 out of 45 pathways, respectively. By integrating these common genes into KEGG, multiple ligands, receptors, signal transducers and downstream target genes were highlighted in all three Wnt signaling pathways. Experimentally, increased β-catenin expression was induced in our p53-null mice.

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ACUTE KIDNEY INJURY AFTER PARTIAL NEPHRECTOMY: A TALE OF TWO KIDNEYS

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Case Report: A 69 y/o male presented to the ED with c/o right lower quadrant abdominal pain for two days duration. His medical history was significant for hypertension and a family history of renal cancer in his Grandfather. On exam, BP was elevated and lower right abdominal quadrant was tender to deep palpation, with mild rebound. Laboratory studies were benign with creatinine 1.3 mg/dl (MDRD eGFR of 58 mL/min) and a urinalysis with moderate blood and 8 red blood cells. CT of the abdomen showed a 4 mm calculus within the right mid ureter with mild hydronephrosis and incidentally revealed a 4.4 x 4.2 cm contrast enhancing mass within the inferior pole of the left kidney.

The patient underwent a rigid ureteroscopy with right retrograde pyelogram which showed no evidence of filling defect, but an area of delayed draining in the mid right ureter was noted. A double-J ureteral sent was placed with good positioning. A KUB was obtained and confirmed there was no abnormal calcification. The patient was discharged in stable condition and scheduled to return for a left partial nephrectomy of the left kidney.

Upon readmission, his vital signs were stable. He was taking Captopril up until one day prior to admission and he had stopped taking Celebrex. He had a partial nephrectomy with a warm ischemia time of 30 minutes without complications. Postoperative lab data were at baseline with the exception of sCr of 2.0 mg/dl. The next morning the creatinine increased to 3.4 mg/dl. A Duplex Doppler ultrasound showed moderate hydronephrosis of the right kidney, no hydronephrosis of the left partial nephrectomy, with good perfusion of the renal artery bilaterally. A right ureteroscopy was immediately performed and a stone was identified in the distal ureter. The stone was fragmented and removed. The patient had immediate return of excellent urine output (UOP) after the procedure and developed a post obstructive diuresis with UOP in excess of 4 liters per day. The patient’s creatinine reached a peak of 5.8 mg/dl and over the course of the next few days decreased with subsequent decrease in his polyuria. The patient was discharged in stable condition with close follow up and a sCr of 2.0 mg/dl.

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P53-WNT SIGNALING CROSSTALK IN KIDNEY DEVELOPMENT

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Purpose of Study: To determine the signaling pathways and transcriptional regulatory networks downstream of p53 in the developing kidney.

Methods Used: Data from Microarray and Chromatin immunoprecipitation followed by next generation sequencing (ChIP-Seq) were analyzed by Ingenuity Pathway Analysis (IPA) and DAVID Bioinformatics. Immunofluorescent microscopy, Western blot and RT-qPCR were also applied.

Summary of Results: We performed a comprehensive analysis integrating the transcriptome regulated by p53 with the p53-binding cistrome during nephrogenesis. Microarray analysis was performed on RNA derived from E15.5 p53 wild-type and knockout embryos. ChIP-Seq was performed in E15.5 mouse kidneys to detect direct p53 target genes in vivo. IPA was applied to compare our microarray results (3,146 genes) and ChIP-Seq data (6,880 genes). 1,463 genes were common to both microarray and ChIP-Seq, which would be considered as potential p53 direct targets. We also compared these databases with published microarray data sets representing different kidney developmental compartments (Brunskill et al., Dev. Cell 2009). To determine the distribution of p53 target genes in the developing nephron, the direct target gene list was used for DAVID functional cluster analysis and KEGG pathway analysis, which indicated that 24% of GO terms were involved in Development and Morphogenesis clusters, and that Wnt signaling pathway was ranked at 6 out of 45 pathways, respectively. By integrating these common genes into KEGG, multiple ligands, receptors, signal transducers and downstream target genes were highlighted in all three Wnt signaling pathways. Experimentally, increased β-catenin expression was induced in our p53-null mice.
and we also observed p53-mediated degradation of β-catenin in metanephric mesenchymal cells.

Conclusions: Our results implicate that p53 is involved in Mesenchyme-to-Epithelium Transition, nascent nephron differentiation and the direct regulation of the Wnt signaling pathways, and that the major functions of p53 in developing kidneys are concerned with development rather than tumor suppression. The Wnt signaling pathway is a major target for p53 during nephrogenesis.

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COMPARISON OF DIALYSATE TO BLOOD FLOW RATIOS 1.5 VS 2.0

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Purpose of Study: Achieving hemodialysis(HD) adequacy is the goal of each HD treatment. Dialysis adequacy is currently determined using the urea reduction ratio [URR] expressed as Kt/V as a surrogate for all uremic toxins. The economics of medicine also dictate that the dialysis treatment be delivered as cost effectively as possible. During dialysis, the ratio of dialysate flow rate [DFR] to patient blood flow rate [BFR] has traditionally been set at 1.5 and 2.0. Using Michael's equation, the change in Kt/V for each dialysis treatment would be a 3.5% decline resulting in a 0.05 absolute reduction in Kt/V. We hypothesized that patients treated with a [DFR/BFR] ratio of 1.5 could still meet Medicare guidelines as measured by Kt/V and [URR]. According to unpublished data, decreasing the [DFR] could produce an approximate $0.40 reduction in cost of dialysis per treatment. It was the intent of this pilot study to determine if a [DFR/BFR] ratio of 1.5 provided standard of care Kt/V & URR in a cost effective way.

Methods Used: [DFR/BFR] ratios were decreased from 2.0 to 1.5 in a single dialysis unit with 45 in-center HD patients. Twenty-one stable patients were randomly selected for study. Adequacy of dialysis in the form of Kt/V and the URR was reviewed for the six month period before and the six month period after decreasing the ratio from 2.0 to 1.5. Dialysis adequacy was then compared for the two six month periods. The total cost for medical supplies, and specifically acid/bicarbonate dialysate, per treatment were reviewed during the same treatment. Adequacy of dialysis for the patients before and after changing the [DFR/BFR] ratio from 2.0 to 1.5 was compared

Summary of Results: The average decrease in Kt/V was 0.55%. The average decrease in URR was 1.5%. Yet both Kt/V & URR remained well within standard of care guidelines. The average decreased cost of pre-mixed acid and bicarbonate per treatment was $0.32. Therefore, at 13 treatments/month, the total savings/treatment was $237.51 & savings on acid/bicarbonate/treatment was $87.36

Conclusions: Hemodialysis performed with a [DFR/BFR] of 1.5 is cost effective without compromising standard of care outcomes. Compared to the expected outcomes of the Michael's equation, the observed Kt/V's exhibited less change than expected. The actual cost savings were less than expected.

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ACHIEVEMENT AND OUTCOMES OF PRE-ESRD CARE AMONG URBAN, MICROPOLITAN, AND RURAL PATIENTS WHO INITIATE DIALYSIS

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Purpose of Study: Achievement of pre-ESRD care is associated with improved outcomes on dialysis. It is unknown if rural or micropolitan residence is associated with less attainment of pre-ESRD care or reduces its protective effect.

Methods Used: A retrospective cohort study was performed using data from the US Renal Data System. Patients ≥18 years old who initiated dialysis between 1/1/2006 and 12/31/2007 were classified as rural, micropolitan, or urban based on rural-urban commuting codes. The attainment of pre-ESRD care on survival and likelihood of kidney transplantation was determined using the medical evidence report. The impact of pre-ESRD care on survival and likelihood of kidney transplantation was assessed using Cox regression models with stratification for degree of rurality and also dialysis modality.

Summary of Results: Of 204,463 patients included in analysis, 10.2% were micropolitan and 9.8% were rural. After multivariable adjustment, there were no significant differences in attainment of early nephrology referral or permanent dialysis access. Rural and micropolitan residence did not reduce the protective effect of such care on survival or likelihood of transplantation. Both micropolitan and rural patients were significantly less likely to receive dietary education (RR 0.80 CI 0.76-0.84 and RR 0.85 CI 0.80-0.89, respectively). Rural patients who received dietary education prior to initiating peritoneal dialysis (PD) survived longer compared to rural PD patients who did not (HR 0.59 CI 0.45-0.77).

Conclusions: Rural and micropolitan residence does not reduce the protective effect of early nephrology care or permanent dialysis access. Non-urban patients receive less dialysis care despite an observed survival benefit among rural PD patients. Pre-ESRD dietary education should be emphasized among rural patients choosing PD.

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ACUTE INTERSTITIAL NEPHRITIS ASSOCIATED WITH THE USE OF AN ANTIBIOTIC-IMPREGNATED BONE CEMENT SPACER (ABCs)

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Case Report: ABCs has been increasingly used as an adjunctive therapy of orthopedic infections. ABCs allows increased local delivery of antibiotics over a sustained period of time, while minimizing systemic toxicities. We report here for the first time a case of acute kidney injury (AKI) clinically consistent with acute interstitial nephritis (AIN) associated with the use of combined vancomycin and tobramycin ABCs, which resolved after removal of the spacer.

A 58-year-old male with history of alcohol abuse, HTN, and left distal femur and proximal tibia osteomyelitis complicated by septic knee arthritis was admitted for intravenous antibiotics and two-stage surgical knee revision. After complete knee synovectomy, bursectomy with irrigation and debridement the patient was started on intravenous vancomycin for MRSA. Ten days later the patient had undergone resection arthroplasty and placement of the bone-cement spacer. His baseline serum creatinine (Scr) was 0.9mg/dL but rose to 3mg/dL despite intravenous hydration. The patient had normal physical exam with the exception of the left knee brace. Vancomycin trough levels were <20mcg/mL. Urinalysis demonstrated minimal pyuria/microscopic hematuria with no casts. Kidney ultrasound was unremarkable. As the hospital course continued, the patient developed a maculopapular non-blanching rash on his chest and upper extremities with associated peripheral blood eosinophilia (12.7%). Vancomycin-induced AIN was suspected and further confirmed by increased kidneys radiotracer uptake on the white blood cell tagged scan. The intravenous vancomycin was changed to daptomycin. However, after discontinuation of intravenous vancomycin, eosinophilia and Scr elevation remained. Further discussion with orthopedic surgeons revealed the presence of a cement spacer containing both vancomycin and tobramycin. Diagnosis of AIN from likely vancomycin in ABCs was strongly considered due to unexplained AKI with rash and eosinophilia and ABCs was removed. Subsequently, Scr within few days reached 1.2 mg/dL. Eosinophilia also resolved.

Conclusion: To our knowledge, this is the first case of AKI due to AIN associated with ABCs use; although, acute tubular necrosis due to ABCs was previously reported. Therefore, Scr should be closely monitored in patients with ABCs.

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INFECTIVE ENDOCARDITIS ASSOCIATED GLOMERULONEPHRITIS: A CASE REPORT

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Case Report: A 23-year-old male IV drug user was admitted to an outside facility and started on IV antibiotics for a diagnosis of Methicillin-Sensitive Staphylococcus aureus sepsis. He was also found to have acute kidney injury (AKI) most likely due to acute tubular necrosis (ATN) secondary to sepsis and hypotension. An echocardiogram showed tricuspid valve vegetations with severe pulmonary regurgitation. During his hospital course, his creatinine, growth and eosinophelia worsened. The patient was subsequently transferred to our intensive care unit for further management. Upon arrival he was afibrile, had a pulse of 103/min, respiratory rate 13/min and blood pressure 127/98 mmHg. His physical examination demonstrated bilateral pulmonary crackles and pitting edema of lower extremities. His leukocyte count was 12.1 × 10^9/L, Hgb 8.8 g/dL, Hct 26.7%, platelets 432, potassium 5.4 mmol/L, CO2 18 mmol/L, BUN 47mg/dL, creatinine 3.29 mg/dL and PO4 9.5. A urinalysis demonstrated 150 protein, 250 blood and 25 leukocytes. On urine
microscopy, many fine granular casts as well as a red cell cast were evident. C3 level was low at 58 mg/dL. A kidney biopsy suggested a membranoproliferative pattern of acute glomerulonephritis. After initiation of appropriate antibiotic therapy the BUN and creatinine steadily declined. At the time of discharge, his kidney function had normalized and the second echocardiogram showed marked improvement of ventricular function.

Discussion: Patients with infective endocarditis (IE) may develop different forms of renal disease: acute tubular necrosis, an infective endocarditis associated glomerulonephritis, a drug-induced acute interstitial nephritis, or embolic disease. A renal biopsy may aid the investigation of renal impairment in these patients. Staphylococcus aureus is one of the most prevalent organisms involved in acute IE associated glomerulonephritis. The duration of antigenemia, which is often prolonged due to a delay in diagnosis and treatment, may result in a greater degree of immune complex deposition. Control of the infection usually leads to rapid resolution of glomerulonephritis with return to normal or near baseline renal function.

283 BEDSIDE REMOVAL OF TUNNELED DIALYSIS CATHETERS (TDC) BY MEDICAL TRAINEES: IS IT SAFE?
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Purpose of Study: Anecdotal experience suggests that procedural aspects of Nephrology training may be endangered. Nephrologists do occasionally remove tunneled hemodialysis catheters (TDC) at the bedside, but this practice was never formally studied. Our theory was that bedside removal of TDC is a safe and effective procedure, allowing prompt removal of infected hardware.

Methods Used: We performed a retrospective cohort review of our consecutive 3-year experience (01/2007 - 12/2009) with bedside TDC removal at the University of Mississippi Renal Fellowship Program. We collected data on patients and procedure-related variables, success and complications rates. Data reported with means and standard deviations (SD). Data was analyzed with PAWS Statistics 18. The study was reviewed and approved by the University of Mississippi Human Research Office.

Summary of Results: Our study population consisted of 55 inpatient TDC bedside removals, 50 (90.9%) was completed by Nephrology Fellow under Attending’s supervision. Of these, 36 (65.5%) TDC were removed from right internal jugular (IJ), 14 (25.5%) from left IJ, and 5 (9.1%) from femoral vein location. The cohort’s mean age was 53.9 (15.6) years, peak WBC 13.6 (8.7) thousand/mm3, nadir platelet count 189.6 (114.8) thousand/mm3, peak CRP was 12.9 (8.4) mg/dL. Most removals had urgent indications with potential for prolonged local bleeding, controlled with local pressure.

Conclusions: Our results suggest that bedside removal of TDC remains a safe and effective procedure regardless of site or indications. Accordingly, TDC removal should be an integral part of competent Nephrology training.

284 COMBINATION OF HIGH FLUX CHARCOAL HEMOPERFUSION/HEMODIAFILTRATION (HFCHP) AND CONTINUOUS VENOUS VENOUS HEMODIAFILTRATION (CVVHDF) IN MANAGEMENT OF ACUTE SEVERE CARBAMAZEPINE INTOXICATION (CASE REPORT)
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Purpose of Study: To determine the efficiency of high flux charcoal hemoperfusion (HFCHP)/hemodiafiltration (HDF) combined with continuous venous venous hemodiafiltration (CVVHDF) in the management of severe carbamazepine toxicity.

Methods Used: Plasma carbamazepine levels were measured at time of presentation, start and completion of HFCHP/HDF. Patient presented with carbamazepine overdose. Initial level was 68mg/dl on admission (lethal level > 20 mg/dL). Repeat carbamazepine level after 14 and one half hour as at 58 mg/dl (naive clearance). Patient received 2 doses of HFCHP each followed by CVVHDF. Dialysate carbamazepine levels were measured at end of HFCHP/HDF and CVVHDF. Naive drug clearance, half life and drug clearance and half lives with HFCHP and CVVHDF treatment calculated. Patient responded to treatment well and carbamezepine level dropped with these measures effectively.

Summary of Results: Carbamazepine levels dropped with HFCHP and maintained with the CVVHDF treatments.

Conclusions: Combined HFCHP and CVVHDF is effective in management of severe carbamazepine poisoning, and prevents the late rebound of carbamazepine levels, a common complication of carbamazepine overdose.

285 THROMBOTIC MICROANGIOPATHY AND LUPUS, AN ELUSIVE UNIFYING DIAGNOSIS
Rashheed K, Lodhavla D, Jack AN LSU-Health Sciences Center, New Orleans, LA.

Case Report: A 30 yr old woman with history of lupus nephritis and diabetes presented with a five day history of bloody diarrhea, nausea/vomiting and fever. She was started on intravenous fluids and analgesics but shortly became hypotensive requiring ICU admission and vasopressors. She developed worsening thrombocytopenia and acute renal failure. She was treated with broad spectrum antibiotics for severe sepis. Rheumatology workup revealed positive ANA (1:320), positive anti-Smith Ab, positive p-ANCA. The patient became oliguric and hemodialysis was started. The thrombocytopenia workup revealed few schistocytes on the peripheral smear, low haptoglobin, no fibrinogen split products, and an LDH of 923. Lupus anticoagulant and anti-cardiolipin antibody were negative. With few schistocytes, thrombotic microangiopathic hemolytic anemia (MAHA) was not considered. The patient subsequently received pulse dose steroids, IV rituximab, IVIG, and plasmapheresis. The patient was transferred to an LTAC on chronic dialysis where she unfortunately developed orbital cellulitis and septic shock and family requested hospice care. Autopsy revealed consistent with organ damage due to septicemia. Renal findings on autopsy were Lupus Nephritis Class 2 and thrombotic microangiopathy (TMA).

Discussion: Active Lupus can be associated with TMA. MAHA in patients with SLE can be caused by SLE, malignant hypertension, Antiphospholipid Syndrome (APS), catastrophic APS, or Thrombotic Thrombocytopenic Purpura (TTP). Differentiation between these syndromes is difficult given numerous overlapping clinical and laboratory features. Despite thorough investigation, a sole unifying diagnosis with satisfactory exclusion of other pathological entities remains elusive. Prompt institution of aggressive blood pressure control, plasma exchange, corticosteroids, and possibly cytotoxic agents might yield a marked survival benefit, even when the exact diagnosis remains unclear. The importance of this case is twofold: first is the need for the clinician to consider TMA as a possibility in a patient with SLE and schistocytes on the peripheral smear and second is prompt institution of treatment, specifically plasmapheresis even if the exact cause of TMA is not clear.

286 OBESITY AND PROTEINURIA!
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Purpose of Study: Obesity-related glomerulopathy (ORG) has been reported in obese patients without overt diabetes or preexisting renal diseases. It is characterized by focal segmental glomerulosclerosis (FSGS) manifested by proteinuria and progressive renal dysfunction.

Methods Used: case presentation

Summary of Results: Case-25 year old African American female with a past medical history of obesity and hypertension presents to renal clinic for further evaluation of proteinuria of 7 grams/day. Medications include HCTZ 25 mg, and a multi-vitamin. There was no history of NSAID or any other nephrotoxic drug use. Vitals signs were stable except for weight of 410 lbs. Physical examination was non contributory except for massive obesity. Labwork: BUN was significantly increased for serum creatinine of 1.9 mg/dL and a total protein to creatinine ratio of 7 grams. All serological workup for HIV, hepatitis, and ANA were non significant. Renal ultrasound showed enlarged echogenic kidneys. Renal biopsy revealed focal segmental glomerulosclerosis (FSGS) which is related to obesity.

Conclusions: The prevalence of obesity is on the rise in United State and other industrialized countries. Therefore, ORG is becoming an emerging epidemic and is an increasing cause of end-stage renal disease. The
pathophysiology of obesity-induced glomerulomegaly and glomerular sclerosis is incompletely understood. Weight loss reduces proteinuria in ORG patients. Our patient has been placed on a RASS inhibitor therapy (lisapril 10 mg) which has produced a significant reduction of proteinuria to 1.2 g/dL.

Technical success rate was 14/15 (93%). PPDCI was not successful in one patient due to extreme body habitus. No Intra-operative or peri-operative complications was noted in any patient. PD Catheter was tested and used immediately in the procedure room in all patients. Mean fluorooscopy time per patient was only 3.1 minutes. Patients resumed renal diet within 2 hours post procedure.

**Conclusions:** PPDCI has a high technical success, very low complication rate, and can be safely performed as an outpatient procedure.

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**UNRESOLVING SINUSITIS**

Shahzad A, Gyebi L, Musa F, Engel L, Soltani Z. LSU-Health Sciences Center, New Orleans, LA.

**Case Report:** A 54 year-old African American man was initially admitted 1 month prior for heat exhaustion and sinusitis. The patient was noted to have mild electrolyte abnormalities with normal kidney function at that time and was treated with intravenous fluids (IVF) and docycycline. Three weeks later, the patient was referred to the emergency room after routine labs revealed a creatinine of 6.1 mg/dL. At admission, his vital signs were stable and his physical exam was remarkable for mild right eye conjunctivitis along with tenderness to palpation over his ethmoid sinuses. Laboratory studies included: WBC 7.9 10^3/μL; hemoglobin 8.2 g/dL; hematocrit 24.4 g/dL; platelets 374 10^3/μL; serum urea nitrogen 60 mg/dL; creatinine 6.21 mg/dL. Urine analysis showed 100 glucose, 75 protein, and 250 RBC, negative leukocyte esterase and nitrite, and many dysmorphic RBC with no casts. The patient was started on IVF without any change in his kidney function. Renal Ultrasound was unremarkable with a 12.9 cm right kidney and a 14.2 cm left kidney. A kidney biopsy showed no granulomas. A diagnosis of granulomatosis with polyangiitis was made and the patient was started on plasmapheresis, prednisone and IV cyclophosphamide. He responded to treatment and his creatinine stabilized at 3.3 mg/dL.

**DISCUSSION:** In January 2011, the Boards of Directors of the American College of Rheumatology, the American Society of Nephrology, and the European League Against Rheumatism recommended that the name Wegener’s Granulomatosis be changed to Granulomatosis with Polyangiitis, ab-

**Conclusions:** Our case is unique in that the patient presented with mild symptoms (mild sinusitis and right eye conjunctivitis). Prompt diagnosis of GPA is important to permit initiation of therapy that may be life-saving and organ sparing.

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**DOES DIFERULOLYLMETHANE (CURCUMIN) FUNCTION AS AN ANTIOXIDANT ANTI-INFLAMMATORY MODULATOR (AIM) IN DIABETIC KIDNEY?**

Sohal DS, Pandey S, Park S, Prabhakar S. Texas Tech University Health Science Center, Lubbock, TX.

**Purpose of Study:** Diabetic nephropathy is a major microvascular complication of diabetes and is mediated by hemodynamic and metabolic factors. Recent findings underscore the role of oxidative stress and inflammation in the pathogenesis of DN, concepts further validated by the studies in human DN using bardoxolone methyl, which is an AIM (Pergola et al NEJM June 2011) currently undergoing phase III clinical studies. We have recently demonstrated that DN is associated with mitochondrial oxidative stress in a rat model of DN (Prabhakar et al JASN 2007). The purpose of these studies is to examine the mechanisms of action of curcumin, specifically if signaling pathways affected are similar to AIMs in DN.

**Methods Used:** ZSF rats, a model for DN were studied from 8th to 26th week and were given high calorie diet and either plain water or curcumin in water at 1 mg/ml. Renal function was measured by Scr, Ccr (weekly) and urine protein excretion rates. Renal mitochondrial oxidative stress was quantified by measuring urinary 8-hydroxy deoxyguanosine (8-OHdG). At 26 weeks kidneys were harvested and homogenates were examined for ex-

**Conclusions:** Curcumin was tolerated by ZSF rats as evidenced by weekly weights and water intake. Curcumin abolished the hyperfiltration and preserved renal function at 26 weeks as reflected by Ccr values. Both VEGF and TGF-β expressions as well as urinary 8-OHdG levels were significantly inhibited by curcumin. However the inhibitory effects of curcumin on NF-κB were modest and there was no effect on NF-κB expression.

**Summary of Results:** Curcumin prevented the progression of nephropathy in diabetes by inhibiting expression of growth factors such as VEGF and TGF-β as well as by inhibiting mitochondrial oxidative stress. The effects of curcumin on nuclear transcription factors such as NF-κB and Nrf-2 were not as impressive unlike bardoxolone methyl which primarily acts through Nrf-2. We conclude that curcumin is renoprotective in DN but affects signaling path-

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**ENDOGENOUS ANGIOTENSIN (ANG) II PROMOTES PAPILLOGENESIS DURING LATE METANEPHRIC DEVELOPMENT**

Song R, Preston G, Yosypiv I. Tulane University, New Orleans, LA.

**Purpose of Study:** We tested the hypothesis that lack of Ang II production in angiotensinogen (AGT)-deficient mice impairs elongation of the papillary collecting ducts, thus contributing to the hypoplastic renal medulla pheno-

**Summary of Results:** The mean age was 39.5 years and 66.7 % were females. The mean eGFR was 9.4 ml/min and mean serum creatinine was 8.7 mg/dL. Technical success rate was 14/15 (93%). PPDCI was not successful in one patient due to extreme body habitus. No Intra-operative or peri-operative complications was noted in any patient. PD Catheter was tested and used immediately in the procedure room in all patients. Mean fluorooscopy time per patient was only 3.1 minutes. Patients resumed renal diet within 2 hours post procedure.

**Conclusions:** PPDCI has a high technical success, very low complication rate, and can be safely performed as an outpatient procedure.

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**PERCUTANEOUS PERITONEAL DIALYSIS CATHETER INSERTION: MAKING A CASE FOR AN OUTPATIENT PROCEDURE**

Sharma MK, Sachdeva B. LSU Health Sciences Center, Shreveport, LA.

**Purpose of Study:** Peritoneal Dialysis Catheters (PDC) have been conventionally placed surgically by open laparotomy or laparoscopically; utilizing general anesthesia with associated risks and cost. Previous research has shown that Percutaneous Peritoneal Dialysis Catheter Insertion (PPDCI) using ultrasound and fluoroscopy share comparable catheter outcomes. We investigated the intra-operative and peri-operative complications associated with PPDCI performed by a trained Interventional Nephrologist using Ultrasound and Fluoroscopy. Through this pilot study we attempt to answer the question if this procedure can be safely performed in an outpatient setting.

**Methods Used:** Using prospective, computerized vascular access database, we identified 15 patients who underwent fluoroscopic PDC placement, from January 2010 to September 2011. All procedures were performed by 4 Interven-tional Nephrologists using fluoroscopic PDC placement technique that has been described before. Procedures were done after the patients were admitted intpatent at our academic medical center. A thorough review of the Intra operative record, post procedure notes, and intpatent charts was completed. Complications were divided into (a) Intra-operative including: bowel/bladder perforation, intra-peritoneal/abdominal hematoma, acute abdomen, procedure failure from any cause, and (b) Immediate post operative complications (within 24 hours after PDC placement) including: catheter malfunction, misplacement, migration, non-function, or any complication necessitating open laparotomy or surgical laparoscopic intervention.

**Summary of Results:** The mean age was 39.5 years and 66.7 % were females. The mean eGFR was 4.1 ml/min and mean serum creatinine was 8.7 mg/dL.
Summary of Results: Although papilla surface area and length decreased after 24 hours in vitro culture in both AGT+/+ and -/- mice, percent reduction in papillary length (-18.4 ± 1.3 vs. -32.2 ± 1.6%, p < 0.001) and in papillary surface area (-17.0 ± 2.3 vs. -25.4 ± 1.5%, p < 0.05) was attenuated in AGT+/+ compared to AGT-/-. papillae. Addition of exogenous Ang II blunted the decrease in papilla length observed in respective AGT+/+ and -/- papillae (-12.8 ± 0.7 vs. -18.4 ± 1.3%, p < 0.01; -26.2 ± 1.6 vs. -32.2 ± 1.6%, p < 0.05, respectively). AGT immunoreactivity was present in P3 kidney collecting ducts visualized with anti-cytokeratin antibody. The number of proliferating phospho-histone H3 (pH3)-positive collecting duct cells was lower whereas the number of caspase 3-positive cells undergoing apoptosis was higher in AGT+/+ vs. AGT-/-- papillae (pH3: 3.3 ± 0.9 vs. 7.3 ± 0.8, p < 0.05; caspase 3: 63.3 ± 6.1 vs. 17.7 ± 2.0, p < 0.001). Using quantitative RT-PCR, we found that Ang II signaling regulates the expression of genes implicated in morphogenesis of the renal medulla such as Wnt7b, FGf7, β-catemin, calcineurin B1 and α3 integrin.

Conclusions: We conclude that Ang II promotes growth of the developing papillae via control of Wnt7b, FGf7, β-catenin, calcineurin B1 and α3 integrin gene expression, collecting duct cell proliferation and survival.

RITUXIMAB IN TREATING HEPATITIS C ASSOCIATED CYTOLLOBULINEMIC MEMBRANOPROLIFERATIVE GLOMERULONEPHRITIS IN A PATIENT WITH COMBINED LIVER AND KIDNEY TRANSPLANT

Thumma V, Moiz A, Garces J

Liver and kidney transplant patients have been rarely reported. Our preliminary data led us to hypothesize that Dot1l-mediated H3K79 methylation plays essential roles in DNA damage, cell cycle, and differentiation pathways. Our preliminary data led us to hypothesize that Dot1l-mediated H3K79 methylation (me1, me2, me3) plays a critical role in kidney organogenesis and self-repair process after injury.

Methods Used: western blot, QPCR, Immunofluorescence, generating KO mice.

Summary of Results: Both Dot1L expression and H3K79 methylation show temporal changes during mouse kidney development by Western blot analysis and RT-QPCR; increase was most significant at P20 with postnatal renal maturation. Immunofluorescence revealed colocalization of Dot1L and H3K79me3/In embryonic kidneys. H3K79me3 correlates strongly with terminal differentiation of the renal epithelium, specifically in glomerular podocytes, proximal and distal tubules. To gain further insight into the functions of H3K79 methylation/Dot1L in kidney organogenesis, we have conditionally deleted Dot1L in specific segments of the mouse kidney. Since H3K79me2 is described to play a role in proliferation, these bivalent functions of Dot1L/H3K79me2/3 raise the possibility that Dot1L/H3K79 methylation potentially play a role in tissue regeneration and repair. To test this proposal, we immunostained kidney sections from mice subjected to ischemia/reperfusion. H3K79me3 modification was rapidly lost in response to ischemic injury by 12-24h post injury. Interestingly, Dot1L levels were upregulated at this time point. By 72h-7d post-injury, K79me3 was regained upon tissue recovery.

Conclusions: Collectively our data strongly suggest a role for Dot1L function in tissue differentiation and repair.

REPRESSION OF THE TRANSCRIPTION FACTOR AND EPIGENETIC REGULATOR PAX2 IN CONGENITAL RENAL DYSGENESIS SECONDARY TO GENE ENVIRONMENT INTERACTIONS

Yan L1, McLaughlin NJ1, Yao X1, Dipp S2, Bachvarov D2, Saifudeen ZR1

Rituximab has been used in renal transplant patients for various indications. This case illustrates the potential role of rituximab and its safety profile in treating HCV-associated cryoglobulinemic MPGN in a patient with a com-

Methods Used: Immunohistochemistry, Immunofluorescing staining, Quan-

Purpose of Study: Gene environment interactions play an important role in the pathogenesis of human congenital disorders. In response to gesta-

Summary of Results: BdkrB2 null mice carrying 30 kb of Pax2 upstream regulatory elements driving a GFP reporter cassette. Embryonic kidneys were micro dissected from salt stressed BdkrB2 null embryos acquire an aberrant renal phenotype mimicking renal medullary dysplasia in humans. We report here that Pax2, an essential transcription factor required for mouse and human kidney development, is down regulated in kidneys of BdkrB2 null compared to wild type pups. We therefore tested the hypothesis that the Pax2 gene is repressed transcriptionally in salt stressed BdkrB2 null mice.

Methods Used: Immunohistochemistry, Immunofluorescing staining, Quan-

Conclusions: We conclude that Pax2 transcriptional activity in the develop-

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PAX2 IN CONGENITAL RENAL DYSGENESIS SECONDARY TO GENE ENVIRONMENT INTERACTIONS

Yan L1, McLaughlin NJ1, Yao X1, Dipp S2, Bachvarov D2, Saifudeen ZR1
Conclusions: The importance of complete neurohormonal withdrawal in the recovery from cardiac cachexia is emphasized.

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STIM1 GOVERNS L-TYPE CALCIUM INFLUX IN CARDIAC MYOCYTES
Miranda K1,2, Hojayev B1,2, Luo X1,2, Hill JA1,2 1University of Texas Southwestern Medical Center, Dallas, TX and 2University of Texas Southwestern Medical Center, Dallas, TX.

Purpose of Study: Stomal interaction molecule 1 (STIM1), an endo-

plasmic reticulum Ca²⁺ sensor, plays an essential role in the activation of store operated calcium channels (SOC) in response to Ca²⁺ store depletion. We have shown recently that STIM1-dependent SOC is required for patho-

logical cardiac hypertrophy. We hypothesized that STIM1 governs other mechanisms of Ca²⁺ influx and interacts with L-type calcium channels in cardiomyocytes to regulate their activity.

Methods Used: Gain- and loss-of-function studies were performed in neonatal rat ventricular cardiomyocytes (NRVMs) and in adult rat ventricular cardiomyocytes (ARVMs) maintained in culture. STIM1 was over-expressed using a STIM1 lentivirus and silenced by siRNA knockdown. STIM1 ex-

pression was readily detected by Western blot analysis. L-type Ca²⁺ channels were activated by depolarization (45mM KCl), and Ca²⁺ influx was measured by Fura-2 imaging.

Summary of Results: In NRVMs, STIM1 over-expression decreased L-type Ca²⁺ influx by 42.6±6.8% as compared with control (p<0.01, n=15-20). Conversely, STIM1 knockdown increased L-type Ca²⁺ influx by 55.7±7.8% (p<0.01, n=18). Similar results were observed in ARVMs, where STIM1 over-

expression decreased L-type Ca²⁺ influx by 47.5±5.6% (p<0.01, n=17-21).

Conclusions: STIM1 negatively regulates L-type Ca²⁺ channel activity in both adult and neonatal cardiomyocytes. Together, these data point to STIM1 as a master regulator of a network of Ca²⁺ influx mechanisms in cardiac myocytes.

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CARDEOHEMODYNAMIC CHANGES IN SUBJECTS WITH RESISTANT AND REFRACTORY HYPERTENSION
Dudenbostel T, Accelalado MC, Judd EK, Oparil S, Calhoun DA. UAB, Birmingham, AL.

Purpose of Study: Within the population of truly resistant hypertension (RHTN), a subset of patients has been identified who remain hypertensive despite maximal medical therapy. This so called refractory hypertension (RefHTN) may have different underlying mechanisms. Secondary causes of hypertension (renal artery stenosis, sleep apnea, aldosteronism, pheochro-

mocytoma, etc) have previously been excluded. This study prospectively compares ambulatory blood pressure monitoring, indices of arterial stiffness, endothelial function and echocardiographic findings between refractory subjects and a similar control cohort of resistant hypertensive subjects.

Methods Used: From 2009 to present, 14 refractory subjects were identi-

fied in a referral hypertension clinic using the following criteria: uncontrolled blood pressure (BP) on 3 or more antihypertensive medications (at least one being a diuretic) after ≥3 visits within a minimum 6-month follow-up period. These refractory subjects along with 28 demographically similar resistant hypertensive subjects with controlled blood pressure underwent 24hr ambulatory blood pressure monitoring (ABPM), heart rate (HR) monitoring, pulse wave analysis (PWA) with augmentation index corrected for HR 75/min (AIx@75), aortic pulse pressure (AP), pulse wave velocity (PWV), flow-mediated dilation (FMD) and transthoracic echocardiography (TTE).

Summary of Results: ABPM confirmed a significant difference between both systolic and diastolic BP in control and refractory groups (SBP/mm Hg) 141±17.8 vs. 171±21.6, p<0.001; DBP/mm Hg 72.1±9.2 vs. 95±13.8, p<0.001, MAP (mm Hg): 97±13.1 vs. 121±15.5, p<0.001). Average heart rate (HR) 69±7.4 vs. 77.8±7.65 (p<0.03), FMD(%) 6.6 vs. 9.4. TTE showed left ventricular hypertrophy in both groups. PWV (m/s) 9.5±1.9 vs. 11.7±2.67 (p<0.03). AIx75 (%): 17.8±12.1 vs. 27.5±10.5 (p=0.01). AP (mm Hg) 10.7±18.3±13.5 (p=0.041). Aortic PP (mmHg) 40.7±15.7 vs. 61±27.9 (p<0.001).

Conclusions: Subjects with refractory hypertension showed increased arterial stiffness indices, central blood pressure indices, and left ventricular hypertrophy and decreased flow-mediated dilation compared to subjects with resistant hypertension. Underlying mechanisms contributing to refractory hypertension seem to differ from resistant hypertension.
Southern Society for Pediatric Research
Plenary Session
Young Investigator Award Finalists
8:00 AM
Friday, February 10, 2012

298 THE ADDITIONAL IMPACT OF INTELLECTUAL DISABILITY ON FAMILIES OF CHILDREN WITH AUTISM
Saunders B1, Tilton M2, Fussell J1, Schulze E3, Casey P3, Kuo DZ4
1University of Arkansas for Medical Sciences, Little Rock, AR; 2University of Arkansas for Medical Sciences, Little Rock, AR
Purpose of Study: Describe the additional financial and employment burden for families of children who have intellectual disability (ID) in addition to autism spectrum disorder (ASD).
Methods Used: This is a secondary data analysis of the 2005-06 National Survey of Children with Special Health Care Needs. Those children whose parents answered “yes” when asked if their child had ASD or ID were classified as having ASD alone, ID alone, or both ASD/ID. Children whose parents reported they had a diagnosis of asthma, exclusive of ASD or ID, served as a comparison group to gauge the relative financial and employment burden of ASD and ID. The study groups were mutually exclusive. Outcome variables included parents reporting if they: 1) paid $1000 for the child’s medical care in the last 12 months, 2) had any financial difficulty in the last 12 months, 3) stopped working due to the child’s health, and 4) cut work hours to care for the child. Bivariate analysis was conducted by chi-square. Multivariate logistic regression, adjusting for significant demographics at the 0.05 level, was used to determine the proportion of pediatric US ED visits that are for ASCC, their frequency, and other financial and employment burden for families of children who have intellectual disability (ID) in addition to autism spectrum disorder (ASD).
Dollars and privately insured 1.4 billion. Multivariate logistic regression, adjusting for significant demographics at the 0.05 level, examined the association of study outcomes with ASD alone and ASD/ID together. The multivariate analyses were weighted using person-level estimates.
Summary of Results: In the study population, 1103 children had ASD, 307 had ID, and 999 had both ASD/ID; 13747 had asthma. Children with ID were more likely to be female, Black or Hispanic, and publicly insured; no additional demographic associations were seen for children with ASD/ID. No differences in any study outcomes were seen when comparing ID alone with ASD alone. Compared to ASD alone, caregivers of children with both ASD/ID were more likely to report financial difficulty (aOR 1.8, 95% CI 1.4-2.6), cutting work hours (aOR 1.9, 95% CI 1.4-2.6), and stop working (aOR 2.3, 95% CI 1.7-3.1). No differences were found in out-of-pocket costs. Caregivers of children with asthma had significantly lower odds of all study outcomes. Frequency of ED visits for ASCC also decreased with older patient age (6-1 years: 28.5%, 4-7 years: 27.7%, 5-9 years: 29%, 10-14 years: 11.3%, 15-19 years: 9.5%, p < 0.001). Total charges billed for these visits was 3.7 billion dollars, of which publicly insured patients accounted for 1.8 billion dollars and privately insured 1.4 billion. Conclusions: Almost a fifth of all US pediatric ED visits may be preventable by quality primary care. Patients with public insurance and lower income are more likely than other groups to present with ASCC. This may indicate poorer access to and utilization of primary care services. Higher rates of ASCC visits among younger children may represent a lower threshold among families to tolerate distress in younger children. The total cost of ED visits for ASCC suggests a need for better access to primary care services to reduce healthcare costs and improve ED overcrowding.

300 VITAMIN A PATHWAY GENES LINKED TO CONGENITAL DIAPHRAGMATIC HERNIA
Purpose of Study: Congenital diaphragmatic hernia (CDH) is a potentially fatal birth defect of unknown etiology. Retinoid signaling is important in diaphragm and lung development; the deletion of retinoid signaling genes produces CDH in rodent models. We tested for associations between variants in retinoid signaling genes and CDH in humans.
Methods Used: CDH cases were ascertained from all births in New York State (NYS) occurring from 1998 through 2005 (n=2,056,124). We conducted a population based, nested case-control study. Cases (N=272) were identified from the NYS Congenital Malformations Registry and matched with unaffected controls (N=577) in the NYS Newborn Screening Program. DNA from each subject was purified from archived blood spots and used to investigate 101 tag SNPs in 17 genes in the vitamin A pathway.
Summary of Results: Compared to controls, cases were more likely to be male and to be the product of assisted reproductive technology. Case and control genotype frequencies (call rates > 95%) varied in 14 SNPs (uncorrected p < 0.01), including 80% of SNPs analyzed in CYP26A1 and CYP26C1. CYP26 genes are crucial in embryogenesis, regulating retinoid levels, cell proliferation, and transcription of primary retinoic acid target genes. Heterozygosity for RDH10 rs16938610 was significantly less common in cases with isolated CDH even after correction for multiple comparisons (unadjusted p = 0.00036, corrected p = 0.036). In the embryo, RDH10 converts vitamin A to retinoic acid and supplementation with vitamin A can prevent lethal defects in mutant mouse models. Genotype frequencies in COUP-TFI and STRA6, previously implicated in CDH, did not differ (p > 0.01) between cases and controls.
Conclusions: Our results support a role for vitamin A pathway genes in CDH. RDH10 and CYP26 genes play critical roles in embryogenesis. Further investigation may lead to prevention strategies using vitamin A.

301 DEVELOPMENTAL REGULATION OF TH17 CAPACITY IN HUMAN NEONATES
Randolph DA, Black A, Bhamaik S, Kirkman R University of Alabama in Birmingham, Birmingham, AL.
Purpose of Study: Very low birth weight (VLBW) infants are at high risk of developing life-threatening bacterial and fungal infections in part due to developmental limitations on their immune function. Central in determining the nature of immune responses are CD4 T-helper cell subsets, including T-helper-1 (Th1) cells that produce IFN-γ and promote intracellular immunity and Th2 cells that produce IL-4 and IL-13 and promote humoral immunity. Th17 cells, a recent described T-helper subset, produce IL-17, IL-21, and IL-22 as their signature cytokines and are key mediators of immunity to bacterial and fungal infections at epithelial barriers. Little is known, however, about the ontogeny of Th17 responses in humans. Given the frequent bacterial infections in VLBW infants, we wished to test the hypothesis that VLBW infants experience developmental limitations on Th17 differentiation and function.
Methods Used: Naive CD4 T cells were purified from VLBW and term infant cord blood and from adult peripheral blood. Cells were stimulated in
vitro with anti-CD3/CD28 beads under neutral and Th17 polarizing conditions. Cytokine production was analyzed by multiplex bead array and by flow cytometry. Gene expression of key Th17 genes was analyzed by real time PCR.

Summary of Results: Under Th17 conditions, VLBW cells produced more IL-17 (p<0.01 vs. adults) and more IL-21 (p<0.01 vs. adults). Real time PCR demonstrated elevated levels of key Th17 genes even prior to activation suggesting a significant developmental Th17 bias. Under neutral conditions, VLBW cells also produced more IL-4 (p<0.05 vs. term and adult) and IL-10 (p<0.01 vs. adult) with a trend toward more IL-13 as well, suggesting a significant Th2 bias whereas adult cells had a Th1 bias.

Conclusions: T helper subset differentiation is highly developmentally regulated. In addition to a previously reported Th2 bias, neonates have a strong Th17 bias. This knowledge may be important in designing interventions to boost mucosal immunity and reduce infections in preterm infants.

302 NEURODEVELOPMENTAL IMPAIRMENT FOLLOWING NEONATAL HYPOXIA EXPOSURE
Ramani M, Ambalavanan N
Univ Ala Birmingham, Birmingham, AL.

Purpose of Study: Extremely low birth weight infants are at high risk (~25%) for neurodevelopmental impairment (NDI) even without intraventricular hemorrhage or periventricular leukomalacia. The etiology for NDI has not been determined, and there are no animal models to simulate neurodevelopmental outcomes of prematurity. Our objectives were to develop and characterize a mouse model to determine long-term effects of chronic hypoxia or hypoxia exposure on neurodevelopment.

Methods Used: Newborn C57BL/6 mice were exposed to hypoxia (12% O2) or hyperoxia (85% O2) from postnatal day 1 to 14 and then returned to air (p<0.10/group). Mice were evaluated at 12-16 weeks of age for cognitive function (Open Field test, Elevated Plus Maze, Novel Object Recognition test, Rotord test, and Water Maze test), followed by evaluation of brain development and structure (MRI, followed by measurement of hippocampal area and brain area, brain weight, brain/body weight).

Summary of Results: Neurobehavioral testing revealed that hypoxia-exposed mice did poorly on the water maze test compared to air (indicating impaired memory) (Fig 1), but did not have major deficits in other tests. MRI revealed smaller hippocampi in hypoxia-exposed hypoxia-exposed mice, with a greater reduction in hyperoxia-exposed mice (Fig 2). Brain histology did not reveal major pathology, injury, or inflammation.

Conclusions: Neonatal hypoxia in mice leads to NDI, primarily deficits in learning and spatial memory, associated with smaller hippocampal sizes, similar to that described in preterm infants. This animal model may be useful to determine mechanisms underlying NDI in preterm infants, and for development of therapeutic strategies.

303 SEX DIFFERENCES IN HYPEROXIC LUNG INJURY: ROLE OF CYTOCHROME P450 (CYP) 1A AND INFLAMMATION
Baylor College of Medicine, Houston, TX.

Purpose of Study: Sex differences in pulmonary morbidity in preterm infants are well documented. Hypoxia contributes to lung injury in experimental animals and bronchopulmonary dysplasia (BPD) in preterm infants. CYP1A enzymes attenuate hyperoxic lung injury. Whether CYP1A enzymes play a role in gender differences is unknown. We tested the hypothesis that mice will display sex-specific differences in hyperoxic lung injury, and that this phenomenon will be altered in mice lacking the genes for CYP1A1 or 1A2.

Methods Used: 8 week-old male and female (C57BL/6) mice; wild type (WT), Cyp1a1-null, and Cyp1a2-null mice were exposed to 72 hours of hyperoxia (FiO2=0.95). Lung injury was estimated by lung weight/body weight (LW/BW) ratios, lung histopathology and immunohistochemistry. Pulmonary and hepatic CYP1A1 and CYP1A2 activities were determined by ethoxyresorufin O-deethylase (EROD) and methoxyresorufin O-deethylase (MROD) assays, respectively. Apoprotein levels were determined by Western blotting, and mRNA levels by RT-PCR. TNF-α mRNA expression was quantified by RT-PCR.

Summary of Results: Upon exposure to hyperoxia, WT males showed a greater increase in LW/BW ratios, compared to air-breathing controls, and more pulmonary perivascular and alveolar injury, neutrophil infiltrates and TNF-α mRNA expression than females. Analysis of liver microsomal proteins showed higher CYP1A2 activity and activity in WT females compared to WT males and a greater induction in CYP1A2 mRNA levels in WT females after hyperoxia exposure. These findings were reversed in Cyp1a1- and Cyp1a2-null mice.

Conclusions: The increased susceptibility to hyperoxic lung injury of WT males compared to females and the reversal of effects in Cyp1a1- and 1a2-null mice indicates an important role for CYP1A in the sex-specific effects. Further studies to elucidate the role of CYP1A in the gender specific modulation of hyperoxic injury could explain the mechanisms underlying the better outcomes in female neonates.

304 INFLAMMATORY MEDIATORS IN THE RETINA AND NEONATAL RETINAL DISEASE
Bhatti F, Ball GS, Munzar S, Hobbs R, Ash JD
1OUHSC, Oklahoma City, OK and 2OU College of Medicine, Oklahoma City, OK.

Purpose of Study: Retinopathy of prematurity (ROP) is the leading cause of acquired childhood blindness. The ROP animal utilizes varying oxygen levels to induce retinal neovascularization. Studies in ROP pathophysiology have traditionally focused on angiogenic mediators as opposed to inflammation. Collectins (including surfactant proteins A [SP-A] and D [SP-D]) are pathogen recognition receptors present throughout the body that interact with cytokines and macrophages. SP-A is up-regulated by TLR-2 signaling. Studies have also shown that SP-A competes with LPS binding to TLR receptors. SPs are also biologically active in organ systems outside the lung. Here, we present data that shows SP-A in the retina and discuss the role it may play in retinal inflammation and neovascularization.

Methods Used: Retinas and lung tissue were harvested and analyzed from exanguinated C57Bl/6 mice by immunohistochemistry (IHC) and ELISA. Results were analyzed via Student’s t-test with a p value of <0.05 significance. For the development analysis of SP-A expression, retinas were harvested at days 0, 2, 5, 7, 14 and 6 weeks of age. Lung tissue was analyzed similarly in parallel. For analysis of inflammatory pathways, intravitreal injections were performed with LPS and PBS as control. Retinas were harvested at 6, 12, 18 and 24 hours after injection and SP-A levels were measured. To determine if TLR’s modulated the signaling pathways, intravitreal injections of LPS (TLR-4 ligand) and Pam3 (TLR-2 ligand) were given and SP-A levels measured after 24 hours.

Summary of Results: SP-A is present in the retina as shown by ELISA and IHC. Retinal SP-A expression over the first week of life is similar to the pattern seen in the lung. SP-A levels increase after injection of LPS with a peak observed at 12 hours. Intravitreal injection of TLR ligands increases SP-A levels in a dose-dependent manner with the greatest increase observed with TLR-2 stimulation.

Conclusions: SP-A is present in the retina in the same developmental pattern as in the lung which has implications for an anti-inflammatory role. TLR-2 activation leads to increased expression of SP-A. We hypothesize that as TLR’s also interact with VEGF and HIF-1alpha, neovascularization may also be influenced. This needs further investigation to examine the precise mechanisms involved.
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ENDOTHELIAL DERIVED CARDIOPROTECTION IS ABOLISHED BY HYPERGLYCEMIA
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Purpose of Study: Previous experiments elucidating mechanisms of endogenous cardioprotection have focused predominately on the cardiomyocyte (CM) and little attention has been paid to the specific contribution of endothelial cells (EC) to CM protection. CM are surrounded by a complex network of capillaries and depend on EC not only for nutritive function, but are also influenced by EC-derived paracrine factors (e.g. NO) that may promote CM survival. Conversely, EC dysfunction presents during various disease states such as diabetes, hypercholesterolemia or hypertension may disrupt favorable EC-CM interactions.

Methods Used: EC were cocultured with CM at different ratios and subjected to hypoxia and reoxygenation (H/R). Equal numbers of CM were used in all experimental groups. LNAME (NO-inhibitor) and sepiapterine (BH4-substrate) were used to block NO-production and to stimulate endothelial BH4 production, respectively.

Summary of Results: EC-CM ratio of 1:3 showed the most pronounced CM protection (LDH release coculture 21.7±0.9 fold change to normoxic control vs. 82.4±3.8 in CM alone). EC alone, subject to H/R did not significantly contribute to LDH release. EC-derived cardioprotection was abolished by LNAME (88±9.5% of CM alone) or by prior incubation of EC in hyperglycemic media (81±1.7% of CM alone). Addition of sepiapterine reversed (25:2.3% of CM alone) the detrimental effect of hyperglycemia and restored the protective properties of EC in coculture.

Conclusions: Our data demonstrates the importance of EC-derived factors in protection of CM against ischemia reperfusion (I/R) injury. The observation that protection was attenuated by NOS inhibition or high glucose supports the concept that EC derived NO is a key element involved in cardioprotection. Diabetes and hyperglycemia have been shown to decrease bioavailable NO and the restoration of EC-derived CM protection with sepiapterine suggests that cardioprotection is also BH4-dependent. Decreases in BH4 contribute to EC dysfunction in diabetes, whereas, BH4 supplementation decreases ROS production and restores EC function induced by acute hyperglycemia and diabetes. Elucidating the role of EC-CM interactions during I/R injury suggests new therapeutic approaches to the treatment of patients with diabetes and dysfunctional endothelium.

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STIM1 GOVERNS L-TYPE CALCIUM INFLUX IN CARDIAC MYOCYTES
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Purpose of Study: Stromal interaction molecule 1 (STIM1), an endoplasmic reticulum Ca2+ sensor, plays an essential role in the activation of store operated calcium channels (SOC) in response to Ca2+ store depletion. We have shown recently that STIM1-dependent SOC is required for pathological cardiac hypertrophy. We hypothesized that STIM1 governs other mechanisms of Ca2+ influx and interacts with L-type calcium channels in cardiomyocytes to regulate their activity.

Methods Used: Gain- and loss-of-function studies were performed in neonatal rat ventricular cardiomyocytes (NRVMs) and in adult rat ventricular cardiomyocytes (ARVMs) maintained in culture. STIM1 was over-expressed using a STIM1 lentivirus and silenced by siRNA knockdown. STIM1 expression was readily detected by Western blot analysis. L-type Ca2+ channels were activated by depolarization (45mM KCl), and Ca2+ influx was measured by Fura-2 imaging.

Summary of Results: In NRVMs, STIM1 over-expression decreased L-type Ca2+ influx by 42.6±6.8% as compared with control (p<0.01, n=15-20). Conversely, STIM1 knockdown increased L-type Ca2+ influx by 55.7±7.8% (p=0.01, n=18). Similar results were observed in ARVMs, where STIM1 over-expression decreased L-type Ca2+ influx by 47.5±5.6% (p=0.01, n=17-21).

Conclusions: STIM1 negatively regulates L-type Ca2+ channel activity in both adult and neonatal cardiomyocytes. Together, these data point to STIM1 as a master regulator of a network of Ca2+ influx mechanisms in cardiac myocytes.

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REVERSE REMODELING AND THE RECOVERY FROM CACHExIA IN RATs WITH ALDOSTERONISM
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Purpose of Study: Congestive heart failure (CHF) has its origins rooted in neurohumoral activation and eventuates in a systemic illness with tissue wasting, or cachexia. Left ventricular assist device support in such patients suggests recovery may be possible. However, pathophysiological mechanisms of ‘‘reverse remodeling’’ remain uncertain, including the importance of neurohumoral withdrawal. This study was undertaken in rats receiving 4 wk aldosterone/salt treatment (ALDOST), where cardiac pathology and muscle wasting simulate cachexia and whose origins relate to intracellular Ca2+ overloading and oxidative stress. We hypothesized the termination of aldosteronism is accompanied by a recovery at tissue, cellular and subcellular levels.

Methods Used: 8-wk-old uninephrectomized male Sprague-Dawley rats received 4 wks ALDOST. Thereafter, ALDOST was terminated and rats examined after 4 wks recovery (Recov). We monitored organ weights and tissue morphology. Cardiomyocytes and their subsarcolemmal mitochondria (SSM) were harvested to determine: cytosolic free [Ca2+], and mitochondrial [Ca2+]m and H2O2 production, together with the opening potential of their permeability transition pore (mPTP), and 8-isoprostane in gastrocnemius. Heart and muscle transcriptome were monitored by expression arrays.

Summary of Results: ALDOST vs. Recov vs. untreated, age-/sex-matched controls (p<0.05): a) recovery in body (278±6 vs. 340±6 vs. 363±8 g) and gastrocnemius weights (0.48±0.02 vs. 0.63±0.01 mg) and reversal of skeletal fiber atrophy; b) reversal of cardiomyocyte [Ca2+]; (80±5 vs. 35±8 vs. 29.4±4 nM) and mitochondrial [Ca2+]m (141±4 vs. 88±5 vs. 89±5 mg/mg mitochondrial protein) and increased H2O2 production (148±13 vs. 98±5 vs. 89.5±5 pmol/mg protein/min); c) reversal of mPTP opening potential; d) attenuation of muscle 8-isoprostane (24±1 vs. 8±1 vs 7±1 mg protein); and e) a reversal of upregulated genes in heart and muscle, including ubiquitin-specific peptidase.

Conclusions: Recovery from aldosteronism is accompanied by reverse remodeling of tissue, cellular and subcellular pathology in heart and muscle. The importance of complete neurohumoral withdrawal in the recovery from cardiac cachexia is emphasized.

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CARDIAC AUTONOMIC NEUROPATHY IS PREDICTIVE OF MORTALITY IN RESISTANT HYPERTENSION
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Purpose of Study: Cardiac autonomic neuropathy (CAN) is a risk factor in patients with diabetes. We hypothesized that a simple marker of CAN, a blunted heart rate response (HRR) to adenosine, is more prevalent in resistant hypertension and can serve as a prognostic marker for poor outcome.

Methods Used: We studied consecutive patients who underwent adenosine myocardial perfusion imaging (MPI) between Sept-Dec 2006. Based on data in the control group, patients with HRR<20% change from baseline were considered to have CAN. Intake of ≥4 BP medications defined resistant hypertension. The outcome of interest was overall mortality.

Summary of Results: Of 879 patients (age 61±13yrs, 52% men, 58%, 40% diabetes), 433 (49%) were on 2-3 and 135 (15%) were on 4 or more BP medications. There was a trend for a higher prevalence of CAN with increasing number of BP drugs (36% for 0-1, 43% for 2-3 and 47% for ≥4 BP medications, p=0.05). In a follow-up period of 4.1±1.4yrs, 224 (26%) patients died. Systolic BP=140 mmHg (n=307, 35%) was not associated with outcome in the overall population or in patients with resistant hypertension. CAN was associated with increased mortality in the overall population (HR 2.2, P=0.001). In patients with resistant hypertension, CAN was a stronger predictor of mortality (HR 3.1, p=0.001) and this association remained significant after controlling for age, gender, DM, and MPI findings (HR 2.9, p=0.004).

Conclusions: CAN is an independent predictor of poor outcome in patients with resistant hypertension. Novel therapies which target the autonomic nervous system may be indicated for these patients.
nervous system represent a potentially important therapeutic option in patients with resistant hypertension and CAN.

309 FACTOR ANALYSIS OF THE POSTPARTUM DEPRESSION SCREENING SCALE (PDSS) WITH MOTHERS OF INFANTS IN THE NEONATAL INTENSIVE CARE UNIT (NICU)

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Purpose of Study: Purpose of Study: Rates of postpartum depression (PPD) are shown to be significantly higher in mothers of infants in the NICU than in the general population estimation. Mothers of preterm infants experience high stress levels and feelings of helplessness in the NICU and often lack adequate knowledge of how to parent and interact with their infants during the hospital stay, contributing to adverse parent and child outcomes. Professionals in the field are beginning to advocate for routine PPD screening for mothers in the NICU. Objectives: 1.Evaluate the construct validity of the Postpartum Depression Screening Scale (PDSS) with other scales. 2.Establish the PDSS as an appropriate screening tool to assess for postpartum depressive symptoms in mothers of NICU infants.

Methods Used: The Postpartum Depression Screening Scale (PDSS; Beck & Gable, 2002) is a 35-item Likert response scale comprised of seven dimensions: Sleep/Eating Disturbances, Anxiety/Insecurities, Emotional Lability, Cognitive Impairment, Loss of Self, Guilt/Shame, and Contemplating Harming Onself. Participants were 387 mothers of infants in the NICU who completed the PDSS. Internal consistency was assessed with Cronbach's alpha. Confirmatory factor analysis (CFA) was used to evaluate the proposed 7-factor structure of PDSS compared to a 1-factor model. Subsequent exploratory factor analysis (EFA) was used to identify an alternative factor structure.

Summary of Results: Internal consistency of the subscales ranged from .789 (Anxiety/Insecurity) to .892 (Loss of Self). CFA did not support a 7-factor or 1-factor model. EFA suggested a 3-factor model which accounted for 58% of the score variance.

Conclusions: A brief, 3-factor model is appropriate for identifying mothers at risk for postpartum depression. The proposed model will likely result in a meaningful description of PPD symptoms and an efficient screening measure that can be utilized on a routine basis. Further evaluation of this brief screen in the NICU setting is warranted to determine generalizability.

310 PARENTING INFORMATION FOR LOW-INCOME FAMILIES IN PRIMARY CARE

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Purpose of Study: Parenting is an important predictor of child outcomes across many domains. However, more data are needed on how to support parents, especially low-income families, in their development of parenting skills. The purpose of this study is to describe parents' preferences for and factors associated with getting parenting information.

Methods Used: Surveys were completed by 175 parents in the waiting room of a primary care pediatrics practice serving predominately low-income families. Data collected include: parent and child demographics, Pediatric Symptoms Checklist, Obstacles to Engagement, stigma, and preferences for parenting information. The majority of parents had at least a high school education (80%), was African American (79%), single parents (75%), and had a mean age of 30 years. Children were 3-8 years of age (M=63.3 months, SD=20.3). Twenty-six percent of the parents believed their child had a behavior problem. Parents selected more than one answer for both from whom they most wanted to and actually got parenting information.

Conclusions: Parents most often indicated that they got parenting information from family (70%), doctor (31%), friends (28%), no one 20%, mental health professionals (4%), all others (17%); and wanted to get information from family (43%), doctor (34%), friends (21%), no one 21%, mental health professionals (14%), all others (18%). The preferred method for receiving information was one-on-one. Group classes, DVD, internet, and handouts were rated least helpful. Parents indicating that they would likely to get information from their doctor scored their children higher on the symptoms checklist. Neither child nor parent stigma was indicated as a factor in attending parenting classes. Parents were more likely to indicate interest in attending parenting classes if they believed their child had a behavior problem rather than to prevent problems.

Conclusions: In general, parents did not see their pediatrician as the primary source of parenting information. They were more likely to want parenting information from their pediatrician if they rated their children as having more social-emotional symptoms on the PSC. Pediatricians are in a position to greatly influence parents. More effort should be made to inform and partner with parents to improve child health and development.
counting, number, shapes and position, but not simple addition and subtraction. Resident physicians delivered the math-focused books and over half reported that it was important to educate parents on their child's mathematical development but felt somewhat comfortable providing AG in the area. ROT + Math is a useful tool during AG portion of well child checkups.

312 COMMUNICATION BETWEEN ASIAN-AMERICAN ADOLESCENTS AND HEALTHCARE PROVIDERS ABOUT SEXUAL ACTIVITY, SEXUALLY TRANSMITTED INFECTIONS, AND PREGNANCY PREVENTION: A QUALITATIVE STUDY
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Purpose of Study: Compared with other races/ethnicities, Asian-American (AA) adolescents have the lowest level of communication with healthcare providers (HCPs) regarding sexual activity and prevention of sexually transmitted infections (STIs). The study goal was to identify AA adolescents’ attitudes and beliefs regarding how HCPs can be most helpful in communicating about healthy sexuality.
Methods Used: AA adolescents, recruited from community sites, completed background demographic surveys and one-on-one semi-structured interviews. Interviews explored adolescents’ attitudes and beliefs on how HCPs can provide the most helpful communication to AA adolescents regarding sexual health.
Summary of Results: Twenty AA adolescents 15-18 years old (mean 16.7) from six different Asian ethnicities participated. Nine were sexually active, and 10 were female. Several key themes were identified. 1) A profound need for privacy from parents regarding sexual behaviors. To conceal sexual activities from parents, AA adolescents lie to HCPs about their sexual history or refuse hormonal contraception. If alone with an HCP and advised of confidentiality, adolescents desired to be honest about their sexuality. 2) Lack of knowledge about STIs and contraceptives. AA adolescents believed their knowledge on sexual health was lacking, compared with their non-AA peers. Adolescents want their HCP to initiate conversations about sex, contraception, STIs, and pregnancy, and to educate all AA adolescents on STIs and contraceptives, whether they are sexually active or not. 3) HCPs first should encourage abstinence and discuss the consequences of sexual activity for the adolescent’s future. Adolescents stated that they would be more likely to consider abstinence if there were discussions of the adverse effects of STIs and pregnancy on future educational and occupational opportunities.
Conclusions: AA adolescents expressed a profound need for both privacy from parents and HCP confidentiality regarding their sexual behaviors. AA adolescents want HCPs to initiate conversations about healthy sexuality and to provide information about STIs and contraceptives to all AA adolescents. HCPs can encourage abstinence by discussing the consequences of sexual activity, STIs, and pregnancy on future goals.

313 BIKE SAFETY ENGAGEMENT IN A LATINO PEDIATRIC PRIMARY CARE SETTING
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Purpose of Study: Limited data is available on bike safety in Hispanic children but research indicates that Hispanic children are less likely to wear helmets and are involved in a disproportionate number of bicyclist crashes. Thus implementing bicycle safety prevention programs in Latino pediatric primary care is needed.
Methods Used: A convenience sample of 42 families in a Latino pediatric primary care clinic were surveyed to examine their attitudes and behaviors surrounding bicycle safety. Approximately 85% of caregivers presenting to the clinic speak primarily Spanish and 90% of patients are insured by Medicaid. After completion of all surveys an art contest was completed in clinic. Children between the ages of 4 and 12 were given the opportunity to draw a picture of what bike safety looked like to them, with a winner chosen in each age category (4-6, 7-9, 10-12) for 7 weeks. Each winner received a bike helmet. A post contest survey is now being completed to allow for pre and post comparisons.
Summary of Results: Caregivers completing the survey had on average 3 children in the home with the identified patient being male 65% and having an average age of 7.74. Eighty eight percent of caregivers reported their child knew how to ride a bike, with 85% of children riding at least one day a week. Fifty six percent of children owned a bike helmet, but 60% of children never or almost never wore a bike helmet and 18% always or almost always wore a helmet. Fifty eight percent of caregivers reported their physician had not talked to them about wearing a bike helmet. Forty nine children turned in drawings during the contest, with 76% of these drawings containing a depiction of a safety helmet.
Conclusions: The pre contest survey results indicated the majority of children do not routinely wear a bike helmet and over half of the families did not remember the physician discussing the need to wear a helmet. The current project involved staff, residents, and medical providers in encouraging patients to turn in pictures and also in selecting winning drawings. Overall, the project was enjoyed by staff and resulted in increased discussion about engaging families in bike safety. Once the post contest survey is completed, analyses will be conducted to examine changes in family attitudes and behavior, and frequency of provider guidance on helmet safety.

314 A EVALUATION OF REPEAT IMAGING IN THE PEDIATRIC EMERGENCY DEPARTMENT: IS IT CLINICALLY INDICATED, SAFE, OR COST EFFECTIVE?
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Purpose of Study: Many patients transported from outside facilities have the same radiographic studies repeated in the ED for a multitude of reasons. This practice exposes patients to additional radiation and incurs a monetary cost billed to the patient. We sought to determine the reasons for repeat radiographic imaging in the ED and to assess both the monetary and radiation cost to the patient.
Methods Used: A prospective study was designed to identify patients who required repeat radiographic imaging upon arrival to the ED of a tertiary pediatric hospital between January 2011- October 2011. Upon arrival, a score sheet was filled out by ED staff to identify the type of study and the reason it was obtained. The results were analyzed using SPSS and reported in aggregate.
Summary of Results: 139 subjects were identified in the study period. The most common reasons cited for repeat imaging was poor quality film/undetermined views (43%), no films sent with patient at time of transfer (21%) and requested by the service (9%). Only 16% of patients had repeat imaging because it was clinically indicated; e.g. a change in clinical status. Types of repeated studies included 70% plain films, 18% CTs and 9% Ultrasound or MRI, with ~3% representing other studies. Eight percent of subjects received multiple repeat imaging modalities during this study. The average cost of a chest x-ray billed to the patient from our hospital is $140 and incurs 0.1 milliSv (mSv) of radiation. This is equal to 10 days of background radiation exposure the average person in the US receives. The cost of a Head CT billed to a patient is $1,870 and incurs on average 2mSv which is equivalent to 4 months of background radiation exposure. Radiation doses incurred from outside referral facilities are typically higher and this does not include radiology technician or radiologist cost.
Conclusions: Repeat imaging for intra-hospital transfer to a tertiary facility is common. However, in our institution, clinical indication was not the primary reason. This practice incurs both a monetary cost and additional radiation exposure to the patient. This preliminary study will allow us to identify potential targets for quality improvement and improve patient safety.

315 ASSOCIATED MORBIDITY AND MORTALITY OF NEONATAL URINARY TRACT INFECTIONS IN FULL TERM, HEALTHY NEONATES WITH VARIED TREATMENT APPROACHES: 5 YEAR RETROSPECTIVE CHART REVIEW
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Purpose of Study: To determine the association between intravenous versus oral antibiotic regimen as well as short duration (3 days or less), medium duration (4-5 days) and longer duration (greater than 5 days) and treatment failure in a cohort of infants less than 30 days of age hospitalized with urinary tract infections at Wolfson Childrens Hospital, Jacksonville, Florida.
Methods Used: This is an IRB approved retrospective chart review of patients admitted between 2006-2010. Patients were selected on the criteria...
that they were less than 30 days of age, full term (>38 weeks), uncomplicated prior medical history (no history of sepsis, UTIs, or bacteremia) and presentation of 18 or fewer hours with urticarial rash. Their treatment regimen was categorized by either oral or intravenous and by length of therapy to conclude whether there was a significant difference in outcome. Outcome was measured by readmission due to urinary tract infection or bacteremia with same organism within 3 months.

Summary of Results: 122 patients were identified to meet this criteria. No difference was associated with route or length of therapy and outcome.

Conclusions: Our data suggests that neonates presenting with urinary tract infections can be treated with shorter intravenous antibiotic courses. Therefore this will reduce length of hospitalization without increasing morbidity or mortality.

316 PREDICTORS OF LEUKOTRIENE MODIFIER MONOTHERAPY AMONG PERSISTENT ASTHMATICS

Wu CL, Andrews A, Teufel RJ, Basco WT

Methods Used: We analyzed de-identified South Carolina Medicaid data from 2007 to 2009 in children ages 2-18 years with persistent asthma. Persistent asthma is defined by Healthcare Effectiveness Data and Information Set (HEDIS) criteria as individuals in the previous year that had: 1) any hospitalization for asthma, or 2) any emergency room visit for asthma, or 3) 4 or more outpatient asthma visits and 2 or more asthma medication-dispensing events, or 4) 4 or more asthma medication dispensing events. Individuals without either LTRA or ICS controller therapy were excluded. The outcome measure of LTRA monotherapy was compared to study variables of age, race, gender, HEDIS classification, and county of residence (as a proxy for access to care). Bivariate analyses and multivariate logistic regression were performed with SAS 9.3.

Summary of Results: 19,512 children with persistent asthma ages 2 through 18 years were studied: 2658 (13.6%) were excluded due to no controller, 2,508 (12.9%) received LTRA monotherapy, and 14,346 (73.5%) received ICS monotherapy. Differences were noted comparing controller therapy with route or length of therapy and outcome. Bivariate analysis demonstrated no association between gender and LTRA monotherapy. Age, race, rurality, and HEDIS classification were all significantly associated with LTRA monotherapy (all p < 0.0001). Multivariate analysis demonstrated: children ages 5-13 years were more likely to receive LTRA monotherapy than children less than 5 years (OR 1.40, 95% CI 1.25-1.57), Caucasians were more likely than African Americans to receive LTRA monotherapy (OR 1.39, 95% CI 1.27-1.53), and children in rural counties were more likely to receive LTRA monotherapy (OR 1.18, 95%CI 1.08-1.3). All models were significant (p < 0.0001).

Conclusions: In South Carolina, children ages 5-13 are significantly more likely to be prescribed LTRA monotherapy than children on either extreme. Uncovering provider rationale and practices as well as patient influences on this prescribing pattern may be helpful in optimizing asthma controller therapy.

317 HPV VACCINATION RATES; DOES IMMUNIZING BOYS MAKE A DIFFERENCE?

Naifeh MM, Halle JJ, Darden PM

Methods Used: We evaluated children less than 5 years of age who presented with isolated skull fractures in children is highly variable resulting in many children being admitted for observation even when there is little concern for serious injury. Our goal is to predict patients who can be safely managed at home. We sought to describe characteristics that lead to prolonged hospital admissions after isolated skull fractures compared to those admitted for 24 hour observation or discharged directly from the emergency department.

Methods Used: Patients met study criteria (ED discharge = 252; inpatient <24 hours = 138; inpatient ≥24 hours = 95). The mean length of stay for admissions was 1.9 days (SD 1.5 days). There were no differences when comparing overnight observations and ED discharges with the exception that inpatient transfers were more likely to be admitted (p=0.0001). Prolonged hospitalization patients were more likely to be African American (p=0.0065). Certain mechanisms of injury were also associated with prolonged hospitalizations including abuse cases and those involving motor vehicles (p=0.0001). In the regression model, only injuries that involved motor vehicles (OR 4.64, 95% CI 1.94-11.07) or abuse (all cases were prolonged admissions) were significant predictors of prolonged hospitalization.

Conclusions: Among young children with isolated skull fractures, there is little difference between patients admitted for observation and those discharged directly from the ED. The mechanism of injury was associated with prolonged hospitalization and may be useful in guiding clinical decision making.
diagnosis and management of Attention Deficit/Hyperactivity Disorder (ADHD). The main purpose of this study is to evaluate the extent to which general pediatricians follow these guidelines. A secondary objective was to measure variability in practice patterns.

Methods Used: A survey was distributed to general pediatricians in South Carolina and included questions to identify if they used specific tools and other methods to diagnose ADHD. We inquired about medication choices, both for initial treatment and second line therapy, follow up intervals, and the use of follow up questionnaires. Data were entered into SPSS and frequency distributions were calculated. Cross tabulations were made with Fisher’s exact test.

Summary of Results: Thirty-five of 64 surveys were returned. The AAP guidelines were consistently followed for a number of items, including use of the Vanderbilt Assessment Scale as a diagnostic tool (100%), choice of stimulant medication as a first line agent (89%), appropriate follow up time frame after initiating medication (97%), and appropriate long term follow up (100%). There was variation in the age at which most were comfortable diagnosing ADHD (26% at ≤ 4 years of age). There was a tendency to prefer methylphenidate over amphetamines, and 11% preferred to use lisdexamfetamine as their main first line agent. For second line use, lisdexamfetamine (64%) and guanfacine (40%) were likely to be prescribed. There was wide variation among providers at using follow up Vanderbilt Assessments for patients, with 20% hardly ever using them and 29% usually using them. Most do so when patients are having difficulty, and about half routinely distribute them at the start of the school year. Non-significant trends indicated that academically strong physicians may be less likely to use the newest medication and more likely to reassess with a standardized tool. Rural physicians were more likely to use the newest medication compared to urban physicians.

Conclusions: Most physicians followed AAP guidelines in diagnosing and managing ADHD, though there was variability in first line medication choices and the use of follow up screening.

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2:00 PM
Friday, February 10, 2012

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ROLE OF Dβ GERMLINE SEQUENCE ON CONSTRAINTING TCR CDR3 DIVERSITY
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Purpose of Study: A highly diverse T cell receptor (TCR) repertoire is necessary for the recognition of exogenous antigens. This diversity is developed through V(D)J rearrangement and N addition during TCR development. The product of V(D)J rearrangement in the beta chain of the TCR is the CDR3, a region of high variability that recognizes antigen and includes all of the D gene. Interestingly, the DJβ sequence, the D gene for the beta chain of the TCR, is highly conserved across various species, from trout to mouses to humans. This suggests that there are some natural constraints on the TCR; these constraints are thought to limit deleterious T cells from reaching the periphery. We hypothesize that altering the D region will have an effect on the development of thymocytes.

Methods Used: Thymocytes (CD4 and CD8 double negative stages of development) were sorted by flow cytometry based on their expression of CD44, CD25 and CD28. RNA from the thymocytes was extracted and the VDJ-beta genes were sequenced using primers to the Vβ1-3 and to the Vγ1. In frame sequences were analyzed using IMGT junction analysis program.

Summary of Results: We have preliminary data comparing the DN-thymocyte repertoires of WT and altered Dβ (Dβ̂) mice. Conversely to WT mice, in which Dβ genes favor glycine rich CDR3 loops, Dβ̂ mice mice have Dβ genes substituted with a DH gene segment (DSP2.3) which is enriched for use of tyrosine (reading frame 1, RF1), threonine (RF2) and leucine (RF3), and contains only germine Jβ1 cluster gene segments.

When compared to WT mice, the Dβ̂ mice mice have an altered mature T cell repertoire in that they resemble the amino acid distribution seen in the B cell repertoire. However, we see a reduced proportion of hydrophobic sequences in the DH compared to the B cell repertoire, which is more in line with the natural T cell repertoire.

Conclusions: The Dβ germline sequence is clearly affecting the TCR repertoire. In Dβ̂ mice, CDR3 repertoire appears skewed towards a more hydrophilic, BCR-like distribution. However, the altered TCR repertoire isn't as hydrophobic as the BCR repertoire, suggesting mechanisms of somatic selection by preferring a less charged CDR3. Ongoing experiments using varied TCR Dβ locus mutants will elucidate the role of the germline sequence on the development of thymocytes.

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PHENOTYPIC ANALYSIS OF VARIOUS B CELL POPULATIONS IN COMMON VARIABLE IMMUNODEFICIENCY, RECURRENT SINO-PULMONARY INFECTION, AND IMMUNOGLOBULIN DEFICIENT PATIENTS
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Purpose of Study: In our Adult Primary Immunodeficiency Clinic in the Southeastern United States, we follow over 300 patients with Common Variable Immune Deficiency (CVID); various immunoglobulin deficiencies, and ReCurrent Sino-Pulmonary Infections with normal serum immunoglobulins (RESPI). Recent studies suggest that clinical symptoms in CVID can correlate with a reduction in the memory B cell compartment. To test this hypothesis, we evaluated various B cell populations of patients without disease, with CVID, with RESPi, and subtype immunoglobulin deficiencies.

Methods Used: Whole blood was collected from our patients from 2008 to 2011. Total lymphocytes, marginal zone-like B cells, memory B cells, class-switched B cells, immature B cells, naive and transitional B cells were isolated from whole blood and counted via FACs. One-way ANOVA was used to analyze the means of these cells on a first time visit.

Summary of Results: We enrolled 265 patients in our study. Of which, seventy percent were females, and the median age was 53. We found the total lymphocyte populations to be lower in CVID patients compared to RESPi patients (p = 0.045). The total IgM memory B cells were also lower in CVID patients compared to controls but this did not reach statistical significance (p < 0.07). When comparing total class-switched B cell populations, there was a significant trend for less class-switched B cells in CVID patients compared to healthy patients (p = 0.03) and in CVID patients compared to RESPi patients (p = 0.0047). Total immature B cells were higher in subtype immunoglobulin deficient patients compared to controls, CVID, and RESPi patients (p = 0.0341, p = 0.0097, and p = 0.004, respectively).

Conclusions: We postulate that the transition from RESPi patients to CVID patients may involve the development of defects in B cell maturation signaling. We are in the process of evaluating immunoglobulin repertoire development in CVID and RESPi, which may give new clues to the potential defect in maturation.

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PHENOTYPIC ANALYSIS OF B CELLS IN HLA*B44 POSITIVE DISCORDANT IDENTICAL TWINS WITH COMMON VARIABLE IMMUNODEFICIENCY AND RECURRENT SINO-PULMONARY INFECTION PATIENTS
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1University of Alabama at Birmingham, Birmingham, AL; 2University of Alabama at Birmingham, Birmingham, AL; 3University of Texas at Austin, Austin, TX; 4University of Alabama at Birmingham, Birmingham, AL; 5University of Alabama at Birmingham, Birmingham, AL; 6University of Alabama at Birmingham, Birmingham, AL; 7University Marburg, Marburg, Germany.

Purpose of Study: Common Variable Immunodeficiency (CVID), the most common primary immune deficiency under the care of clinical immunologists, present with unexplained hypogammaglobulinemia and recurrent sino-pulmonary infections (RESPi). We seek to identify putative common susceptibility gene(s) for RESPi/CVID within the major histocompatibility complex (MHC). Also we seek to better define the pathophysiologic block in B cell (BC) function by examining BC antigen receptor repertoire signaling. We are in the process of evaluating immunoglobulin repertoire development in CVID and RESPi, which may give new clues to the potential defect in maturation.

Methods Used: To identify putative susceptibility genes within the MHC we used high resolution single nucleotide polymorphism mapping to re-evaluate all of the patients within our clinic cohort. To better define the block in BC development, we have isolated 6 distinct BC populations: memory IgD+IgD-, plasma, immature, transitional, and mature Bcs, from blood of IT discordant for CVID and RESPi. Deep sequencing of the immunoglobulin transcripts is in progress.
Summary of Results: Memory IgD+ and memory IgD- cells were significantly lower in the CVID twin (mean 3.2 X 10^5 in CVID, 1.0X 10^6 in RESPI, p=0.012, mean 2.4 X 10^5 in CVID, 8.2X10^5 in RESPI, p=0.017, respectively). We observe higher immature BC and lower transitional BC in the CVID twin compared to the RESPI twin.

Conclusions: The CVID discordant twin appears to have less memory, less transitional cells, and more immature BC compared to her RESPI counterpart. A comprehensive analysis of the MHC and BCR could help extend the disease definition and mechanism that result in susceptibility to infection, diagnosis, and possible new treatment and prevention of CVID and RESPI.

Supported by U01 AI096902-01.

323 ALTERED IMMUNOGLOBULIN CDR-H3 REPERTOIRE APPEARS TO IMPAIR THE RESPONSE TO INFLUENZA VIRUS INFECTION

Watkins L1, Moldoveanu Z2, Huang W2, Schroeder H1 1University of Alabama at Birmingham, Birmingham, AL and 2University of Alabama at Birmingham, Birmingham, AL.

Purpose of Study: While individuals previously infected with or vaccinated against influenza virus typically express protective levels of antibody toward homologous virus, heterosubtypic immunity (HI) requires production of a broadly neutralizing antibody repertoire. Intriguingly, the ability to generate HI varies with the age of the individual, with the elderly particularly at high risk. We have previously shown that both human and mouse produce a primary antibody repertoire that is enriched for tyrosine containing, neutral CDR-H3s while, conversely preventing expression of other categories of sequences, including highly charged sequences enriched for cationic amino acids. Therefore, we believe that the breakdown in protection against influenza virus results, in part, from an accumulation of highly charged amino acids in the immunoglobulin (Ig) CDR-H3 repertoire. In this study, we sought to determine how, and to what extent, controlling composition of the antibody repertoire permits or prevents HI to influenza viruses.

Methods Used: Here, we immunized mice with an H3N2 strain (A/UpMarket) of influenza, waited 4 weeks, and then challenged with an H1N1 strain (A/PR/8/34). We variably challenged five types of mice: wild-type (WT), mice homozygous for a single, normal DH gene segment (ΔD-ΔFL), mice homozygous for a single, frameshuffled DH that express hydrophobic antigen binding sites (ΔD-d), and mice heterozygous for a normal DH allele and a charged allele (WT/ΔD-d). To measure protection from infection, we calculated body weight loss and measured influenza specific antibody (Ab) titers from collected sera.

Summary of Results: Heterozygous WT/ΔD-d mice experienced increased morbidity relative to WT, as if they had not been immunized; and displayed lower Ab titers against different strains of H3N2.

Conclusions: These data show impaired immunity in mice heterozygous for the charged DH allele and suggest that inclusion of disfavored CDR-H3s can have a dominant negative effect on protection against T-dependent viral infection. That is, the mere presence of disfavored antigen binding sites, despite the normal DH allele, impairs heterosubtypic immunity.

324 T HELPER 17 CELLS ARE INCREASED IN THE LUNGS OF OLDER MICE

Rehm T, Hossain F, Welsh DS Louisiana State University Health Sciences Center, New Orleans, LA.

Purpose of Study: Interleukin 17-producing helper T (TH17) cells constitute a recently defined effector T cell subset that plays a cardinal role in antimicrobial immunity and host-destructive pathogenic inflammation. TH17 cells are increased with aging. However, the impact of aging on the pulmonary TH17 population has not been characterized. We hypothesized that immunosenescence would skew the distribution of the TH17 cells in lungs of older mice.

Methods Used: Young (4 month) and old (22-month) C57BL/6 female mice were obtained from the National Institute on Aging, and sacrificed. Lymphocytes from lung and spleen were harvested, and incubated for 6 hours with PMA (Sigma) 50ng/ml, Ionomycin (Sigma) 1000ng/ml and Brefeldin A (eBiosciences) 9μg/ml. Surface and intracellular staining was performed using fluorescent antibodies purchased from eBiosciences or BD Pharmingen. Multiparametric flow cytometry was carried out on the LSR II (BD Biosciences) instrument and analyzed using the FlowJo software. All comparisons were made using the two-tailed Student t test. A p value of <0.05 was considered significant.

Summary of Results: TH17 cell population was significantly expanded in the lung (p=0.02), but not in the spleen of the older mice compared with the young mice (N=6 per group). A greater proportion of lung TH17 cells was interleukin-17F positive in the older mice, suggesting functional activation (p=0.03). The distribution of the regulatory T (Treg) cells was not altered with aging in either the lung or the spleen. TH17 and Treg cells are developmentally coupled and perform reciprocal effector functions in maintaining immune-homeostasis. The ratio of TH17 to Treg may thus serve as a marker of immune-activation. TH17/Treg ratio was significantly increased in the lungs (p=0.004), but decreased in the spleens of the older mice (p=0.01).

Conclusions: TH17/Treg immune-homeostasis is perturbed in the lungs of older mice due to unknown mechanisms. Implications of such changes for the pulmonary host defense in older age need further investigation.

325 IN VIVO EFFECTS OF THERAPEUTIC MONOCLONAL ANTIBODY STIMULATION IN MURINE COLLAGEN INDUCED ARTHRITIS

Easterling ER, Cullins DL, Stuart JM, Kang AH, Myers LK University of Tennessee, Memphis, TN.

Purpose of Study: The success of Abatacept (CTLA4-Ig) and TNF-α antibodies in treating rheumatoid arthritis (RA) suggests that treatment with specific monoclonal antibodies can be an effective therapeutic strategy for human autoimmune arthritis, such as RA. A possible new therapeutic target might be an inhibitory receptor which contains an ITIM found on peripheral mononuclear cells, including NK cells and T cells. Our hypothesis was that antibodies administered in vivo to stimulate ITIM-containing receptors will suppress cell signaling and lead to inhibition of autoimmunity arthritis in the collagen-induced arthritis (CIA) model.

Methods Used: DR1 transgenic mice were injected intraperitoneally with three doses of either the monoclonal antibody (n=4) or a hamster IgG control (n=7) for a total of 500 μg each following immunization with type II collagen and complete Freund’s adjuvant.

Summary of Results: When mice were scored for the incidence and severity of inflammatory arthritis in each paws, it was shown that treatment with the monoclonal antibody attenuated CIA in the mice (severity scores 1.5 ± 1.9 vs. 6.4 ± 2.4, p = 0.007). In addition, mice treated with the monoclonal antibody carried a lower tier of antibody to type II collagen (33 ± 7.9 units vs 62 ± 16 units, p = 0.04).

Conclusions: These data suggest that stimulation of ITIM-containing receptors might be an effective therapeutic target for treatment of rheumatoid arthritis.

326 INCREASED RENAL INVOLVEMENT IN SYSTEMIC LUPUS ERYTHEMATOSUS (SLE) PATIENTS WITH CHILDHOOD DISEASE ONSET

Meyer A 1, McKinney E 2, Oates JC 1, Gilkeson GS 1, Kamen DL 3 1Medical University of South Carolina, Summerville, SC and 3University of Virginia, Charlottesville, VA.

Purpose of Study: The purpose of this study is to investigate the influence of age of SLE disease onset in the development of renal disease.

Methods Used: We investigated the incidence of renal disease in SLE patients enrolled in our Lupus Clinic Database and compared patients with childhood SLE disease onset (C-SLE) to adult SLE (A-SLE) patients.

Summary of Results: Table 1 shows demographic, renal, and outcome data of the study patients, 18.8% of whom had childhood onset SLE (cSLE). The mean age of SLE onset was 29.8 +/- 13.1 years. We found a statistically significant increase in the number of deaths among cSLE compared to aSLE patients (p<0.01). When comparing mortality rates, we found a statistically significant increase in the number of deaths among cSLE compared to aSLE patients (p<0.04) with age of death at 25.4 +/- 5.0 years in cSLE and 47.4 +/- 7.7 years in aSLE (p<0.01). Although the values did not reach statistical significance, a higher proportion of cSLE patients compared to aSLE required dialysis and had renal transplant.
Conclusions: There is strong evidence that childhood onset SLE tends to be more severe than SLE occurring during adulthood. Data from our center concur with several studies and suggest that SLE patients whose initial disease onset occurred before adulthood are more likely to develop renal abnormalities and have more severe disease outcomes, including death.

<table>
<thead>
<tr>
<th>Age of SLE onset +/- SD in years</th>
<th>Total Patients N=319</th>
<th>cSLE n=60</th>
<th>eSLE n=256</th>
<th>P-value (cSLE vs. eSLE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>29.8 +/- 13.1</td>
<td></td>
<td>13.6 +/- 5.8</td>
<td>33.6 +/- 11.5</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>SLE disease duration +/- SD in years</td>
<td></td>
<td>6.7 +/- 7.4</td>
<td>6.9 +/- 3.9</td>
<td>6.0 +/- 6.7</td>
</tr>
<tr>
<td>Renal disease (%)</td>
<td>177 (55.5)</td>
<td>45 (75.0)</td>
<td>132 (51.0)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Females (%)</td>
<td>292 (91.5)</td>
<td>55 (91.7)</td>
<td>237 (91.3)</td>
<td>NS</td>
</tr>
<tr>
<td>African American (%)</td>
<td>257 (80.6)</td>
<td>49 (81.7)</td>
<td>208 (80.3)</td>
<td>NS</td>
</tr>
<tr>
<td>Caucasian (%)</td>
<td>52 (16.3)</td>
<td>8 (13.3)</td>
<td>44 (17.0)</td>
<td>NS</td>
</tr>
<tr>
<td>Diagnosed (%)</td>
<td>29 (9.1)</td>
<td>9 (15.6)</td>
<td>20 (7.7)</td>
<td>NS</td>
</tr>
<tr>
<td>Renal transplant (%)</td>
<td>14 (4.4)</td>
<td>4 (6.7)</td>
<td>10 (3.9)</td>
<td>NS</td>
</tr>
<tr>
<td>Deceased (%)</td>
<td>12 (3.8)</td>
<td>5 (8.3)</td>
<td>7 (2.7)</td>
<td>0.04</td>
</tr>
</tbody>
</table>

327 SRUROGATE LIGHT CHAIN COMPONENT OF THE PRE BCR SELECTS FOR IMMUNOGLOBULIN HEAVY CHAINS BASED ON THEIR CDR3-H3 CONTENTS

Klaus M1, Zhuang Y2, Schroeder H2 UAB, Birmingham, AL and 2UAB, Birmingham, AL.

Purpose of Study: Formation of the pre B cell receptor (Pre BCR) is a key step in B cell development. The Pre BCR is formed by the binding of the surrogate light chain proteins (SLC) and an in-frame re-arranged Mu heavy chain (Mu HC). Optimum surface expression of Pre BCR allows Pre B cell proliferation and further passage into successive stages of development. We sought to test the hypothesis that the sequence of the heavy chain complemen-
tarity determining region 3 (CDR3-H3) differentially affects the interaction between SLC and Mu HC and thus the nature of the produced Pre BCR and Pre B cell development

Methods Used: By generating a stable of mice limited to use of a single normal or altered DH, we previously showed that the sequence of the DH gene segment dictates the overall composition of CDR-H3. We used Bromo-decoy Uridine (BdU) incorporation and analysis of apoptopic markers to assess B cell turnover, cell cycle progression and cell loss as functions of CDR3-H3 content and developmental checkpoint progression in the bone marrow. We measured the rate of formation of Pre BCR based on binding of the surrogate light chain to Mu HC in different mouse models.

Summary of Results: B lineages enriched for hydrophobic CDR-H3 had difficulty forming Pre BCR, with increased cell loss and inefficient cell cycle progression at the stage of transition from early to the late pre-B cell. B cells limited to use of a single, normal DH with tyrosine enriched CDR-H3 followed the wild-type pattern.

Conclusions: Our findings suggest that immunoglobulin heavy chains with hydrophobic CDR-H3s have poor binding to the surrogate light chain, which results in a decreased cycling activity and increased apoptosis at the Pre B cell stage. These findings may explain how humans minimize the use of hy-
drophobic CDR-H3s in their developing B cells.

328 PERIPHERAL TOLERANCE OF RECENT THYMIC EMIGRANTS IN A MODEL OF TYPE 1 DIABETES

Bhaunik S, Kirkman R, Randolph DA University of Alabama at Birmingham, Birmingham, AL.

Purpose of Study: Thymic education results in the deletion or the con-
version to a FoxP3+ regulatory phenotype of most autoreactive T cells. How-
ever, thymic education is imperfect and peripheral tolerance mechanisms are believed to play a role in limiting damage from autoreactive cells that escape thymic deletion. Recent thymic emigrant (RTE) T cells produce lower levels of inflammatory cytokines than mature peripheral T cells upon stimulation. We reasoned that the RTE phenotype might serve to facilitate peripheral tolerance induction in self-reactive T cells that escape thymic deletion. Type 1 diabetes is an autoimmune disease driven in part by self-reactive T cells. Using a mouse model of Type I diabetes, we tested the hypothesis that peripheral tolerance of recent thymic emigrants helps limit autoimmunity.

Methods Used: RTEs were identified as green fluorescent protein (GFP) positive cells in the peripheral lymphoid tissues of Rag2-GFP reporter (NGBAC) mice. Diabetes was induced by transferring ovalbumin (OVA)-
specific OT-I C5D8 cells and OT-II CD4 cells into RIPmOVA mice that express OVA in the thymus and pancreatic beta cells. Development of central and peripheral tolerance was visualized by generating bone marrow chimeras with WT bone marrow mixed with a tracer population of bone marrow from OT-I1 NGBAC mice transplanted into WT or RIPmOVA recipients.

Summary of Results: Transfer of mature CD4 cells resulted in higher rates of diabetes compared to transfer of CD4 RTEs (p=0.05). Recipients of CD4 RTEs had little histologic evidence of inflammation in the islets compared to recipients of mature cells, suggesting that RTEs are inefficient at driving autoimmune responses. After bone marrow transplant into RIPmOVA recipi-
ents, expression of OVA in the thymus resulted in the deletion of 80-90% of the tracer population of OVA-specific OT-II CD4 cells, but significant numbers of autoreactive cells did escape to the periphery. The majority of GFP+ RTEs in RIPmOVA recipients were already Foxp3+, but further conversion to Foxp3+ phenotype was seen the periphery, suggesting that both thymic and peripheral tolerance mechanisms are involved.

Conclusions: Peripheral conversion of RTEs to a Foxp3+ phenotype is a significant mechanism for maintaining peripheral tolerance. A better un-
derstanding of this process may give insights into autoimmunity.

329 ASTHMA EDUCATION VIA TELEMEDICINE: EFFECTS ON ASTHMA KNOWLEDGE AND SELF-EFFICACY

Burbank A, Rettiganti M, Brown RH, Jones S, Perry TT UAMS, Little Rock, AR.

Purpose of Study: Asthma Education via Telemedicine: Effects on Asthma Knowledge and Self-efficacy.

Methods Used: Rural Arkansas Delta children with asthma and their caregivers were randomized to receive either asthma education via tele-
medicine or usual care. The intervention group received detailed education regarding asthma symptoms, proper medication use, asthma triggers, how to handle asthma-related emergencies, and use of the asthma action plan.

Summary of Results: Pre and post-intervention scores for the primary outcomes were measured and expressed as mean values. The caregiver self-
efficacy attack prevention sub-scores were significantly different between the intervention and usual care groups at baseline (t=3.58, p=0.01), with a higher mean score in the usual care group. There were no other statistically differ-
ces between the groups at baseline. Following intervention, caregivers had little histologic evidence of inflammation in the islets compared to transfer of CD4 RTEs (p=0.05). Recipients of CD4 RTEs had little histologic evidence of inflammation in the islets compared to recipients of mature cells, suggesting that RTEs are inefficient at driving autoimmune responses. After bone marrow transplant into RIPmOVA recipi-

Conclusions: Caregivers receiving asthma education via telemedicine had a significant improvement in the asthma attack prevention subscale as compared to the usual care group. Results suggest that asthma education via telemedicine can potentially improve health outcomes, specifically caregiver asthma self-efficacy, in rural, underserved regions such as the Arkansas Delta.

Cardiovascular 1

2:00 PM

Friday, February 10, 2012

330 ACUTE MYOCARDIAL INFARCTION BEFORE AND AFTER THE STORM: HURRICANE KATRINA

Hameed I, Moscona J, Kakoulides S, Srivastav S, Delafrome P, Irimpen A Tulane University and Heat Vascular Institute, New Orleans, LA.

Purpose of Study: To evaluate the difference in acute myocardial infarc-
tion (AMI) incidence before and after Hurricane Katrina and the pertinent contributing factors.

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Methods Used: This was a single center retrospective study. Patients admitted with AMI to Tulane University Hospital, in the two years before Katrina and in the four years after the hospital reopened in February, 2006 were identified from hospital medical records. The two groups (pre- and post-Katrina) were compared for pre-specified demographic and clinical data.

Summary of Results: In the 4-year post-Katrina group, there were 629 confirmed admissions for AMI out of a total census of 28597 patients (2.2%), as compared to 150 out of a census of 21,079 (0.7%) in the 2-year pre-Katrina group (p<0.0001). The post-Katrina group had a higher prevalence of unemployment (17% vs. 2%, p=0.0001), lack of medical insurance (12% vs. 6%, p<0.0001), smokers (58% vs. 17%, p=0.001), medical non-compliance (25% vs. 7%, p<0.0001), substance abuse (16% vs. 7%, p<0.01), psychiatric comorbidities (10% vs. 6%, p=0.05) history of coronary artery disease (46% vs. 31%, p=0.001), and percutaneous coronary interventions (66% vs. 52%, p=0.0001). More people in the post-Katrina group were single/divorced (30% vs. 26%, p=0.05). There were no significant differences between the two groups in terms of age, race, and gender, and history of hypertension, hyperlipidemia, diabetes mellitus and chronic renal disease.

Conclusions: Discussion: Hurricane Katrina wreaked an enormous long-term physical, psychological, emotional, and social burden on the residents of New Orleans as evident by our data and similar studies. At the 5th-year anniversary, we still find a higher incidence of unemployment, lack of medical insurance, depression, tobacco use, medical non-compliance and acute myocardial infarction. To our surprise this persistent increase in AMI incidence has occurred in the absence of any change in traditional risk factors (age, hypertension, hyperlipidemia, obesity and diabetes).

Conclusion: The three-fold increased incidence of AMI more than 4 years after Hurricane Katrina requires further study to identify mechanisms and special efforts from medical personnel and public health services to mitigate the long term effects.

331 HEART CONDUCTION DISORDERS ARE ASSOCIATED WITH OBSTRUCTIVE SLEEP APNEA

Texas Tech University Health Science Centers, Lubbock, TX.

Purpose of Study: This study was done to determine the prevalence of obstructive sleep apnea (OSA) symptoms in patients with and without cardiac arrhythmias in our cardiology clinics. Patients with OSA are at increased risk for arrhythmias, including sinus node dysfunction (SND). Continuous positive airway pressure (CPAP) may provide adjunctive treatment for these arrhythmias.

Methods Used: Seventy patients in our cardiology clinics completed the Berlin questionnaire. Based on the questionnaire scores, subjects were divided into low or high risk for OSA. Demographic data and relevant medical histories were recorded and summarized with descriptive statistics. Patient groups were compared with t-tests and chi-square tests. A p value < 0.05 was considered significant.

Summary of Results: The mean age of our sample was 65 years (SD ± 15), 44% were females, 20% were Hispanic, and 64% were Caucasian. The mean BMI was 29 kg/m2 (±7); the mean blood pressure was 126/72 mmHg. Eighteen percent had SND, 14% had high-degree AV block, 33 % had a pacemaker, and 34% had atrial fibrillation. The prevalence of hypertension was 72.9%, coronary disease 37.1%, heart failure 28.6%, diabetes 28.6%, thyroid disease 21.4%, and alcohol use 17.1%. Thirteen percent had previous diagnosis of OSA, and 10% of the total population was on CPAP treatment. Patients with high risk versus low risk Berlin scores had a higher BMI (32 vs. 25 kg/m2, p= 0.0001), more frequent diagnoses of hypertension (91% vs. 64%, p= 0.0015), and OSA (21% vs. 3%, p=0.026). The patients with SND were older (75 vs. 63 years, p=0.04) and had more pacemakers (100% vs. 18%, p = 0.0001). SND patients did not have a more frequent diagnosis of OSA (15% vs. 12%, p=0.15), or higher risk scores on the Berlin questionnaire (62% vs. 53%, p=0.56). High risk patients for OSA had a more high-degree AV block diagnoses and pacemaker implantations (24% vs. 3%, p=0.014) and (45% vs.19%, p=0.021), respectively. Atrial fibrillation was equally present in both risk groups (34%).

Conclusions: Patients with high-degree AV blocks and permanent pacemakers had higher scores on the Berlin questionnaire and likely had undiagnosed OSA. Patients with AV node disease should be screened for OSA. The association between SND and OSA symptoms may need more data to be confirmed.

332 MAGNESIUM THE FORGOTTEN ELECTROLYTE

Borges W, Alvarado S, Altieri PL, Branch G, Escobales N, Crespo M, Gonzalez M, University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico.

Purpose of Study: Magnesium (Mg++), Potassium (K+) and Calcium (CA+) are crucial electrolytes in maintaining a stable electrophysiological status in critically ill patients (P). The purpose of this study was to measure the above electrolytes in critically ill P and find out the relationship of them with arrhythmias and management of this problem.

Methods Used: 28 consecutive critically ill P were analyzed for abnormalities in the electrolytes status. 18 were females and 10 males with a mean age of 62 years.

Summary of Results: The admission diagnosis in 95% of the cases was congestive heart failure and its complications. Levels of these electrolytes, arrhythmias and managing were analyzed. 64% had subnormal values of Mg++ < than 2mg%(1.8 ± 2mg%), 53% of K+ < than 4.0mg%(3.8 ± 7mg%) and CA++ < 8mg%(7.4 ± 1mg%). Lower values of the 3 (14%) and (42%) of Mg++<K+. The QTC interval > than 440 m sec. (28%). 25% had Atrial Fibrillation(A.F) and Ventricular Fibrillation (VT). The V.T. group had more electrolyte abnormalities than the A.F. The most frequent drug used was furosemide and prior to admission no drug was being used which increased QT interval. None of the P received Mg++ replacement and 50% received K+ replacement.

Conclusions: This data shows that physicians forgets the importance of Mg++ deficiency and other electrolyte abnormalities in critically ill P. Deficiencies of them will produce a higher incidence of A.F and VT. This concept of Mg++ and K+ replacement should be stressed at the intensive care units, especially by practicing physicians to avoid lethal arrhythmias and other complications.

333 ACUTE STRESSOR STATES: CATION DYSHEMOSTASIS, PROLONGED MYOCARDIAL REPOLARIZATION WITH CARDIAC ARRHYTHMIAS AND NECROSIS

Khan MU, Shahbaz AU, Khalid H, Weber KT University of Tennessee Health Science Center, Memphis, TN.

Purpose of Study: Acute stressor states involves neurohormonal activation with elevations in plasma catecholamines that promote translocation of circulating cations into soft tissues. In the heart, the resultant dyshomeostasis of extracellular and intracellular cations is accompanied by the prolongation of myocardial repolarization with a greater propensity for atrial and ventricular arrhythmias and nonischemic cardiomyocyte necrosis. Herein, we studied serum electrolytes and troponin-I (trop-I), corrected QT interval (QTC) from the ECG, and the appearance of arrhythmias in acutely ill patients hospitalized in a medical intensive care unit (MICU) to elucidate their potential pathophysiologic correlations.

Methods Used: A retrospective chart review of 200 consecutive patients (58:1 yrs; 106 females) admitted to a MICU from April to August 2010, with acute stressors, such as sepsis, pulmonary embolus, acute lymphocytic leukemia, intracranial hemorrhage, subdural hematoma, or diabetic ketoacidosis, and who did not have previously documented arrhythmia or chronic renal failure (serum creatinine >1.4 mg/dL). Total serum [Ca2+] and ionized [Ca2+]o, K+, Mg2+, and trop-I, together with QTC (ms) and cardiac rhythm, obtained within admission to 12-48 h of admission, were noted.

Summary of Results: Hypocalcemia was present in 70% and ionized hypocalcemia in 70%; K+ <4.0 in 85% and in 65% it was <3.5; Mg++ <2.0 in 70% and <1.8 in 42%. Prolonged QTC was found in 76% when K+ was either <4.0, Mg++ <2.0, and/or hypocalcemia was present. New-onset arrhythmias were seen in 50% when QTC was prolonged (>440 ms); 45% supraventricular, 36% ventricular and 19% both ventricular and supraventricular arrhythmias. Trop-I was elevated (>0.04 mg/mL) in 52%, exceeding 1 mg/mL in only 6% patients.

Conclusions: Acute stressor states are accompanied by a dyshomeostasis of extracellular cations and QTC prolongation with a predisposition to arrhythmias and nonischemic myocardial injury. Early surveillance and maintenance of
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**EFFECTS OF ADULT BONE MARROW CELL THERAPY ON CARDIAC PARAMETERS AND OUTCOMES: ANALYSIS OF POOLED DATA**

Jeewanatham V1, Butler M2, Saad A2, Abdel-Latif A2, Zuba-Surma E2,
Dawn B1 **1University of Kansas Medical Center, Kansas City, KS, 2University of Kentucky, Lexington, KY**

**Purpose of Study:** The effects of BMC therapy on left ventricular (LV) structure and function, arrhythmias and mortality in patients with ischemic heart disease (IHD) remains poorly understood. We analyzed the pooled data on LV ejection fraction (LVEF), infarct size, LV end-systolic volume (LVESV), LV end-diastolic volume (LVEDV), ventricular arrhythmias, and mortality in patients with IHD.

**Methods Used:** We searched the MEDLINE, Web of Science, Cochrane Central Register of Controlled Trials, and reference lists of articles for relevant trials. Randomized control trials (RCTs) and cohort studies conducted in patients with IHD were included. Weighted Mean Difference (WMD) for changes in LVEF, LVESV, LVEDV and infarct size were estimated using random effects meta-analysis. Peto-odds ratio was calculated for ventricular arrhythmias, all-cause and cardiac mortality.

**Summary of Results:** The final analysis included data from 42 studies (2,416 patients). Compared with the standard treatment group, BMC-treated patients showed a significant increase in LVEF, and significant decrease in infarct size, LVESV, and LVEDV (Table). Compared with controls, patients treated with BMCs showed significant decrease in all-cause and cardiac mortality without significant increase in ventricular arrhythmias (Table).

**Conclusions:** Adult BMC therapy results in significant improvement in LV volumes, function and scar size compared with standard therapy in patients with IHD. In addition, BMC therapy is associated with a significant reduction in mortality without any significant increase in ventricular arrhythmias.

Mean change in cardiac parameters and clinical outcomes in patients treated with BMC compared with standard treatment

<table>
<thead>
<tr>
<th>Mean Change in LV Outcomes</th>
<th>Weighted Mean Difference (WMD)</th>
<th>95% CI</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LVEF</td>
<td>3.46 %</td>
<td>2.44 to 4.53 %</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>LVESV</td>
<td>6.07 ml</td>
<td>-0.44 to -3.7 ml</td>
<td>P=0.001</td>
</tr>
<tr>
<td>LVEDV</td>
<td>-3.42 ml</td>
<td>-5.87 to -4.97 ml</td>
<td>P=0.001</td>
</tr>
<tr>
<td>Infarct Size</td>
<td>-303.5 %</td>
<td>-412.0 to -194.9 %</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td>Clinical Outcomes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peto OR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All-Cause Mortality</td>
<td>0.38</td>
<td>0.26 to 0.55</td>
<td>&lt;0.00001</td>
</tr>
<tr>
<td>Cardiac Mortality</td>
<td>0.4</td>
<td>0.21 to 0.75</td>
<td>0.004</td>
</tr>
<tr>
<td>Ventricular arrhythmias</td>
<td>1.23</td>
<td>0.52 to 2.91</td>
<td>0.64</td>
</tr>
</tbody>
</table>

These refractory subjects along with 28 demographically similar resistant hypertensive subjects with controlled blood pressure underwent 24hr ambulatory blood pressure monitoring (ABPM), heart rate (HR) monitoring, pulse wave analysis (PWA) with augmentation index corrected for HR 75/min (AIx@75), aortic pulse pressure (APP), pulse wave velocity (PWV), flow-mediated dilation (FMD) and transcranial echocardiography (TTE).

**Summary of Results:** ABPM confirmed a significant difference between both systolic and diastolic BP in control and refractory groups (SBP(mm Hg) 141.1±7.8 vs. 171.2±2.6, P<0.001; DBP(mm Hg) 72.2±1.9 vs. 91.3±2.5, P<0.001, MAP (mm Hg): 97±13.1 vs. 121±15.5, P<0.001). Average heart rate (HR) 69.7±4.7 vs. 77.8±7.65 (p=0.03), FMD(%) 6.6 vs. 9.4. TTE showed left ventricular hypertrophy in both groups. PWV (m/s) 9.5±1.9 vs. 11.7±2.67 (p=0.03), AIx75 (%) 17.8±12.1 vs. 27.5±10.5 (p<0.001), AP (mm Hg) 11.3±10.7 vs. 18.3±13.5 (p=0.041), Aortic PP (mmlg) 40.7±15.7 vs. 61±27.9 (p=0.001).

**Conclusions:** Subjects with refractory hypertension showed increased arterial stiffness indices, central blood pressure indices, and left ventricular hypertrophy and decreased flow-mediated dilation compared to subjects with resistant hypertension. Underlying mechanisms contributing to refractory hypertension seem to differ from resistant hypertension.

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**DIFFERENTIAL REQUIREMENT FOR NADPH OXIDASE- AND MITOCHONDRIA-DERIVED SUPEROXIDES IN RESISTANT ANGIOTENSIN-II (ANG) SUBSTRATE: A NOX- AND MITOCHONDRIA-DEPENDENT MODEL OF CACHEXIA AND BLOOD PRESSURE INCREASE**

Sukhanov S, Semprun-Prieto L, Yoshida T, Galvez S, Tabony M, Delafontaine P, Tulane University, New Orleans, LA.

**Purpose of Study:** Skeletal muscle wasting (cachexia) is associated with congestive heart failure (CHF) and chronic kidney disease (CKD) and correlates with increased levels of angiotensin II (ANG) and elevation of reactive oxygen species (ROS). We reported previously that ANG induces cachexia and increases ROS in mice. In this report we studied role NADPH oxidase (Nox) and mitochondria in ANG-induced muscle atrophy, ROS increase and hypertension.

**Methods Used:** ROS were quantified with DHE staining of muscle sections or by measuring GSSG/GSH ratio in muscle homogenates. Mitochondria-specific superoxides were assessed by MitoSOX Red staining.

**Summary of Results:** C57BL/6 WT mice were treated with antioxidant NAC and infused with ANG (1 ug/kg/min) or vehicle (Sham) for 7d. ANG induced gastrocnemius muscle weight loss (16.7±2.3% decrease vs. Sham, n=30, P<0.05) and increased muscle ROS levels (3.6±0.5-fold increase, P<0.05, GSSG/GSH assay; 2.9±0.2-fold increase, P<0.05, DHE assay) and NAC blocked these effects. NAC had no effect on ANG-induced blood pressure. WT mice or mice deficient for p47phox, a key Nox subunit (P47null mice) were infused with ANG or Sham. ANG-induced muscle weight loss (21.6±2.1% muscle loss, P=NS) and ROS increase was completely blocked in P47 mice. ANG-induced hypertension was not altered by p47phox deficiency. WT mice were co-infused with ANG or Sham and with mitochondrial superoxide-specific blocker MitoTEMPO (0.4 ug/kg/min). MitoTEMPO did not change ANG-induced total superoxides (DHE assay) and reduction in muscle weight. However, MitoTEMPO completely blocked ANG-dependent mitochondrial superoxides and partially reduced blood pressure increase (ANG + MitoTEMPO: 145±7 vs. ANG: 164±9 mmHg, P<0.05) indicating importance mitochondrial ROS for hypertension but not for cachexia.

**Conclusions:** We demonstrated that ROS mediates ANG-induced muscle atrophy and Nox and mitochondria are differentially contributed to ROS increase. NADPH oxidase-derived ROS plays primarily role and medium muscle atrophy and mitochondrial ROS do not contribute to cachexia, however they are mainly responsible for hypertensive effect. Our findings offer new therapeutic targets for CHF and CKD.

**337**

**RESPONSES IN BRAIN NARIOTIDE PEPTIDE TREATMENT CLINICALLY DECOMPENSATED AND COMPENSATED PHASES OF SYSTOLIC HEART FAILURE**

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Purpose of Study: The constellation of symptoms and signs that constitute the congestive heart failure (CHF) syndrome is rooted in a salt-avoid state mediated by effector hormones of the adrenergic nervous and renin-angiotensin-aldosterone systems. The resulting expansion of intravascular and central blood volumes are manifested with the dilated failing heart's release of brain natriuretic peptide (BNP). The objective of this study was to determine responses in BNP when a given patient was hospitalized with clinically decompensated (Decomp) failure and again when they were compensated (Comp).

Methods Used: Seventy-two veterans (69 men) having a dilated failing heart with reduced ejection fraction (EF, 26.1±1.2%) were followed: 27 had ischemic cardiomyopathy (angio-proven coronary artery disease); and 45 with nonischemic cardiomyopathy (angio-proportionally normal coronary arteries). Group 1 consisted of 42 men (66.9±1.7 yrs) who were hospitalized with Decomp (EF, 26.8±1.7%), treated and discharged receiving today's standard of care and then followed as outpatients during Comp. Group 2 included 30 patients (27 men; 64.0±2.1 yrs) who were first seen as outpatients when they were Comp (EF 26.0±2.1%) and then subsequently hospitalized with clinically Decomp. Plasma BNP was obtained in each patient during Comp and Decomp phases.

Summary of Results: Normal BNP <100 pg/mL. In group 1, plasma BNP was markedly elevated (p<0.05) at 1471±160.6 pg/mL when patients were Decomp and declined to 274.3 pg/mL when patients were Comp and rose even further to 1577.2±274.3 pg/mL when they were Decomp. BNP was already elevated at 402.2±87.6 pg/mL when patients were Decomp and then subsequently Decomp and 350.1±100 pg/mL when patients were Decomp and rose even further to 1577.2±274.3 pg/mL when they were Decomp. These responses suggest baseline BNP levels should be obtained when patients with enlarged hearts are Comp in order to gauge elevations that accompany Decomp heart failure.

Methods Used: A cross-sectional analysis of baseline data from the Cohort Study of Medication Adherence in Older Adults (CoSMO) treated for hypertension was conducted. Data for socio-demographic and clinical characteristics were obtained from outpatient surveys. Blood pressure measures were obtained from outpatient medical records. Antihypertensive medications filled and co-morbid conditions were obtained from administration database utilization. Using the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7), cut points for blood pressure levels were assessed: SBP <120 and DBP <80, SBP 120-139 or DBP 80-89, and SBP ≥140 or DBP ≥90. Blood pressure control rates (SBP ≥140 or DBP ≥90 versus SBP <120 and DBP <80) were compared between genders.

Summary of Results: The mean age of 1957 participants was 75.0±5.6, 30.5% were African American, and 58.7% were women. Female gender was consistently associated with higher blood pressure levels. After adjustment for socio-demographic characteristics, women had a 1.94 (95% CI 1.31, 2.89) higher odds of SBP ≥140 or DBP ≥90 than men. Gender differences in blood pressure control remained significant even after additional adjustment for clinical characteristics, the number and type of antihypertensive medication filled in the last year, and self-reported adherence to antihypertensive medications.

Conclusions: Gender disparities exist in blood pressure control among hypertensive adults. The purpose of this study is to determine if there are gender differences in blood pressure control in a sample of older adults with hypertension and to explore factors contributing to these differences.

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Conclusions: Gender disparities exist in blood pressure control among hypertensive adults. Further research to identify gender-specific determinants of blood pressure control is needed.
Summary of Results: The incidence rate of the onset of type 2 diabetes was 1.6, 4.3, 3.9, and 3.4 per 1000 person-years for age group 18-29, 30-39, 40-50, and total sample, respectively. Incidences of diabetes increased with age by race and sex groups (P for trend <0.01); higher in black females vs white females and blacks vs whites in total (P < 0.05). In a multivariable Cox model, baseline parental diabetes and insulin resistance were significantly associated with diabetes incidence at age 18-29; black race, BMI, and glucose at age 30-39; female sex, parental diabetes, BMI, triglycerides/HDL-C ratio, and glucose at age 40-50; and black race, parental diabetes, BMI, triglycerides/HDL-C ratio, and glucose in whole cohort. Further, diabetics, regardless of age-onset, displayed a significantly higher prevalence of maternal history of diabetes at baseline (P < 0.01).

Conclusions: In relatively young adults, maternal history of type 2 diabetes at baseline consistently predicted the onset of diabetes, regardless of age; whereas predictability of individual cardiometabolic risk factors along with race and sex in this regard varied by age group. This could have implications for early prevention and intervention in the relatively young adults.

Gastroenterology I

Friday, February 10, 2012

341 OBESITY ALTERS GUT MICROBIOTA IN AN ELDERLY HUMAN COHORT

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Purpose of Study: Human gut harbors a vast consortium of micro-organisms collectively referred to as the microbiota. Obesity perturbs gut microbial community structure with deleterious metabolic consequences for the host. Whether this holds true for elderly humans as well is not known. The purpose of this study was to assess the impact of obesity on the gut microbial community structure in an elderly human cohort.

Methods Used: Stool samples were collected from 43 community-dwelling subjects age > 50. A Body Mass Index (BMI) <25 was defined as “Normal” whereas a BMI ≥30 was defined as “Obese”. Genomic DNA from stool samples was isolated, and the hypervariable V4 region of the 16S ribosomal RNA gene PCR amplified. Multiplexed, massively-parallel pyrosequencing was performed using the Roche 454 platform. Data analysis was carried out using the Quantitative Insights into Microbial Ecology (QIME) pipeline, as well as a locally developed bioinformatics framework.

Summary of Results: Twenty-four subjects had a BMI <25 (Normal), while 19 had a BMI ≥30 (Obese). Mean age of the Obese was not different from the Normal (63 vs. 65 years, p=0.3). Obesity resulted in a significant loss of microbial community α-diversity as measured by the Shannon Diversity Index. Principal Co-ordinate Analysis using the β-diversity UniFrac metric also revealed distinct clustering patterns for the Normal and the Obese. Moreover, obesity was associated with significant differences in the relative abundance of several taxa. The ratio of Firmicutes to Bacteroidetes, the predominant phyla in the human gut microbiota, was 14.5 in the Normal but >20 in the Obese. This contrasts with previous reports, which have shown an increase in the Firmicutes and a decrease in the Bacteroidetes associated with obesity.

Conclusions: Obesity is associated with an altered gut microbial community membership and structure in humans over 50. An interaction between aging and obesity is suggested when compared to previously published work.

342 THE INCIDENCE OF CELIAC DISEASE IN IRON DEFICIENCY ANEMIA IN THE VETERANS AFFAIRS POPULATION

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Purpose of Study: To identify the prevalence of celiac disease in veterans with iron deficiency anemia.

Methods Used: We undertook a chart review of 361 consecutive patients who underwent duodenal biopsies to evaluate for celiac disease between January 2005 and September 2008 at the VAMC in Memphis. Data on patients with iron deficiency (defined as an iron saturation of <10%, a ferritin <25 μg/l, or both) and no source identified on EGD or colonoscopy were analyzed. The pathological specimens were independently reviewed again by an expert Gastrointestinal Pathologist for confirmation. Those patient’s whose initial or repeat duodenal biopsy specimens showed findings suggestive of celiac disease (increased intraepithelial lymphocytes, villous atrophy, or crypt hyperplasty) were followed up in Gastroenterology clinic. Celiac serologies including Tissue Transglutaminase (TTG) IgA, TTG IgG, Endomysial IgA, and Deaminated Gliadin Peptide (DGP) IgA and DGP IgG were ordered. If the biopsy findings and serologies were ambiguous, an HLA celiac panel was ordered. If the HLA celiac panel was negative, the patients were considered not to have celiac disease. If positive, the patients were to undergo a trial of a gluten free diet.

Summary of Results: 167 were identified who met the inclusion criteria. The mean age was 61.7 years. Mean laboratory values included a hemoglobin of 10.3 g/dl, mean corpuscular volume of 78.5, and an iron saturation of 6.7%. On initial pathological review, only 1 patient was found to have pathological changes consistent with celiac disease. This patient had both biopsy and serologic studies highly suggestive of celiac disease. On repeat pathological review, an additional 32 patients were found to have increased intraepithelial lymphocytes. 28 of these patients had serologies that were unequivocally negative for celiac disease. The additional 4 patients had serologies indeterminate for celiac disease. All 4 of these patients had a HLA celiac profile inconsistent with celiac disease.

Conclusions: According to this study, occult celiac disease in the setting of unexplained iron deficiency in our veteran population is extremely low, only identifying 1 of 167 (0.6%) patients. One should appreciate the low diagnostic yield of this routine practice in the VA setting.

343 NON-HEPATOCELLULAR CARCINOMA LIVER MALIGNANCIES IN VETERANS WITH HEPATITIS C

Jones JL1,2, Waters B1,2, Memphis VA Medical Center, Memphis, TN and University of Tennessee Health Sciences Center, Memphis, TN.

Purpose of Study: Study patients with hepatitis C and non-hepatocellular liver malignancies

Methods Used: Retrospective chart review

Summary of Results: The Memphis VA Medical Center has 1,587 patients enrolled in the Hepatitis C Registry. Of these patients, 210 have cirrhosis. Between 2007 and 2010, 65 Hepatitis C patients were diagnosed with hepatocellular carcinoma (HCC). Five were diagnosed with intrahepatic cholangiocarcinoma. One of these had a biopsy showing mixed HCC/cholangiocarcinoma. Gender: Male 5/5. Mean age: 54.4yr (51-59). Race: Caucasian 2, African American 2, Hispanic 1. Smoker: 4/5. Cirrhosis: 3/5. HIV: 0/5. Inflammatory bowel disease: 0/5. Primary Sclerosing Cholangitis: 0/5. At the time of diagnosis: mean AFP 47.9 (range 5.0-186.5), CA19-9:11.8 (range 11-293), CEA: 6.07 (range 0-14.8). Two patients eventually developed an AFP >200 despite a tissue diagnosis of cholangiocarcinoma. The mean MELD score was 7.8 (range 6-10). Diagnosis occurred with routine screening for HCC in two patients. One patient presented with abdominal pain and one presented with weight loss. In one patient without cirrhosis, an incidental liver mass was found on a chest CT following resection of an undifferentiated lung cancer two years earlier. All patients had intrahepatic lesions with absence of large duct involvement. Treatment included: resection 1; chemotherapy 2; chemoembolization 2. All patients were evaluated for liver transplantation but did not meet listing criteria. Mean survival was 11.75 months (range 4-21 months) for those who succumbed to their cancer. One patient is alive with no evidence of recurrent disease at 37 months post-treatment.

Conclusions: In this series, intrahepatic cholangiocarcinoma was the most likely etiology of non-HCC hepatic neoplasms in veterans with hepatitis C (comprising 7.1% of liver neoplasms). An AFP >200 did not exclude the diagnosis of cholangiocarcinoma.
(CTT) and whole gut (WGTT) transit times. The introduction of Cecal Residence Time (CRT) could provide an explanation for the complaint of constipation in patients with a normal CTT.Aim: To investigate potential differences in the duration of CRTs among healthy subjects (HS) and chronically constipated (CC) patients, with a normal CTT.

Methods Used: The WMC recordings from 151 patients- 64 HS and 87 CC (Rome III) with negative balloon expulsion test were evaluated. Ingestion of SmartBar with 50 ml of water was followed by swallowing of WMC. All WMC recordings were analyzed using published criteria for GET, SBTT and WGTT. Cecal arrival time was identified when a stable pH profile in the small bowel was interrupted by an abrupt ≥ 1.0 unit fall, and CRT ended when there was a subsequent pH increase of 1 or more units sustained for longer than 1 hour. Based on published data the upper limit of normal CTT is 59 hrs with mean/median of 17.1hrs (11.9-25.1). The t-test and Mann-Whitney Rank Sum Test were used for analysis.

Summary of Results: Totally, 58 HS (27 F) mean age 38 (18-72) and 81 CC patients (67 F) mean age 49 (21-79) qualified for our analysis based on having a normal CRT reading. CRT was further evaluated in these two groups. The mean CRT value for HS was 4.0 hrs SD ±3.9; for F-4.6 hrs SD: 4.8; and for M-3.4 hrs SD: ±3.0. The mean CRT value for CC was 8.0 hrs SD:6.0; for F-8.0 hrs SD: ±5.8; and for M-7.2 hrs SD:7.3. Interestingly, CRTs of 15 CC patients (19%) exceeded the upper limit (max-11.8 hrs) of HS CRT. There were no statistical differences of CRT and CRT observed between both genders in HS and CC groups.

Conclusions: In the subset of CC patients with a normal CRT, a significantly longer duration of CRT could help to explain the complaint of constipation. This entity of prolonged CRT could be a part of a spectrum of the right-sided colonic inertia.

The median values are presented in the table:

<table>
<thead>
<tr>
<th>Group</th>
<th>CTT (hrs)</th>
<th>p</th>
<th>HS-F</th>
<th>CC-F</th>
<th>p</th>
<th>HS-M</th>
<th>CC-M</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>HS</td>
<td>22.5</td>
<td>25.7</td>
<td>27.8</td>
<td>26.3</td>
<td>21</td>
<td>24.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CC</td>
<td>2.4</td>
<td>6.1</td>
<td>p&lt;0.001</td>
<td>2.3</td>
<td>6.2</td>
<td>p=0.002</td>
<td>2.4</td>
<td>5.8</td>
</tr>
</tbody>
</table>

345 PROFOUND DIFFERENCE IN NITRIC OXIDE SYNTHASE EXPRESSION IN ANTRAL MUSCULARIS IN IDIOPATHIC VERSUS DIABETIC GASTROPARESIS: ITS POTENTIAL PATHOGENETIC IMPLICATION

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Purpose of Study: To assess Nitric Oxide Synthase (nNOS) expression within the gastric antral muscularis propria of controls and rats with diabetes (D), diabetic gastroparesis (DGP) or idiopathic gastroparesis (IGP).

Methods Used: The study was conducted using a rat model of streptozotocin (STZ)-induced D with or without GP. A group of male (M) rats also received estradiol.

Full-thickness muscularis propria from antrum of control (C), D, DGP in M and F rats as well as idiopathic IGP (3/group) were processed for mucosal nNOS using PC assisted laser confocal microscopy. The abundance of nNOS per unit area (100 μm2) of muscularis was determined as function of anti-nNOS immunofluorescence intensity using nNOS Ab and anti-mouse 2nd Ab. Results are presented as Mean ± SEM and for statistical analysis Σ-Statistic was employed.

Summary of Results: The administration of estradiol to C male rats resulted in 13-fold increase in nNOS expression in the antral muscularis propria (902 ±709 vs. 71 ±25). STZ-induced D antagonized the effects of estradiol on nNOS expression in muscularis propria regardless of GP status. In C female rats NOS expression was 5-fold higher than in CM animals (357 ±119 vs. 71 ±25).

The presence of D in F rats, regardless of GP status, is associated with a significant decrease in nNOS expression on the muscularis propria as compared to CF (51 ±46 vs. 357 ±119, P=0.05).

Idiopathic GP in F rats is associated with 2-fold increase of nNOS expression on the muscularis propria as compared to CF (741 ±254 vs. 357 ±119) and 15-fold increase as compared to FDGP (741 ±254 vs. 51 ±46; P=0.02).

Conclusions: 1. Endogenous or exogenous estrogens remain a potent up-regulator of n-NOS both in Control F and M rats correspondingly.

2. D with or without GP in F rats results in profound down regulation of n-NOS leading to distal muscle contraction thus predisposing F gender to subsequent gastro-pyloric outflow dysregulation.

3. Profound increase in n-NOS expression in IGP in F rats may indicate that excessive muscle dilation, not only contraction, may lead to delayed gastric emptying too.

346 IMMUNOTHERAPY TREATMENT FOR DRUG-REFRACTORY GASTROPARESIS: CASE-SERIES OF TREATMENT WITH IMMUNOGLOBULIN, CELLCEPT, AND SOLUMEDROL

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Purpose of Study: Drug-refractory gastroparesis patients with inadequate gastric electrical stimulation (GES) outcomes who had gastric enteric nerve-reinnervation on gastric biopsy and positive GAD65 autoantibody profile were selectively chosen for immunotherapy with Cellcept and Solumedrol or Immunoglobulin. Our aim is to compare immunomodulatory therapy with Cellcept and Immunoglobulin in drug-refractory gastroparesis to improve treatment outcomes previously treated with GES.

Methods Used: Our clinical series included 11 female gastroparesis patients with mean of age 45 years old. 10 patients had a history of idiopathic GP and 1 patient with a history of diabetic GP. 3 patients with positive GAD65 antibody were treated with weekly IV immunoglobulin therapy for 8-12 weeks. 4 patients were treated with daily Cellcept for 12 weeks and IV or oral Solumedrol therapy. 4 more patients were treated with Cellcept only. Patients with previous side effects from steroid therapy, low scores of DEXA bone test results, immunocompromised conditions with infections such as TB and zoster were excluded. All patients were followed up at clinical visit or by phone call from 2 to 64 weeks after the initiation of therapy.

Summary of Results: See table 1. GP symptoms of vomiting improved in 3 patients with Cellcept treatment. However, 2 out of 4 and 1 out of 3 patients had improvement on treatment with Cellcept/Solumedrol and Immunotherapy respectively. Most commonly observed side effects from Cellcept and Solumedrol therapy were abdominal bloating and musculoskeletal pain.

Conclusions: Immunomodulatory therapy with Cellcept, Solumedrol, and Immunoglobulin shows positive outcomes in improving vomiting symptom in a subset of GP patients who have coexisting positive autoimmune profile.

<table>
<thead>
<tr>
<th>Treatment Comparison</th>
<th>Immunoglobulin (n=3)</th>
<th>Cellcept (n=4)</th>
<th>Cellcept and Solumedrol (n=4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper GI symptoms</td>
<td>Improvement</td>
<td>No change</td>
<td>Improvement</td>
</tr>
<tr>
<td>Vomiting</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Abdominal pain</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Anorexia/hyperalimentation</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>bloating</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>TSS</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

347 CAN TRANSCUTANEOUS ELECTRICAL ACUPUNCTURE CONTROL SYMPTOMS OF SEVERE GASTROPARESIS AND CONSTIPATION?

Alvarez A1, McCallum R2, Sun Y3, Chen J2, Sarosiek I4 1Texas Tech University Health Sciences Center, El Paso, TX and 2VA Medical Center, Oklahoma City, OK.

Purpose of Study: 51 years old F diagnosed with Diabetes Mellitus (DM) developed severe, drug refractory gastroparesis (GP) leading to implantation of gastric neurostimulation system-GES- (Enterra Therapy) in 2000. In June of 2011 she noticed the exacerbation of GP symptoms, with return of nausea to pre-GES levels. GES batteries were totally depleted and replacement of the device was scheduled.

Methods Used: During evaluation, it was noticed that besides presence of symptoms of GP (score 25 out of max 28 points) the major problem was constipation, with bowel movements (BMs) approximately every 3-4 weeks and passing a little liquid stools with gas with straining. Cytotec 200 μg up to QID, with Go-Lightly, Amitiza, Colchicines and all possible laxatives were introduced in the past without any success. While waiting for the Enterra...
surgery, Transcutaneous Electrical Acupuncture (TEA) therapy was initiated. Two pairs of electrodes were connected to the micro-stimulator which was programmed based on patient's preference and tolerance. One pair was positioned on arm-point PC6 (current 2 mA), the second was located on her leg point ST36 (current 4mA). Other Parameters of TEA were this same. Patient was using acupuncture for 30 min before and 2 hours after each meal.

**Summary of Results:** Nausea was completely resolved within 15 min of TEA. 6 hours after starting this stimulation patient had a normal, “healthy” BM. Similar BM responses were observed next day. TEA therapy was discontinued for implantation of the new Enterra device. No BMs took place in 24 h after surgery (Enterra still OFF) and TEA system was utilized again. During next 48 h, patient was able to have 3 BMs with complete control of GP symptoms. TEA therapy was then discontinued and GES was turned ON. In the next 2 months, patient was doing well with GP symptoms (score 6 points) but BMs could not be stopped.

**Conclusions:** In a case of DM GP patient, TEA System demonstrated a very impressive efficacy in controlling GI dysmotility problems. Most remarkable and unexpected was the improvement in constipation.

Transcutaneous Electrical Acupuncture therapy is efficacious not only for severe nausea and DMGP symptoms but also in stimulating bowel movements in colonic inertia setting.

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**DOMPERIDONE AND ITS CARDIOVASCULAR SAFETY PROFILE IN A COMPASSIONATE USE STUDY**

Ortiz A, Alvarez A, Pattathan M, Ahluwalia P, McCallum R, Sarosiek I. *Texas Tech University Health Science Center, El Paso, TX.*

**Purpose of Study:** Oral domperidone (Motilium), a non-FDA approved dopamine antagonist, can prolong the QT interval and predispose to ventricular arrhythmias. Its use is limited to clinical research or the compassionate access protocols.

**The aim:** 1) to establish a clinical profile of patients receiving domperidone through the limited access protocol 2) to investigate the indications and possible side effects of domperidone 3) to analyze ECG reports with special attention to the duration of QTc intervals.

**Methods Used:** Study involved a retrospective chart review of 163 patients that were referred to a single physician at a GI Motility Center. Patients demographics, GI diagnosis, cardiovascular complaints and ECG tracings were obtained. Prolonged QTc were verified if they were longer than 470 ms in F and longer than 450 ms in M patients.

**Summary of Results:** Overall 23 out of 163 (13%) patients (15 F, mean age 47, range 18-73) presenting with chief complaints of nausea and vomiting were receiving domperidone. There were 8 (36%) Hispanics, 12 (52%) Caucasians, and 3(12%) African Americans. Totally 16 (60%) of these patients (9F) were diagnosed with GP and 4 F met the criteria of Cyclic Vomiting Syndrome. 6 (27%) ECG reports showed non-significant sinus arrhythmias, and one patient had an irregular rhythm. Women had higher heart rate with mean value of 82 (range 52-112) vs men who's average HR was 86 (range 55-105) bpm. Overall, the mean value of QTc for all domperidone patients was 427 ms (ranges 383 - 507 ms). When looking at ECGs for females, mean did not have "normal" BM.

None of these patients complained about palpitation, tachycardia or cardiac pain. Also, all other potential complications including extra-pyramidal side effects have not been reported during this therapeutic trial. There were no ethnic differences and predispositions observed under this protocol.

**Conclusions:** 1) Domperidone as a safe drug can be prescribed for patients with symptoms of nausea and vomiting related to gastroparesis and other motility problems 2) No significant ECG changes and QTc prolongations were discovered during this observation.

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**EOSINOPHILIC GASTROENTERITIS: ACUTE DIARRHEA IN A PRENISONE DEPENDENT, ATOPIK PATIENT**

Bradley MK *Texas A&M/Scott and White Memorial Hospital, Temple, TX.*

**Case Report:** Eosinophilic gastroenteritis is an extremely rare histologic condition which can be confused for a mass. Obtaining a correct diagnosis is important because this condition does not require surgical management. This case report describes a unique occurrence of eosinophilic gastroenteritis in the setting of atopy and nasal polyps. Studies have shown that there is considerable overlap in patients with eosinophil-mediated diseases such as asthma and rhinosinusitis. In patients with allergic rhinosinusitis and nasal polyps, mucosal eosinophils exhibit signs of pronounced degranulation and likely cause extensive tissue disturbances. The patient's aspirin allergy and atopy created a change in the milieu of her inherent prostaglandin and leukotriene signaling cascade, resulting in an increased activity of mast cells and eosinophils. This hyperactive leukotriene signaling cascade, resulting in an increased activity of mast cells and eosinophils, may be a precipitating factor in eosinophilic gastroenteritis.

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**GASTRIC ANTRAL VASCULAR ECTASIA PRESENTING AS AN UNUSUAL CAUSE OF OCCULT BLEEDING: A CASE REPORT**

Grover I, Weeks S, Davila R *University of Mississippi Medical Center, Jackson, MS.*

**Purpose of Study:** Gastric antral vascular ectasia (GAVE) syndrome is rare and uncommon cause of occult gastrointestinal bleeding. Characteristic...
endoscopic appearance of ‘watermelon stripes’ earns it the name watermelon stomach. GAVE patients often present with insidious onset of weakness, fatigue secondary to iron deficiency anemia, resulting from occult blood loss. Elderly people are affected mostly and the diagnosis is often missed. Pathogenesis is unknown although this could be a variant of Heyde’s syndrome in which gastrointestinal angiodysplasias are associated with aortic valvular disease. Diagnosis is based on clinical history, endoscopic appearance and histological changes. Prompt recognition and treatment with either heater probe, electrocoagulation or argon plasma coagulation result in complete recovery and decreased morbidity and mortality. We present a case of an elderly man with aortic stenosis and multiple other medical problems who presented with fatigue, weakness and severe anemia secondary to chronic blood loss who was diagnosed with GAVE syndrome and prompt diagnosis and treatment resulted in complete recovery.

Methods Used: Case report.

Summary of Results: Case report.

Conclusions: Case report.

Hematology and Oncology I

2:00 PM
Friday, February 10, 2012

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CHARACTERISTICS OF DE NOVO STAGE IV BREAST CANCER PRESENTATION AND COMPARISON WITH STAGE IV DISEASE RELAPSE AFTER ADJUVANT THERAPY
Waynick C, Romond E
University of Kentucky, Lexington, KY.

Purpose of Study: Patients with stage IV breast cancer at presentation may have different disease characteristics than those with relapsed stage IV disease after adjuvant therapy. To examine potential differences, prospectively-collected data were examined for patients diagnosed at the Markey Cancer Center since 2007.

Methods Used: Of 1089 patients, 76 (7%) presented with de novo stage IV disease and 40 (4%) had systemic disease relapse after initial adjuvant therapy. Key variables including patient age, tumor size, grade, estrogen receptor (ER) status, progesterone receptor (PgR) status, HER2, and sites of metastatic disease were compared. Data were analyzed using the Chi-square test, Fisher’s exact test, two-sample t-test, or Wilcoxon’s rank sum test.

Summary of Results: Patients with de novo stage IV breast cancer were more likely to be older than women with relapsed stage IV breast cancer (median age 58.5 years, Range 28-88 vs. 53, 28-77, respectively, p=0.039), grade 1/2 (43 vs. 18.4%, p=0.032), ER positive (69.7 vs. 47.5%, p=0.019), and PgR positive (56.6 vs. 32.5%, p=0.0136). Interestingly, de novo stage IV breast cancer was more likely to be HER2 positive than in patients with relapsed disease (27.4 vs. 10.26%, p=0.035). When available patient data prior to 2007 were included in the analysis, no significant difference in the frequency of HER2 expression between the groups was found (27.4 vs. 19.4%, p=0.26). Regarding sites of metastatic disease, the de novo stage IV patient group was more likely to have bone metastasis (68.4 vs. 35%, p=0.006) but there were no significant differences in the frequency of other metastatic sites, such as brain, liver, and lung.

Conclusions: In this breast cancer patient cohort, there was a relatively high percentage who presented with stage IV disease, likely reflecting the underserved nature of this population. Women with de novo stage IV breast cancer were more likely to be older, have ER/PgR positive disease, and have bone metastases. These characteristics may reflect delay in initial presentation rather than a biologically more aggressive phenotype. The higher relative frequency of HER2 positive cancer in the de novo stage IV patient group may be related to the impact of adjuvant trastuzumab on reducing the risk of relapse in HER2 positive breast cancer.

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PEPTIDE H2009.1 UPTAKE BY aVb6 IN NON-SCREW LUNG CANCER CELLS
Avutu V, McGuire MJ, Brown KC
1 University of Texas Southwestern Medical School, Dallas, TX; 2 University of Texas Southwestern Medical Center, Dallas, TX and 3 University of Texas Southwestern Medical Center, Dallas, TX.

Purpose of Study: Non-small cell lung cancer (NSCLC) cells can serve as targeting vectors for drug delivery. The peptide H2009.1 (RGDLATLRQL) was selected via biopanning against a NSCLC adenocarcinoma-derived cell line (H2009). H2009.1 binds specifically to the integrin receptor aVb6; b6 is not expressed in healthy tissues and over-expression in lung tumors is correlated with poor prognosis. Knowledge about the uptake of such peptides can be used to design linkers capable of delivering cargo intracellularly.

Methods Used: To assess the feasibility of using H2009.1 as a drug delivery vector, characterization of binding, cell uptake, and localization was carried out using flow cytometric analysis and microscopy. A tetrameric form of the peptide constructed on a trilysine core was labeled with fluorescent dyes via a streptavidin-biotin linker. Assays of uptake at different temperatures, concentrations, and times were performed. Localization studies to ascertain intracellular destination of H2009.1 were carried out using known subcellular markers. Inhibitors of clathrin-dependent and -independent endocytosis were co-incubated with the peptide following pretreatment of H2009 cells to elucidate the internalization pathway.

Summary of Results: Analysis revealed that peptide uptake required membrane fluidity, was specific and saturable, but linear for at least six hours. Peptide uptake was most potent inhibited by compounds known to decrease clathrin-dependent endocytosis (filipin). Furthermore, H2009.1 accumulatd in Golgi-like compartments, co-localizing with known Golgi-specific stains (cholera toxin b subunit) but not stains specific for other intracellular compartments (LAMP-1 and EEA1).

Conclusions: These results indicate that H2009.1 is internalized by H2009 cells via a aVb6-integrin dependent, clathrin-independent endocytic pathway. Thus, targeted drug delivery using H2009.1 and linkers that are designed for caveolar trafficking would be more effective than using linkers designed for clathrin trafficking.

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PEDIATRIC SICKLE CELL DISEASE INDICATORS AND NEUROCOGNITIVE OUTCOMES
Tulane University, New Orleans, LA.

Purpose of Study: Neurocognitive deficits are associated with sickle cell disease (SCD). While there exist a range of different neurocognitive tests, no previous studies have utilized a standardized computerized nonverbal testing battery with applicability to larger multi-center studies. To better define the association between medical indicators and neurocognitive function in pediatric SCD patients we utilized the Cambridge Automated Neuropsychological Testing Battery (CANTAB) to assess spatial working memory and attention as both of these measures have relevance for academic success.

Methods Used: Participants: 40 children with SCD between the age of 4 and 18 completed CANTAB testing. Average annual laboratory values of hemoglobin (hgb) and ferritin were obtain from electronic medical records. Linear regression analysis was performed with each neurocognitive outcome and medical predictor.

CANTAB: We report on two specific tasks: Spatial Working memory (SWM) and Reaction Time Index (RTI). SWM targets the DLPFC and memory while RTI reflects PFC functioning and attention. Dependent variables were SWM strategy, in which lower scores indicate better tactical methods, and RTI simple accuracy.

Summary of Results: Hgb average levels were 7.1-12.9 (SD 3.14) and Ferritin ranged from 30.8 to 3518. Because of the skewed nature of ferritin we categorized ferritin as greater or less than 500 μg/L. Table 1 presents significant associations between medical and neurocognitive outcomes.

Conclusions: These results demonstrate the utility of the CANTAB testing battery in pediatric SCD. We also demonstrate that elevated ferritin is associated with decreased spatial working memory while lower hgb levels are associated with slowed reaction time and accuracy. Future studies should explore change in CANTAB functioning over time and during specific treatments. These approaches will provide a greater understanding of the neurocognitive changes associated with pediatric SCD and potentially result in improved quality of life.

Table 1

<table>
<thead>
<tr>
<th>Neurocognitive Outcome</th>
<th>Medical variable</th>
<th>r</th>
<th>b</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWM strategy</td>
<td>Ferritin</td>
<td>0.200</td>
<td>-0.447</td>
<td>-1.997</td>
</tr>
<tr>
<td>RTI simple accuracy</td>
<td>hgb</td>
<td>0.124</td>
<td>0.352</td>
<td>2.095</td>
</tr>
</tbody>
</table>
Griscelli syndrome (GS) is a rare autosomal recessive disease characterized by protein deficiency, leading to severe immune disorders, skin, and hair abnormalities. The syndrome was first identified in 1978. Type 2 has a poor prognosis and is fatal. The disease is suggested by high clinical suspicion; MRI findings; hair, skin, and eye complications; and neurologic compromise.

Hemophagocytic lymphohistiocytosis leads to fatality. It can be attenuated by chemotherapy and high dosage steroids but bone marrow transplantation is considered the treatment of choice to improve survival.

Purpose of Study: Pain is one of the most characteristic manifestations of sickle cell disease (SCD) and is the leading cause of hospitalization of affected pediatric patients. When treating pediatric patients, clinical history is often obtained from parents; however, there is limited data on comparisons between pain reporting from the parent and the child. The purpose of this study is to assess parent and child pain reports to better evaluate patient pain burden.

Methods Used: Thirty-five patients (ages 4-17) with SCD (HbSS and HbSC) and their parents were asked to report pain burden. Children and parents separately completed the Child’s Teen Activity Interview (CALI-21), a 21-item inventory to assess functional impairment across a range of domains associated with chronic pain. All parents and children ≥10 years also independently completed a 7-item Sickle Cell Pain Burden (SCPB) scale to further characterize and report pain. Patients were also evaluated by the Child Behavior Checklist, which assesses child externalizing and internalizing behaviors, sleep disorders, and DSM-oriented measures of affect, anxiety, pervasive development, attention, and opposition.

Summary of Results: Across both pain measures (CALI-21 and SCPB), parent report is significantly correlated (r=0.393, p=0.024), and child report is significantly correlated (r=0.883, p<0.0001). However, parent and child reports do not correlate with each other (CALI-21: r=0.037, p=0.872; SCPB: r=−0.109, p=0.710) and parents report less pain than children. Hemoglobin level and externalizing behaviors together predict parent report of pain (B=-0.452, p<0.017), with 28% variance in parent pain report explained by these two variables (r²=0.281).

Conclusions: Two separate measures of pain burden demonstrate a discrepancy in reporting between pediatric patients with SCD and their parents. Parents consistently report less pain than their children. Parental pain reporting correlates to the child’s hemoglobin level and externalizing behaviors. These findings indicate that children may be experiencing greater levels of pain than their parents perceive which may affect the ability to provide adequate patient pain control.

Novel RAB27A mutations causing Griscelli syndrome type II

Siddik S, Chaote B, Winter CA, Todd CS Texas Tech University HSC-Amarillo Campus, Amarillo, TX.

Case Report: Griscelli syndrome (GS) is a rare autosomal recessive disorder that was first identified in 1978. Type 2 has a poor prognosis and is fatal without early identification and intervention. Few descriptions are in the US literature, and we found no articles comprehensively describing the array of diagnostic tests that may help identify the disease.

We report an 11 month old female admitted for intermittent fever, pallor, pancytopenia and massive hepatosplenomegaly. She was noted to have a distinctive silvery-gray hair and eye brows in contrast to the parents’ dark colored hair. Her history was significant for nystagmus, ataxia and worsening dysarthria. MRI showed prominent pigment clumping in the basal ganglia and bilateral thalami.

Evaluation included hair microscopy, skin and liver biopsy, bone marrow aspiration and biopsy, brain imaging and genetic testing, in addition, laboratory studies for infectious etiologies.

MRI showed patchy multi-focal active plaque like lesions.

Microscopic hair examination showed prominent pigment clumping along shaft.

Skin biopsy demonstrated scattered basally oriented melanocyte in epidermis and hyperpigmented adjacent keratinocytes.

Liver biopsy confirmed hemophagocytosis with microvesicular fatty metamorphosis and stage I portal fibrosis.

Genetic testing of RAB27A identified a novel missense mutation, p.Asp74His, in a completely conserved amino acid and a novel frameshift mutation, p.Asn112ThrStop5, predicted to prematurely stop the protein.

HEPARIN INDUCED THROMBOCYTOPENIA IN PATIENT REQUIRING HEART TRANSPLANTATION: A CASE REPORT

Allee L, Buck T UMC, Jackson, MS.

Case Report: Heparin-induced thrombocytopenia (HIT) is a well-recognized complication of heparin therapy. As patients are at a paradoxically high risk for thrombosis, anticoagulation with non-heparin alternatives is indicated. Management of HIT in patients requiring cardiopulmonary bypass (CPB), as required in heart transplantation, is particularly difficult. The safety of re-exposure to heparin during CPB in HIT positive patients has not been well studied in the transplant population.

Three case reports have shown success with re-exposing patients to heparin during procedure then returning to non-heparin anticoagulation, using heparin anticoagulation plus a protaclycin analog during procedure, using non-heparin anticoagulation during procedure, and even using plasma exchange with re-exposure to heparin during procedure.

American College of Chest Physicians Guidelines published in 2008 make recommendations for anticoagulant approaches for patients requiring cardiac surgery to be based on patient and center-specific considerations. We describe a 20-year-old man with severe heart failure secondary to viral myocarditis requiring left ventricular assist device (LVAD) bridge to heart transplant. He was transferred to our institution with hepatic and renal failure secondary to myocarditis with left ventricular ejection fraction 10-20%. He was initially placed on balloon pump cardiac assist and continuous veno-venous hemodialysis (CVVH) renal replacement. Three days after admission, platelets dropped from 130,000 to 80,000th/cmm, hitting low of 32,000th/cmm by day 7. Argatroban was started for anticoagulation. HIT antibody test by ELISA method returned positive. With
discontinuance of heparin, thrombocytopenia resolved. Our patient underwent evaluation for heart transplant. Prior to transplantation, serotonin release assay was ordered and was negative. In this case, our patient underwent transplantation with reintroduction of heparin without complications.

359 HIT BY HITT (HEPARIN INDUCED THROMBOCYTOPENIA AND THROMBOSIS)

Panchal G, Amin P, Guha B James H Quillen College of Medicine, East Tennessee State University, Johnson City, TN.

Case Report: A 57 year old male admitted in the hospital for metabolic encephalopathy, developed severe thrombocytopenia (nadir of 69000/μL) over 4 days. Patient was also diagnosed with new left posterior tibial and peroneal vein thrombosis despite being on Enoxaparin. Patient was treated with unfractionated heparin 2 weeks back for acute left lower extremity DVT complicated by pulmonary embolism. Thrombocytopenia was confirmed by peripheral smear. All heparin products were stopped and appropriate labs were drawn. DIC panel was negative and other etiologies were excluded. Platelet factor 4 antibodies were present. Diagnosis of HIT was made and he was started on Lepirudin. His platelet count improved over time. As he developed hematuria on Lepirudin, IVC filter was placed and was started on warfarin later.

DISCUSSION: Heparin induced thrombocytopenia (HIT) is one of the most important encountered adverse drug event. There are two types of HIT reaction (Type I and II) of which HIT 2 or HITT (Heparin induced thrombocytopenia thrombosis) is clinically more important. HIT is a clinicopathologic syndrome diagnosed with HIT antibody and presence of either of: Unexplained drop in platelet count- reduction of platelets by 50% from baseline, Venous or arterial thrombosis, Skin lesions at heparin injection sites, Acute systemic anaphylactic reaction with heparin. Incidence of HIT varies from 0.2 to 0.5 percent of patients administered heparin. HITT is caused by antibodies to a complex of heparin and platelet factor 4(PF4) that activate platelets, resulting in release of procoagulant microparticles, thrombocytopenia, excessive thrombin generation, and frequently thrombosis. Typical presentation of HIT is fall in platelet count by 5 to 10 days of starting heparin, with the nadir of >50% reaching in 7 to 14 days. However in 25-30% of patients late presentation may possible. Laboratory diagnosis of HIT can be done by either functional platelet assay or by detection of antibody by ELISA. Drugs approved for treatment of HIT are direct thrombin inhibitors i.e. argatroban, lepirudin and bivalirudin. Use of warfarin is not recommended until platelet count reaches at least 150000/μL. Without prompt diagnosis and treatment, HIT has a mortality rate of 20-30% and risk of limb amputation 10%.

360 EXPECTING THE UNEXPECTED: A CASE OF SORAFENIB CAUSING IMMUNE THROMBOCYTOPENIA PURPURA

Milner C1, Elkins S1, Frost J2 University of Mississippi Medical Center, Jackson, MS and G.K. Sonny Montgomery VA Medical Center, Jackson, MS.

Case Report: Hepatocellular carcinoma (HCC) is the fifth most common malignancy and third most common cause of cancer mortality worldwide. In early stage disease, surgical resection, liver transplantation, and radiofrequency ablation are utilized as potential curative treatments. Sorafenib is the standard of care for HCC not amenable to locoregional therapy. Common side effects of sorafenib are diarrhea, nausea, anorexia, and hand-foot skin reaction.

A 61 year-old white man presented with increasing abdominal girth and weight loss. By imaging, he was found to have a liver mass, measuring 18 x 16.5 centimeters in his left hepatic lobe. Although the alpha-fetoprotein level was not elevated, liver biopsy revealed a diagnosis of HCC. He was deemed not to be a surgical candidate due to the size of the mass, surrounding mesenteric edema, and a possible right lung metastasis. After diagnosis, abdominal paracentesis was performed secondary to rapid re-accumulation of peritoneal fluid. Within a month of diagnosis, he was started on sorafenib for Stage IV HCC. Approximately ten days after initiation, he was found to have platelet count of 7,000, with a previous platelet count approximately twelve days prior of 465,000. At time of admission, he denied recent infection, fevers, bleeding, bruising, or neurologic changes. On day one of his hospitalization, sorafenib was discontinued. He received two units of single donor platelets without rise in platelet count, remaining 2,000 and 8,000 post transfusion. His white blood count and hematocrit were at baseline indicating no other evidence of myelosuppression or active bleeding. After failure to respond to platelet transfusions, treatment was initiated with high dose corticosteroids. Within 24 hours, platelets had improved to 43,000 and within thirteen days returned to 173,000.

This case illustrates the potential adverse side effect of for sorafenib to cause immune thrombocytopenia purpura. Although this is a rare side effect of sorafenib, recognition of this adverse side effect could be potentially life saving.

361 TWO ENDS OF THE SPECTRUM

Saad K, Jahangir SZ. LSU/Health Sciences Center, New Orleans, LA.

Case Report: A 67 year old woman presented our Emergency Department with increasing frequency of painless rectal bleeding for 6 months. She had associated shortness of breath and weakness. On physical examination the patient was hemodynamically stable but rectal examination revealed a palpable bleeding painless mass at the anal verge. She had a hemoglobin of 8.2 gm/dl and was transfused with 2 units packed red blood cells. Endoscopy revealed a 2.5cm x 5cm fungating anal mass involving the internal sphincter. Biopsy of the mass was taken and hemostasis achieved. Contrast computed tomography (CT) of thorax, abdomen and pelvis revealed multiple lesions in lungs suspicious for metastasis. CT of her head was normal. Pathology of the anal mass revealed an invasive poorly differentiated squamous cell carcinoma, positive for vimentin, CD99 and fluorescence in situ hybridization analysis revealed SYT gene rearrangement.

Discussion: The case represents a rare high grade malignancies most common in the first 3 decades of life. Ovid search did not generate cases of PBCSS in a G population. Additionally, our case is unique as the presentation was with concurrent anal SCC; initially, the neck lesion was presumed to be a metastatic possibility. The possibility of a second malignancy should always be considered, especially in cases of a single metastasis in areas without frequent tropism for previously biopsy proven primary tumors.

362 HEMATOLOGY/ONCOLOGY: SUFFICIENT, SURPLUS, OR SHORTAGE OF SPECIALISTS

Maronge GF, Narmala SK, Ramnayan PG, Jahangir KS, Varughese S, Boulmey BC, Rigby PG LSU/Health Sciences Center, New Orleans, LA.

Case Report: Each specialist area of medicine has a supply line of physicians who renew the provision of health care delivery quantitatively and qualitatively. The GME programs in the U.S. vary in size, type and location; generally they are not increasing the production of specialists fast enough, even though demand is increasing due to population increases, aging, technology, and health care reform. Oncology and Hematology have been recognized as specialist shortage areas by national medicine specialty organizations i.e., AAMC, ASCO and ASH.

The trend of senior medical student graduate increase sparked by the AAMC planned 30% expansion has also been accompanied by some GME expansion. Four specialty programs were evaluated to produce results from the AMA Data Bank: Hematology/Oncology, Oncology, Hematology and Pediatric Hematology/Oncology. The sum of the 4 is trending upward, but at a slow pace. The U.S. will be several thousand cancer and blood specialists down by 2020, according to the AAMC, within the prediction of 90,000 short overall. The GME programs take 5 to 6 years after medical school. A plan to add GME slots is therefore needed soon.

The limitations on GME growth in the U.S. are several, not the least of which are Federal Regulations regarding the Medicare program and reduced funds available.

The production of Hematology/Oncology specialists combined 4 program data for the U.S. Fellowship programs are 637 per year, for Louisiana 12 per year in the last match. The U.S. number in 2009 of the same program...
ASSOCIATION BETWEEN METHICILLIN-RESISTANT STAPHYLOCCUS AUREUS INFECTION AND VITAMIN D INSUFFICIENCY

Thomason JL 1,2, Hidron AI 1,3, Stonehjem EA 1,3, Rimland D 2,3 1 Emory University School of Medicine, Atlanta, GA; 2Rollins School of Public Health, Emory University, Atlanta, GA; and 3Atlanta Veterans Affairs Medical Center, Decatur, GA.

Purpose of Study: Given that vitamin D plays a role in innate immunity, we sought to determine if vitamin D insufficiency was significantly associated with Methicillin-resistant Staphylococcus aureus (MRSA) infection.

Methods Used: All patients with vitamin D determinations at the Atlanta Veterans Affairs Medical Center from 2006 to 2011 were included in the analysis. The first recorded vitamin D level was considered the exposure. These patients were matched with an ongoing study of patients with well-characterized MRSA infection and were considered cases; patients with vitamin D determinations without an MRSA infection served as controls. Multivariable logistic regression was used to determine the independent association between vitamin D level, dichotomized into insufficient (<20 ng/mL) vs. sufficient (≥20 ng/mL), and case/control status.

Summary of Results: A total of 6405 patients with vitamin D determinations were included in the analyses, of which 401 (6.3%) experienced an MRSA infection during the study period. The majority of the MRSA infections were skin and soft tissue infections (n=232; 57.9%) and almost all were diagnosed in the outpatient setting (n=366; 91.3%). Mean (SD) vitamin D levels were 21.1 (12.4) and 24.0 (12.6) for cases and controls, respectively (p=0.0001). MRSA infection status was also significantly associated with younger age (p=0.0001), male gender (p=0.0023), lower BMI (p=0.0001), and HIV positive status (p=0.0001) in the univariate analyses. The multivariable logistic regression model confirmed an independent association for gender, BMI, HIV status, race, and vitamin D (OR: 2.039; 95% CI: 1.589, 2.617). Sensitivity analyses using only community-acquired cases or those causing only skin and soft tissue infections still revealed vitamin D as an independent risk factor.

Conclusions: MRSA cases had significantly lower serum vitamin D levels than controls, even when controlling for age, gender, BMI, HIV status, and race. Further study is necessary to investigate this association in other populations and to determine if optimization of vitamin D levels could potentially be useful for prevention or treatment of MRSA infection.

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Conclusions: MRSA cases had significantly lower serum vitamin D levels than controls, even when controlling for age, gender, BMI, HIV status, and race. Further study is necessary to investigate this association in other populations and to determine if optimization of vitamin D levels could potentially be useful for prevention or treatment of MRSA infection.
Methods Used: Patients admitted to the neurosurgical intensive care unit were characterized as "central fever.

Summary of Results: We examined the medical records of 39 patients with a diagnosis of acute CNS injury with fever in whom serum PCT level were measured. We assumed normal PCT to be below 0.5 ng/mL.

Methods Used: Residual Pap smear fluid from HIV+ women were processed for DNA extraction using a Qiagen kit. HPV was detected and genotyped using the reverse line blot assay while EBV was detected by BanHi targeted PCR. The presence of EBV was correlated with HPV results and concurrent Pap smear findings.

Summary of Results: A cross-sectional study of discarded residual Pap smear fluids (n=154) detected EBV in 48% of the samples, HPV in 12%, and co-shedding in 6%. Dysplasia was found in 75% of both co- and HPV-only shedding women. A follow-up comparative study (n=56) showed an increase in dysplasia for co-shedders (57% vs. 54%) utilizing cervical swab specimens, but the residual fluid did not demonstrate this. In both studies, the rates of HPV DNA detection were markedly lower in the Pap smear fluid (12%) versus the cervical swab (40%) raising a concern for inadequate cells remaining in the residual fluid.

Conclusions: EBV can be readily detected in residual Pap smear fluid from HPV+ individuals. Women with an abnormal Pap smear have high rates of detectable EBV in residual fluid. Additional studies are ongoing to improve detection of HPV and EBV co-shedding, which may lead to an improved biomarker for abnormal Pap smears.

Purpose of Study: To determine the prevalence and severity of frailty and its associated factors in patients ≥60 infected with HIV in an urban academic center.

Methods Used: A total of 80 patients ≥60 years infected with HIV were screened and 26 patients were transferred to our newly created Geriatrics-HIV Frailty program. We divided this group of already frail patients in three different subgroups; the mildly, moderately and the very frail groups based on the number of domains failed during the initial geriatrics screening.

Summary of Results: The percentages of mildly, moderately, and severely frail elderly patients in our cohort were 20% 50% and 30% respectively. Cognitive impairment (30%), multiple co-morbidities (60%), and history of AIDS-related opportunistic infections (40%) were correlated with frailty status. Smoking was highly prevalent in all groups. The average number of medications used per patient was 8.1 with 65% of patients being compliant with their regimens.

Conclusions: We found that cognitive impairment, presence of co-morbidities, high number of medications used, and past history of any opportunistic infection are factors prevalent in severely frail patients infected with HIV in our cohort. The significance of these factors in development and progression of frailty syndrome in HIV-positive patients needs to be elucidated.

Purpose of Study: Chronic HIV infection may confer increased cardiovascular (CV) risk; yet HIV patients are often managed in clinics focused on treating HIV viral load. We aim to assess if there is a difference in cardiovascular outcomes between patients with normal CD4+ T cell count and those with abnormal CD4+ T cell count.

Methods Used: We used clinical data from physicians' notes, as well as laboratory and radiographic data derived from the patients' medical records, to determine the cause of fever.

Summary of Results: We examined the medical records of 39 patients with a diagnosis of acute CNS injury with fever in whom serum PCT level were measured. We assumed normal PCT to be below 0.5 ng/mL.

Methods Used: Residual Pap smear fluid from HIV+ women were processed for DNA extraction using a Qiagen kit. HPV was detected and genotyped using the reverse line blot assay while EBV was detected by BanHi targeted PCR. The presence of EBV was correlated with HPV results and concurrent Pap smear findings.

Summary of Results: A cross-sectional study of discarded residual Pap smear fluids (n=154) detected EBV in 48% of the samples, HPV in 12%, and co-shedding in 6%. Dysplasia was found in 75% of both co- and HPV-only shedding women. A follow-up comparative study (n=56) showed an increase in dysplasia for co-shedders (57% vs. 54%) utilizing cervical swab specimens, but the residual fluid did not demonstrate this. In both studies, the rates of HPV DNA detection were markedly lower in the Pap smear fluid (12%) versus the cervical swab (40%) raising a concern for inadequate cells remaining in the residual fluid.

Conclusions: EBV can be readily detected in residual Pap smear fluid from HPV+ individuals. Women with an abnormal Pap smear have high rates of detectable EBV in residual fluid. Additional studies are ongoing to improve detection of HPV and EBV co-shedding, which may lead to an improved biomarker for abnormal Pap smears.

Purpose of Study: Monitoring of patients on antiretroviral therapy (ARTs) is important to assess medication tolerance, toxicity, and efficacy. Improved ARTs has resulted in patient’s attaining a better health status. For this reason and the focus on healthcare costs, health guidelines have prolonged interval monitoring to every 6 months in highly stable patients.

To assess the safety of decreasing the frequency of routine monitoring we reviewed charts of selected stable patients to determine the cumulative risk for an asymptomatic abnormal laboratory or blood pressure (BP) outcome at 3 and 6 months.

Methods Used: A line listing of patients age 25-50 years of age on a stable ART regimen meeting the following criteria was generated: having near normal routine laboratories x 4 months (serum Cr normal, glucose <120, AST normal, hemoglobin >11), HIV RNA levels consistently <400 and CD4 cell counts >350 x 8 months, diastolic BP <90, no active substance use x 4 months, and no incident opportunistic process x 8 months.

Summary of Results: A total of 76 patients met the screening criteria for highly stable health status (32 women and 44 men). At baseline 31 patients had an abnormal parameter. Of the 45 patients (2 were lost to follow-up at 3 months) with normal parameters at baseline, 7 (15%) had an abnormal parameter at 3 months. Of the 36 patients (4 were lost to follow-up at 6 months) with normal parameters at baseline and 3 months, 12 (33%) had an abnormal value at 6 months. The most common abnormal parameters between baseline and 6 months were a hemoglobin <10 (n=8), a CD4 <350 (n=9), and a rise in diastolic BP >90 (n=6). Only 2 patients had a HIV RNA level >400 during this time period.

Conclusions: Although virologic failure was uncommon in this cohort of patients, a high proportion had either a fall in their CD4 cell count or hemoglobin, or a rise in their BP that may have required medical attention at 3 and 6 months. The time period of 4 to 8 months of stability prior to prolonging laboratory monitoring may need to be lengthened to have an even more highly selected group of patients. Additional studies are warranted using a stability period of 1 to 2 years.

Purpose of Study: To assess if EBV can be detected in Pap smear fluid and if its detection could improve the current cervical cancer screening process.

Methods Used: Residual Pap smear fluid from HIV+ women were processed for DNA extraction using a Qiagen kit. HPV was detected and genotyped using the reverse line blot assay while EBV was detected by BanHi targeted PCR. The presence of EBV was correlated with HPV results and concurrent Pap smear findings.

Summary of Results: A cross-sectional study of discarded residual Pap smear fluids (n=154) detected EBV in 48% of the samples, HPV in 12%, and co-shedding in 6%. Dysplasia was found in 75% of both co- and HPV-only shedding women. A follow-up comparative study (n=56) showed an increase in dysplasia for co-shedders (57% vs. 54%) utilizing cervical swab specimens, but the residual fluid did not demonstrate this. In both studies, the rates of HPV DNA detection were markedly lower in the Pap smear fluid (12%) versus the cervical swab (40%) raising a concern for inadequate cells remaining in the residual fluid.

Conclusions: EBV can be readily detected in residual Pap smear fluid from HPV+ individuals. Women with an abnormal Pap smear have high rates of detectable EBV in residual fluid. Additional studies are ongoing to improve detection of HPV and EBV co-shedding, which may lead to an improved biomarker for abnormal Pap smears.
primarily on HIV treatment. Evaluation of CV quality of care measures is critical in these settings.

Methods Used: SAHIV is a cohort of HIV+ individuals receiving care in a hospital-based HIV clinic. Of 2392 HIV+ patients, 1241 had ≥3 clinic visits and ≥3 recorded blood pressures (BP) over ≥3 mos between 2007-2010. Of these, we selected 1076 with ≥1 LDL cholesterol measurement. Patients with ICD9 codes for hypertension (HTN) at ≥2 visits or a mean BP from 3 visits >140/90 were considered to have HTN. Patients with diabetes ICD9 codes at ≥2 visits were considered diabetic (DM). Quality metrics for HTN (BP mean of last 3 outpatient visits) and LDL (value at last check) were based on JNC 7 and ATPIII guidelines for DM (<130/80; LDL <100) and non-DM (<140/90; LDL <130). We examined bivariate and multivariate associations of demographic and clinical variables with BP control and lipid control.

Summary of Results: Cohort characteristics: 78% men, 45% MSM, 61% Hispanic, median age 42y (IQR:34,49), and median BMI 27kg/m2 (IQR:24,30). Median follow-up time was 44 mos (IQR:31,46), and 98% were on anti-retrovirals at some point during the observation period. Of 1511 (14%) with DM, quality of care metrics were: 85% LDL at goal and 71% BP at goal. Among all non-DM patients, the LDL was at goal for 84%. Of the 373 non-DM with HTN, 57% were controlled. Lack of BP goal achievement in non-DM with HTN was associated with age <40 (OR 1.73;95%CI:1.09,2.74) and Hispanic ethnicity (OR 1.71;95%CI:1.04,2.80) compared with non-Hispanic whites.

No other demographic or clinical characteristics were significantly associated with quality of care metrics.

Conclusions: In a majority Hispanic HIV cohort, achievement of quality of care metrics for BP and lipid control was good, with the exception of BP control in non-DM with HTN.

371 SHOULD ALL PERSONS WITH HIV UNDERGO ANNUAL SCREENING FOR GONORRHEA AND CHLAMYDIA?

Shambharkar S, Haman T, Chotiala J, Frontini M, Clark RA. LSU-Health Sciences Center; New Orleans, LA.

Purpose of Study: Health Resources and Services Administration (HRSA) currently includes both gonorrhea (GC) and Chlamydia (CT) annual testing as a clinical performance measure. Although this is standard practice in the HIV Outpatient Program (HOP), the low frequency of GC and CT infections in relatively low risk individuals prompted a review of the cost/benefit of universal screening of all patients enrolled in the HOP clinic.

Methods Used: A retrospective review was performed on all HOP patients diagnosed with GC and CT infections in 2010 to better define the population with these infections and to determine if symptomatology would have prompted targeted screening. Simple frequency distributions were conducted in SAS 9.2.

Summary of Results: A total of 67 patients (36 Males, 31 Females) were identified (31 GC, 45 CT). Median ages were 34 and 27 years for men and women, respectively. Only 12 patients (18%) (9 males, 3 females) were over the age of 45 years. 21% of the patients were known active substance users with marijuana being the most frequently used substance (n = 7) and 21% (31%) admitted to practicing unprotected sex. Among females, 29% had at least one vaginal symptom; 9 (29%) had a vaginal discharge, 4 (13%) had a vaginal odor, and 1 (3%) had vaginal itching. Among men, 33% of the men had at least one urethritis symptom; 9 (25%) had a urethral discharge and 9 (25%) had dysuria. Of the 12 patients over 44 years, 4 (25%) had at least one risk factor (active substance use, practicing unprotected sex) or were symptomatic.

Conclusions: The majority of STIs are diagnosed in younger individuals and many patients have risk factors or are symptomatic. If only targeted screening (i.e. screen patients with risk factors or symptoms) was performed on persons over the age of 44 then 8 STIs would have missed in 2010 in a clinic serving approximately 2000 patients. Additional analyses to review the cost benefit ratio on selected groups of patients currently undergoing widespread universal STI screening are warranted.

Medical Education and Ethics
2:00 PM
Friday, February 10, 2012

372 EDUCATIONAL IMPACTS OF CHANGING RESIDENT WORK HOURS

Rochelle KA, Hough-Telford C, Hartig J, Nassetta L, Wall T. UAB, Birmingham, AL.

Purpose of Study: In July 2011, the Accreditation Council of Graduate Medical Education implemented resident work hour changes prompting residency programs to adjust schedules. We sought to prospectively study the impact of our program’s changes on 1) daily team census, 2) the proportion of admissions performed by the primary team, and 3) estimated time spent reading.

Methods Used: Three months prior to and two months after the work hour changes, residents completed paper and electronic surveys during their general inpatient pediatrics rotations. Surveys were distributed twice during an admission cycle: the post-admit day, and the day teams received patients that were admitted overnight. Surveys identified residents’ level of training, shift worked, daily team census, number of admissions, proportion of patients admitted by the primary team, and estimated time spent reading during the previous 24 hours. Existing data regarding average team census was used for comparison.

Summary of Results: Fifty residents completed 236 surveys between April and August 2011. Team census for all days in the admission cycle averaged 8.5 patients for April-June, and 7.7 patients for July-August. Residents were surveyed on post-admit days and reported an average census of 12.1 and 8.0, respectively. PGY1s participated in the initial evaluation of an average of 9.1 patients per admission day (70% of team census) prior to July 1, and 2.6 patients after (34%) prior to July 1. PGY2s-4 reported initial involvement in an average of 5.2 patients (44%) prior to July 1, and an average of 3.9 patients (47%) after July 1. Regarding time spent reading, 28% of PGY1 residents read at least 15 minutes per day after July 1, as opposed to 47% prior to July 1. Prior to July 1, 53% of PGY2-4 residents read for at least 15 minutes per day; after July 1, 48% reported reading for this amount of time.

Conclusions: Following work hour changes, PGY1s are involved in a lower proportion of initial patient evaluations on their primary clinical teams, therefore limiting opportunities for continuity of care. Additionally, residents of all levels of training report doing less reading than their pre-July counterparts. While our study has limitations, it highlights the need for the leaders in medical education to continue evaluating this impact on the educational experience of trainees.

373 RESIDENT PERCEIVED STRESS: IMPACT OF NEW WORK HOURS?

Patil R, Belt T, Golwala H, Rashid S, Anderson M, Gillaspy SR, Naifeh M. University of Oklahoma Health Sciences Center, Oklahoma City, OK.

Purpose of Study: In July 2011, ACGME enforced new work hours for residency training programs across the United States. The objective of this study was to measure residents’ perceived stress with the new work hours.

Methods Used: Perceived stress in residents from the Departments of Pediatrics, Internal medicine, Medicine-Pediatrics and Family medicine was measured using Cohen’s Perceived Stress Scale (PSS), which is a well-validated and widely accepted scale which provides a global stress score. Respondents also completed a brief demographic questionnaire. Data was collected anonymously with careful administration to prevent duplication. Data collection occurred during the first month of the resident year. Analyses consisted of independent t-tests and one-way ANOVA to compare the mean global perceived stress scores.

Summary of Results: A total of 91 residents in the four programs participated in the study, resulting in a 63% participation rate. The internal reliability of PSS was excellent, Cronbach’s alpha = .89. Three variables were found to have a significant impact on resident perceived stress: level of training, gender, and program type. Second year residents were found to have higher levels of perceived stress (CI 24.59-30.97) as compared to interns (CI 18.35-24.54; p-value < .05). There was no statistical difference between second and third year residents or third year residents and interns. Female residents were found to have higher levels of perceived stress (CI 24.00-29.29) as compared to their male colleagues (CI 19.61-25.32; p-value < .05). There was no statistically significant difference in perceived stress levels based on marital status, number of people living in home or the type of rotation worked during the survey period.

Conclusions: This single center cross-sectional prospective study examining perceived stress levels in medical residents found level of training, gender and program type associated with resident perceived stress. We plan to examine perceived stress in 6 months and again in 12 months to evaluate the changes over the course of the year with the new work hour regulations.
IMPACT OF OBESITY TRAINING ON RESIDENT KNOWLEDGE AND PERCEPTIONS


Purpose of Study: WHO has declared obesity a 21st century pandemic. Yet survey studies reveal physicians are uncomfortable managing obesity. A major barrier is poor education in residency with a paucity of residency obesity curricula and ACGME guidelines. Overcoming this atmosphere was our impetus to develop a formal obesity didactic curriculum in our Internal Medicine (IM) Residency program and assess its impact on the clinical knowledge and perception of residents in obesity medicine.

Methods Used: Five one-hour lectures on specific obesity topics (basic science/diagnosis, food addiction, treatment, bariatric surgery, and community resources) were incorporated every 2 weeks into the IM Residency Noon Conference within a 10 week period. Each session was taught by academic obesity experts in align with the validated curriculum from American Board Bariatric Medicine program and Obesity Society's Certified Obesity Medical Physician Program. A voluntary, anonymous obesity survey was given to 75 IM residents 2 weeks before and after intervention.

Summary of Results: Survey response rates were 89% pre-survey and 84% post-survey. Lecture attendance rate was 45%. A 21% increase was seen in residents' empathy towards obese patients on ability to lose weight and awareness of health risks. Over 20% of residents were more comfortable coaching obese patients about weight loss and prescribing detailed exercise or dietary programs. Residents' knowledge of obesity risks, treatment modalities and weight loss benefits did not change significantly post-intervention. Over 85% of residents still felt physicians get inadequate obesity education.

Conclusions: There is a clear need to establish a formal obesity education in residency training. Our obesity curriculum is a viable intervention to enhance residents’ perceptions of obesity management. We acknowledge the higher impact on residents’ attitudes than knowledge, likely due to low lecture attendance rate. This suggests didactic sessions are insufficient to train IM resident in obesity medicine. We propose development of an individualized multidisciplinary resident-led obesity clinic to foster knowledge and practice behaviors. We call for an ACGME mandate of a longitudinal residency obesity curriculum.

AN OUTCOMES STUDY ON THE IMPACT OF SERVICE LEARNING ON MEDICINE CLERKSHIP PERFORMANCE

Leeper C, McCluskey S, Snyder E, Jackson J University of Alabama at Birmingham, Birmingham, AL.

Purpose of Study: The role of service learning within education is an area of intense interest and discussion. Medical schools are no exception to the trend: currently service learning is an LCME requirement, and medical students nationally are pursuing ways to expand service opportunities. As participation in service learning has increased, researchers have begun to assess the impact of volunteering on student education and career choice. In this study, we assessed whether medical student volunteerism at a free clinic during first or second year of medical school has an impact on performance during third year Internal Medicine clerkships.

Methods Used: We gathered the volunteer records of medical students at a local free clinic. Using these records, each student was matched with his or her Medicine clerkship preceptor evaluations, clerkship shelf exam score, and residency choice. The scores of students who volunteered were compared to those of peers who did not volunteer using descriptive statistics.

Summary of Results: We reviewed volunteer records and clerkship scores for 316 students in the classes of 2010 and 2011 at University of Alabama at Birmingham. 107 students (34%) volunteered in the free clinic at least once. There was a statistically significant improvement in the evaluation score for history-taking and physical exam skills for those who volunteered compared to those who did not (score 7.64 vs. 7.48 on a 1-9 scale, p value =0.04). There was no significant difference in case presentation scores, shelf exam scores, or matching into a primary care residency.

Conclusions: Our study adds a unique perspective to the current knowledge on the subject of service learning in the medical curriculum by taking a quantitative approach. We found that volunteerism is correlated with improved medical student history and physical taking skills in the Medicine clerkship. Service learning in early medical education may improve clinical skills.

ORGANIZATIONAL COMMUNICATION EFFORTS FOR THE PREVENTION OF CATHETER RELATED BLOOD STREAM INFECTION FROM HEMODIALYSIS

Rattan JS, Rangachari P, Nahman NS Georgia Health Sciences University, Augusta, GA.

Purpose of Study: Catheter related blood stream infection (CRBSI) is a significant cause of morbidity and mortality (Pronovost, NEJM 355:2725, 2006). Application of CRBSI prevention practices (i.e., the “central line bundle”) has been shown to significantly reduce the incidence of CRBSI. We previously showed that a lack of an organizational communication network for educating providers about CRBSI was associated with poor compliance with CRBSI prevention practices (CRBSI-PP) in the medical care intensive care unit (MICU) (Q Manage Health Care, 19:330, 2010).

Methods Used: To address these issues, a prospective study examining patterns of communication related to CRBSI-PP was initiated to measure compliance with bedside application of the CRBSI-PP. Among the groups for educational targeting were the faculty and fellows in the Section of Nephrology. The educational effort included a required one hour didactic session reviewing the CDC recommended CRBSI-PP (the central line bundle) and successful completion of a hands-on session in the simulation center demonstrating application of the bundle. The institution initiated the study in January 2011 and the present data reviewed after 26 weeks. Nephrology was educated in the CRBSI-PP in the 11th week.

Summary of Results: 100% of faculty (N=8) and fellows (N=6) completed the educational bundle. Compliance with bedside application of the bundle for the 10 weeks prior (PRE) and 16 weeks after (POST) to the educational sessions was 37.5 vs 100 % for PRE vs POST, respectively. In addition, compliance with the 5th point of the bundle (daily documentation of the indications for continued use of the device) went from 0 to 100% following the educational intervention. These data indicate that a focused educational effort at improving communication about CRBSI improves compliance with the bundle.

Conclusions: Educational communication efforts result in higher compliance with CRBSI-PP by Nephrology faculty and fellows. We anticipate that this will result in a reduction in CRBSI associated with the placement of temporary hemodialysis catheters.

DEVELOPING A PEDIATRIC ADVOCACY CURRICULUM

Lin A, Dunlap M, Gillaspie SR University of Oklahoma Health Sciences Center, Oklahoma City, OK.

Purpose of Study: All pediatric residency programs are required to provide structured educational experiences designed to prepare residents to be effective advocates for the health of children in the community. This mandate represents an opportunity to survey residents about advocacy, collaborate with community partners, and develop a resident advocacy curriculum.

Methods Used: First, pediatric and med-peds residents were surveyed to assess advocacy topics and ideas. Residents were asked to rate their ability/preparedness to advocate for their patients (X= 2.2) and find more community resources for their patients (X=1.6). With this resident feedback, a three part curriculum was developed that included activities on a 4 week block, a longitudinal advocacy project, and an advocacy presentation. During their 4 week block residents have a core set of 11 activities and then selects an additional 10 activities tailored to their own interests.

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Conclusions: Residents felt only somewhat prepared to advocate for their patients but are interested in learning more in this area. By incorporating resident feedback and convening a well-represented group of faculty, resident leaders, and community organizations we were able to develop a new pediatric advocacy curriculum. Data collection is ongoing to assess the impact the new curriculum on residents attitudes and knowledge of advocacy. New proposed curriculum on resident attitudes and knowledge of advocacy. New proposed leaders, and community organizations we were able to develop a new pediatric advocacy curriculum.

378 THE OKLAHOMA CHAPTER AAP OBESITY TOOLKIT: A PRACTICAL GUIDE TO ASSESS AND MANAGE PEDIATRIC OBESITY
Sadler JM1,2, Brown J1,2, Ponniah K1, Switzer E2, Legako E2, Gillaspy S1,2, Weedn A1,2 1University of Oklahoma Health Sciences Center, Oklahoma City, OK and 2Oklahoma Chapter AAP, Oklahoma City, OK.

Purpose of Study: Studies indicate that a significant gap exists in primary care pediatrics between pediatricians reporting an overall awareness of and concern for childhood obesity but lacking the training and resources to address it. In response, The Oklahoma Chapter (OKAAP) Obesity Committee developed a toolkit to assist pediatricians in the assessment and management of childhood obesity in primary care. The goal of this advocacy project is to report on the process of the toolkit design and implementation.

Methods Used: The OKAAP Obesity Committee reviewed several pediatric obesity toolkits and met monthly to discuss their different components. The Committee then reviewed the results of their own needs assessment survey, which was developed to determine members’ current practices, skills, and the needed resources to address pediatric obesity in their practice. Based on the survey results, the committee determined the toolkit components that would address Oklahoma pediatricians’ needs. The content was based on the AAP Expert Committee Recommendations, which consists of evidence based and expert opinion recommendations on childhood obesity management. Implementation included presenting the toolkit at the Annual Pediatrics and OKAAP meeting in August 2011 and providing the toolkit online to members through the OKAAP website.

Summary of Results: The toolkit included the following components: definitions of overweight, obesity, and severe obesity; assessment of dietary and physical activity behaviors through targeted histories; personal and family history risk factors for obesity; a motivational interviewing prompt; screening recommendations for comorbidities; an algorithm for management; weight management goals; and provider and patient resources. The provider resources included the CDC BMI growth charts, a laboratory evaluation table, blood pressure tables, and a coding reference. The patient resources included a nutrition plate and activity recommendations by age group.

Conclusions: The OKAAP Obesity Toolkit is a thorough yet efficient evidence-based resource designed to guide primary care providers in their assessment and management of childhood obesity. A follow up survey will be conducted to assess the utility of the toolkit.

379 EFFECT OF A MEDICAL SCHOOL CAPSTONE COURSE IN COMMUNICATION ON LAYPERSONS’ ASSESSMENTS OF STUDENTS
Dow A1, Anderson A2,1 Virginia Commonwealth University, Richmond, VA and 2Virginia Commonwealth University, Richmond, VA.

Purpose of Study: Communication is a core competency of medical education, yet most communication training is confined to the first two years of medical school. We implemented a capstone course in communication for 4th year medical students and measured the effect of this course using members of the community.

Methods Used: Seven 4th year students participated. During the first 2 weeks, students received a 12-hour curriculum on the structure of medical conversations, interpreting body language, and techniques for motivating behavior change. Sessions emphasized roleplay with feedback to build skills. Each student’s communication abilities were rated by three community members 1 day prior to receiving the curricular intervention, 3 days after intervention ended, and 2 weeks after the intervention ended. The community members attended a one-hour training session which covered use of the assessment form and instruction to treat each encounter as a primary care visit.

Conclusions: Residents felt only somewhat prepared to advocate for their patients but are interested in learning more in this area. By incorporating resident feedback and convening a well-represented group of faculty, resident leaders, and community organizations we were able to develop a new pediatric advocacy curriculum. Data collection is ongoing to assess the impact the new curriculum on residents attitudes and knowledge of advocacy. New proposed curriculum on resident attitudes and knowledge of advocacy. New proposed leaders, and community organizations we were able to develop a new pediatric advocacy curriculum.

380 PATIENT HAND-OFFS: RESIDENTS’ PERCEPTIONS OF INFORMATION EXCHANGED AND ITS VALUE IN PATIENT CARE
Nassetta LB, Hartig JR, Wall TC University of Alabama at Birmingham, Birmingham, AL.

Purpose of Study: As residency programs make changes in schedules to comply with duty hour restrictions set forth by the Accreditation Council for Graduate Medical Education, patient care hand-offs have become more frequent. We sought to prospectively evaluate resident perceptions of the information transferred during hand-offs and how useful they find the information for making medical decisions.

Methods Used: Residents completed paper and electronic surveys during significant Inpatient Pediatrics Rotations, April through August 2011. Residents answered two sets of three multiple-choice questions regarding information exchanged during two daily check-out times. Based on principles of Ecological Momentary Assessment (brief, minimally intrusive feedback), questions assessed residents’ perceptions of (1) the adequacy of the information given during patient hand-off, (2) the adequacy of information received during this time, and (3) residents’ recollections of the usefulness of the information they received. Answers were categorized as Positive (“Agree,” “Strongly Agree,” “0-25%,” “25-50%”) vs. Negative (“Disagree,” “Strongly Disagree,” “50-75%,” “75-100%”). Comparisons between questions were analyzed with Fisher’s test on 2 x 2 contingency tables.

Summary of Results: Fifty residents (PGY1-PGY4) completed 236 surveys. For evening checkout, both the teams delivering and receiving the information reported the exchange was adequate 94% of the time. However, the overnight (receiving) residents reported that the information was useful only 77% of the time (p<0.05). Similarly, for morning checkout, both the groups delivering (the overnight team) and receiving (the primary team) information reported the exchange was adequate 100% of the time. However, the residents on the primary team responded positively to the usefulness of the information only 77% of the time (p<0.05).

Conclusions: Residents believe they both give and receive adequate information during patient hand-offs. However, our results suggest that information exchanged in hand-offs may be felt to be incomplete at the time of application. As duty hour restrictions prompt increasing hand-offs, emphasis needs to be placed on the quality and quantity of information exchanged.

381 CRITICAL CONCEPTS: A UNIQUE APPROACH TO UNDERGRADUATE EDUCATION IN THE CARE OF THE ACUTELY ILL PATIENT
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Purpose of Study: Care of the acutely ill, undifferentiated patient is a challenge encountered by health care professionals in nearly every specialty. However, medical student exposure to such patients can vary widely, and few institutions offer a multidisciplinary educational approach to this area of medicine. We developed a senior medical student course, Critical Concepts, to provide every student with a broad foundation in the principles and skills needed to care for emergently ill patients. We sought to evaluate the effectiveness of the course with respect to knowledge acquisition and self-efficacy.

Methods Used: With the input from clerkship directors and other faculty educators, this multidisciplinary, multi-modality course was developed over 18 months. Course objectives are: 1) provide all senior students with exposure to acute and critical care concepts; 2) review and reinforce diagnostic and management skills in common and/or critical disease entities; 3) prepare senior students for their roles as physicians with direct patient care and health care team responsibilities. The course includes 1 week of practical lecture and interactive lab sessions provided by eight different specialties on the acute management of emergencies unique to their field. Students also have 2 weeks of clinical duties in the Emergency Department and 1 week of clinical duties in an intensive care unit. Students are also responsible for educational content found in social media texts, on-line modules, text chapters, and journal articles. To evaluate the effect of the course on knowledge and self-efficacy, students complete a survey before and after the course.

Summary of Results: The course began July 2011. Enthusiasm from students and faculty alike has been high, and there have been no major concerns. Evaluation and survey data is actively being collected and will be presented at this meeting.

Conclusions: Critical Concepts represents a unique approach to medical student education in emergencies and acute care. Using a great deal of specialty collaboration and a wide variety of learning methods, we believe that student engagement and knowledge retention will be strong. Further study on the lasting impact of such a course into residency is planned.

382 EFFICIENCY OF RESIDENT-DRIVEN, FACULTY-BASED AMBULATORY PRACTICES

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Purpose of Study: A common belief is that resident education in the outpatient setting decreases faculty productivity & quality of care. In our experiences with a resident-driven, faculty-based, pediatric practice, we postulate that residents enhance both the productivity of the faculty as well as the quality of care delivered. The aim of our project was to look at the efficiency of this type of practice in comparison to similar practices without a resident education component as well as faculty perceptions of the impact of residents on clinic efficiency.

Methods Used: The number of patient encounters during a three month period was collected from 6 practices. The data reflect the average patients seen per session in clinics where faculty work with residents full-time and in clinics where faculty work with residents <50%. In addition, a survey was done of the above providers as to their perceptions of the value of residents in the ambulatory setting.

Summary of Results: The data reflect that 7.2 patients per session were seen in clinics where faculty work with residents full-time vs 7.4 patients per session for physicians with residents in clinic <50% of the time. In our survey, all pediatricians disagreed or strongly disagreed with a statement about residents inhibiting their ability to see patients in an efficient manner. Only 25% of pediatricians surveyed felt that the presence of pediatric residents in their clinic slows the flow of patients through the clinic. The majority believe that residents improve the quality of care that their patients receive & that working with residents would improve their practice. All respondents felt that patients were satisfied with the care they received from resident help.

Conclusions: The results of this study indicate that resident participation in faculty-based pediatric practices does not significantly decrease faculty productivity. In fact, the data indicates that physicians working with residents full-time are as productive as physicians who do not. In addition, faculty attitudes & perceptions of resident participation in clinic is very positive. Most of the pediatricians surveyed believe that residents improve the quality of care in the clinic & enhance their own practice of medicine.

Neurology and Neurobiology
2:00 PM
Friday, February 10, 2012

383 COMPROMISE TO STRUCTURAL AND FUNCTIONAL CONNECTIVITY IN COGNITIVE AND AFFECTIVE NETWORKS AFTER TRAUMATIC BRAIN INJURY

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Purpose of Study: Traumatic Brain Injury (TBI) is a major public health issue, affecting 1.7 million people yearly in the United States. Individuals with TBI frequently report cognitive deficits and emotional disturbances. Neuroimaging has shown promise as a biomarker of injury severity and outcome after TBI. This study utilizes diffusion tensor imaging (DTI) and resting state functional magnetic resonance imaging (rsfMRI) to examine structural and functional connectivity among individuals with varying degrees of cognitive and depressive symptoms.

Methods Used: rsfMRI and DTI were obtained from 22 patients in the chronic phase following TBI (median 6 months after injury) and 17 uninjured controls. To determine functional connectivity, blood oxygen level dependent (BOLD) signal was extracted from seven bilateral regions of interest (ROIs): hippocampus, anterior cingulate (AC), rostral anterior cingulate (rAC), caudal anterior cingulate (cAC), amygdala, lateral orbitofrontal, and thalamus. While matter tracts connecting these bilateral structures were reconstructed and fractional anisotropy (FA) values were extracted. Cognitive and affective functioning was assessed using the Trail Making Test B (TMTB) and the Beck Depression Inventory (BDI-II), respectively.

Summary of Results: Decreased functional connectivity was observed among patients compared to controls for 4 ROIs: hippocampus, AC, rAC, and amygdala (p < 0.05). Decreased FA in connecting tracts was observed for 3 ROIs: hippocampus, rAC, and cAC (p < 0.05). The BDI-II was significantly (p=0.01) correlated with functional connectivity between bilateral cAC regions and the FA of reconstructed white matter between bilateral rAC regions. TMTB was significantly (p=0.05) correlated to functional connectivity between bilateral lateral orbitofrontal cortices, and FA for reconstructed tracts connecting bilateral AC and rAC.

Conclusions: Novel imaging modalities are useful in identifying compromise to structural and functional connections. The integrity of these connections appears to correlate to cognitive and affective dysfunction post-TBI. These findings may assist in identifying markers useful for future TBI clinical trials.

384 COMPLEX HEADACHE DISORDERS AFTER SPORTS-CONCUSION

Nesmith JD1, Pugh CP2, Cox BH1 University of Arkansas for Medical Sciences, Little Rock, AR and 2Harding University, Searcy, AR.

Case Report: Background: Headache is the most commonly reported symptom among athletes who sustain concussions. Many athletes with pre-injury headaches experience more frequent and more intense headaches after a concussion. We report cases of two adolescents whose post-concussion headaches differ not only in intensity, but also in character, compared to their pre-injury headaches.

Results: HH is a 16 y.o. male who was struck on the forehead with a baseball during a game in March 2011. He was initially confused, dizzy, had a headache. He has a history of five previous concussions sustained during sports and recreational activities. After a concussion in October 2010, HH had daily headaches for four days.

DCC is a 16 y.o. male who sustained a helmet-to-helmet hit in football practice in May 2011. He was initially dazed, confused, and had a headache. He has a history of five previous concussions sustained during sports and recreational activities. After a concussion in October 2010, DCC had daily headaches for four days.
month. Six months after his most recent concussion, he is an extensive headache regimen consisting of amitriptyline 75 mg daily, verapamil SP 180 mg daily, and memantin 100 mg prn. He is currently attending school and maintaining good grades, but he takes two breaks a day from class work because of headaches.

Discussion: While most athletes who sustain concussions recover spontaneously and rather quickly, some experience a more complicated recovery. Athletes with pre-injury headache disorders often exacerbations of their pre-injury symptoms. The cases we present suggest that post-concussive headaches might differ not only in intensity, but also in character, compared to the athlete’s pre-injury headaches.

Viral hepatitis was suspected based on asymptomatic serum transaminase elevation. Hepatitis virus serology was normal on admission, but polymerase chain reaction (PCR) performed three days later confirmed the presence of HCV infection. Treatment with high-dose methylprednisolone resulted in dramatic clinical improvement and, on the day of discharge, the patient only had a mild left hemiparesis.

For over a year now, the patient has had no signs of relapse and no evidence of new lesions on serial MRI. Repeat HCV testing two months after initial presentation did show evidence of seroconversion (anti-HCV antibody became positive) and a higher level of HCV-RNA on PCR. HCV genotyping revealed the presence of the 2a/2e genotype.

Conclusion: The CNS complication of HCV infection typically takes the form of a vasculitis occurring late in the course of the infection. On the contrary, our patient developed ADEM during the acute phase of HCV infection (indicated by the occurrence of seroconversion 60 days after initial presentation) analogous to the case reported by Sacconi, Salvati, and Merrelli in 2001 (Arch Neurol. 2001;58:1679-81). Their case and ours suggest that CNS myelin is a potential target of the immune response to acute HCV infection. Both cases underscore the importance of HCV testing in patients with ADEM.

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ACUTE DISSEMINATED ENCEPHALOMYELITIS IN A PATIENT WITH ACUTE HEPATITIS C VIRUS INFECTION


Case Report: Background: Acute disseminated encephalomyelitis (ADEM) is an immune-mediated inflammatory disease producing widespread demyelination in the brain and spinal cord. ADEM has been associated with vaccination and various types of viral infections. However, we are aware of only one published case report of ADEM in association with acute hepatitis C virus (HCV) infection.

Case Report: The patient is a 17-year-old female with a history of substance abuse and incarceration who tested negative for HIV and hepatitis virus in the past. She presented with a six-day history of rapidly evolving left hemiparesis and hemisensory loss. She also complained of diplopia, the cause of which was found to be a right third nerve palsy. Brain MRI revealed multiple T2-hyperintense and gadolinium-enhancing lesions predominantly involving the subcortical white matter but also extending to the cerebral cortex and the brainstem. Cervical cord MRI and CSF studies were normal.

Conclusions: These four occupational groups have substantially different sleep characteristics. Assessing and improving sleep conditions would benefit from the use of summary outcomes which include both sleep duration and quality and that are tailored to the occupation.
GUILLAIN-BARRE´ SYNDROME WITH UNSUAL CALCIUM DISSOCIATION AND ALDOSTERONISM: A CASE SERIES
Khan MU, Khalid H, Weber KTLouisiana State University Health Richeh W, Gutierrez A, Branch LA
Purpose of Study: Idiopathic intracranial hypertension (IIH), also known as pseudotumor cerebri, is a clinical syndrome whose symptoms and signs include headache, with or without visual disturbances and field defects, together with papilledema. The pathogenic origins of IIH remain uncertain. In our previous report (J Invest Med 2011;59:402), we summarized 10 patients with IIH having primary or secondary aldosteronism. Aldosteronism is a known cause of hypocalcemia which has been reported in some cases of IIH. To explore the pathomechanistic basis of this association we studied 15 reported cases with IIH and hypocalcemia of various etiologies.
Methods Used: We conducted a retrospective study to summarize 15 patients with IIH and hypocalcemia which had been reported in the literature.
Summary of Results: The female:male ratio was 9:6. Patients were 12±3 yrs old at the time when the diagnosis of hypocalcemia was made, whereas they were 16±3 yrs old when IIH was diagnosed. Hypocalcemia was related to vitamin D deficiency in 11, hypoparathyroidism in 2, pseudohypoparathyroidism in 1 and an inherited renotubular defect in 1. All patients exhibited clinical symptoms related to hypocalcemia before development of symptoms of IIH. Plasma calcium levels 1.38±0.16 mEq/L were significantly decreased (normal, 2.1-2.6 mEq/L) as were plasma magnesium levels (0.41±0.13 mM; normal, 0.6-1.1 mM). Symptoms of IIH were controlled by: polyunsaturated dietary supplementation in 10, folic acid and calcium supplementation in 4, and cessation of thiazide diuretic and replacement of magnesium and calcium in 1. Conclusions: An association between IIH with severe symptomatic hypocalcemia has been reported in young patients while an association between IIH with primary aldosteronism occurs in hypertensive middle-age women, whereas normotensive girls having an inherited renotubular defect have IIH with secondary aldosteronism. Patients with IIH therefore should be evaluated for both hypocalcemia and aldosteronism. Replacement of calcium and magnesium, together with the use of calcium and magnesium-conserving diuretics, offers effective treatment for both hypocalcemia and IIH.

IDIOPATHIC INTRACRANIAL HYPERTENSION ASSOCIATED WITH HYPOCALCEMIA AND ALDOSTERONISM: A CASE SERIES
Joshi HK, Patel M, Whaley NEast Tennessee State University, Johnson city, TN.
Shaky Heart Can Present as Shaky Limb
Case Report: Introduction Transient Ischemic Attack (TIA) and stroke not uncommonly occurs secondary to focal cerebral hypoperfusion in the context of relative hypo perfusion distal to an extra or intracranial artery stenosis. In this report, we document a case of an unusual presentation of TIA known as a shaky limb TIA in the context of carotid occlusion and decreased ejection fraction (EF) secondary to symptomatic advanced coronary artery disease (CAD).
Case: A 57 year old male presented with chest pain and recurrent left hemi-anesthesia who described 3 month history of near weekly episodes of brief transient left arm and leg involuntary jerking, shaking with retained awareness that occurred only with standing and often resulted in a fall. He had a history of recurrent right middle cerebral artery (MCA) territory ischemic stroke, total right internal artery carotid (ICA) occlusion and an extensive history of CAD status post coronary artery bypass graft (CABG) with EF of 15%. Computed tomography (CT) angiogram of the extra cranial vessels confirmed total occlusion of the right ICA and 70% stenosis of right vertebral artery. A CT head showed evidence of old right frontal and parietal lobar strokes. The individual was taken for cardiac catheterization which confirmed an occluded graft to the left anterior descending and severe native multivessel CAD. He underwent percutaneous coronary intervention (PCI) for the same. After that chest pain and shaky limb symptoms resolved.
Discussion Limb shaking TIA is rare phenomenon. It is likely under recognized by primary care physicians because of its positive symptomatology (i.e. increase in movement) whereas stroke or TIA is most commonly associated with negative symptoms (i.e. loss of function). The mechanism behind this is transient hypoperfusion of the motor areas of the cerebrum (i.e. precentral gyrus) usually in the context of relative hypotension in the setting of an ICA stenosis resulting in partial dysfunction making the limb shake. The principal of management is to avoid hypotension and increase perfusion to the ischemic area. In this case, cardiac intervention was performed in an attempt to increase the cardiac EF and to optimize the individual’s medical management in order to avoid hypotension. If these measures prove ineffective, an extra- cranial-intracranial bypass may be considered.
392 STABILITY OF LACTOFERRIN IN STORED HUMAN MILK
Rollo DE, Radmacher P, Turcu R, Adamkin D University of Louisville, Louisville, KY.

Purpose of Study: Lactoferrin, the major whey protein in human milk, is an iron-binding molecule that decreases the bioavailability of iron which can limit bacterial growth. Lactoferrin likely provides antimicrobial and anti-inflammatory action in the neonatal intestine that may decrease the occurrence of necrotizing enterocolitis and late-onset sepsis. The aim of this study was to determine if long term, low temperature storage of human milk decreases the amount of lactoferrin available to the neonate. Long term storage of human milk may alter lactoferrin stability resulting in a loss of protein function and potential benefits. The study hypothesis was that long-term freezing of human milk will result in lower concentrations of lactoferrin when compared to levels in freshly expressed milk.

Methods Used: Human milk samples were collected and stored at four different temperatures (refrigerator at 4-8°C for 5 days, frost-free refrigerator freezer at -15°C for 3 months, deep freezer at -20°C for 6 months and in a laboratory freezer at -80°C for 6 months). Using ELISA, lactoferrin concentrations in fresh expressed human milk were compared to concentrations in stored human milk under the current CDC recommendations.

Summary of Results: Human milk samples in typical storage demonstrate stability under refrigerator storage for 5 days. After storage for 3 months in an -15°C freezer the average decrease in lactoferrin was 37%. In storage at -20°C, lactoferrin levels decreased by 38.8%.

Conclusions: Refrigration of human milk under current CDC recommendations does not appreciably decrease lactoferrin levels. However, freezing human milk at -15°C and -20°C for greater than three months significantly lowers lactoferrin levels. The decrease appears to be more severe with storage at lower temperatures. The standard practice of freezing human milk for storage prior to feeding premature infants may require further consideration. The study results question whether feeding premature infants thawed stored human milk with likely lower amounts of lactoferrin offers equivalent benefits of fresh unfrozen milk.

393 VARIABILITY IN PRETERM HUMAN MILK MACRONUTRIENTS
Radmacher PG, Adamkin DH University of Louisville, Louisville, KY.

Purpose of Study: To analyze data from discrete human milk samples submitted for macronutrient analysis by mid-infrared spectrometry.

Methods Used: Human milk or donor milk samples were submitted for macronutrient analysis (Calais Human Milk Analyzer, Metron Instruments, Solon, OH). Recorded data included date/time milk was expressed which, coupled with the infant’s data of birth, allowed calculation of the day of lactation. Donor milk samples were presumed to be term. Concentrations of total protein, lactose and fat were expressed in g/dL. Energy (kcal/oz) was calculated: ([protein * 4] + [lactose * 4] + [fat * 9]) / 30.

Summary of Results: Macronutrient concentrations in fresh expressed human milk were compared to concentrations in stored human milk for preterm infants, based on “presumed” values for these macronutrients, varied widely, primarily due to variations in fat content, the major contributing nutrient. Mean protein content showed the expected decline over the first month of lactation, while mean lactose content was extremely stable. Sample results reflected term characteristics but with somewhat lower than expected fat concentrations, perhaps due to losses in processing. Fortification of human milk for preterm infants, based on “presumed” values for these macronutrients, may not produce the expected nutrient content and may impact growth.

394 EFFECT OF H2-BLOCKERS ON FECAL MICROBIOTA IN PREMATURE INFANTS
Wetzel Gupta R, Tran L, Norori J, Ferris M, Eten A, Penn D1 Louisiana State University Health Sciences Center New Orleans, New Orleans, LA; 2Research Institute for Children, New Orleans, LA and 3University of New Orleans, New Orleans, LA.

Purpose of Study: Bacterial colonization is considered a major risk factor for the development of necrotizing enterocolitis (NEC). A large retrospective analysis (Guillett, Pediatrics, 2006) reported a higher incidence of NEC with H2-blocker use. Altering pH affects bacterial colonization of the stomach, but its effect on lower intestinal colonization is unclear. The goal of this study is to analyze and compare the fecal microbiota in premature infants with and without H2-blocker therapy using sensitive molecular biological techniques.

Methods Used: After obtaining parental consent, sequential stool samples were collected from 38 premature infants ≤ 1500 grams or ≤ 34 weeks of gestation. Six had received H2-blocker therapy, thirty two were control infants. Following DNA extraction, PCR amplification of 16S rRNA genes was undertaken prior to 454 pyrosequencing to determine genetic sequences. Online bioinformatics search tools were used to identify microorganisms based on their 16S rRNA sequences. Clinical chart reviews were performed to provide clinical data for correlation with genetic parameters.

Summary of Results: The 2 groups were similar with respect to gestational age, age, birth weight, and nutritional modalities. Mean relative abundance of fecal microbiota at the phylum taxonomic level for the two groups was compared. Those receiving H2 blockers had a statistically significant higher percentage of Proteobacteria. Longitudinal studies demonstrated an increase in the relative abundance of Proteobacteria with duration of H2 blocker use and a fall in the relative abundance when H2 blockers were not in use.

Conclusions: Infants receiving H2 blockers had increased Proteobacteria compared to a similar cohort who did not receive H2 blocker therapy. Fecal colonization with Proteobacteria tended to correlate with duration of H2 blocker therapy which reverted upon cessation of therapy. These data support the hypothesis that H2 blockers affect intestinal microbiota of preterm infants possibly predisposing them to NEC.

395 CAN TRANSFUSION ASSOCIATED MESENTERIC TISSUE OXYGENATION CHANGES EXPLAIN THE INCREASED ODDS OF NECROTIZING ENTEROCOLITIS?
Marin T1, Josephson C2, Moore J3 Emory University, Atlanta, GA; 2Emory University, Atlanta, GA and 3UT Southwesten Medical Center, Dallas, TX.

Purpose of Study: To examine tissue oxygenation patterns using near-infrared spectroscopy in preterm infants receiving packed red blood cell transfusions with and without enteral feedings.

Recent studies have suggested that transfusions may be related to the development of necrotizing enterocolitis (NEC). In this study we evaluated biochemical factors related to transfusions, effects of feedings, and the age of blood transfused.

Methods Used: This was a prospective, observational study of preterm infants receiving a PRBC transfusion. Data included patient demographics, amount and type of feeding, biochemical blood constituents, physiologic data, procedures, and medications. Mesenteric tissue oxygenation was recorded before, during and 48 hours following the transfusion. Near Infrared Spectroscopy (NIRS) was used to examine tissue oxygenation in cerebral, gut and renal tissues before, during and 48 hours following PRBC transfusions. Infants were followed until transfer, discharge, or death.

Summary of Results: This study demonstrated that gut tissue oxygenation was significantly decreased by PRBC transfusions. We noted further reduction in mesenteric tissue oxygenation with the presence of feedings during the transfusion. There was no association between pre-transfusion hematocrit levels and gut tissue oxygenation rSO2 values. Four preterm infants developed NEC.

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following a transfusion, and these patients were more likely to have received feedings during transfusions, fed larger volumes, had lower beginning hematocrit values and demonstrated greater change in gut tissue oxygenation baseline values than infants that did not develop NEC. Age of blood was not associated with NEC development; however, all infants in this study received blood ≤15 days old.

Conclusions: Tissue oxygenation patterns using NIRS provides a non-invasive mechanism to evaluate differential tissue specific responses to PRBC transfusions and the effect of feedings. We found that the starting hematocrit values alone may be insufficient in determining the need for a PRBC transfusion. Further studies are warranted to examine tissue oxygenation patterns in preterm infants receiving stored blood.

396
ARYL HYDROCARBON RECEPTOR DYSFUNCTIONAL NEWBORN MICE ARE MORE SUSCEPTIBLE TO HYPEROXIA-INDUCED DELAYED ALVEOLARIZATION

Shivanna B, Zhang W, Jiang W, Moorthy B Baylor College of Medicine, Texas Children's Hospital, Houston, TX.

Purpose of Study: Hyperoxia causes bronchopulmonary dysplasia (BPD) in preterm infants. We showed that adult mice deficient in aryl hydrocarbon receptor (AhR) are more susceptible to hyperoxic lung injury than wild type controls due to marked decreases in the expression of cytochrome P450 (CYP) 1A enzymes that appear to detoxify lipid hydroperoxides generated by reactive oxygen species (ROS). Whether AhR protects newborn mice against hyperoxia-induced developmental lung injury is unknown. Therefore, we tested the hypothesis that upon exposure to hyperoxia; aryl hydrocarbon receptor dysfunctional newborn mice have increased inflammation and decreased alveolarization compared to newborn wild type mice.

Methods Used: One-day old wild type C57BL/6J (WT) and aryl hydrocarbon receptor dysfunctional (AhRd) mice were exposed to room air or hyperoxia (FiO2 > 95%) for 7 days. Following exposure to room air or hyperoxia, the lungs of the mice were harvested to determine AhR activation, inflammation, and alveolarization. Pulmonary AhR activation was assessed by analyzing the expression of pulmonary CYP 1A1 and NAD(P)H quinone oxidoreductase-1 (NQO1) enzymes. Lung inflammation and alveolarization were determined by immunohistochemistry (neutrophils and macrophages) and lung morphometry (radial alveolar counts and mean linear intercepts), respectively.

Summary of Results: In both newborn WT and AhRd mice, exposure to hyperoxia increased lung inflammation. However, hyperoxia-induced lung inflammation was significantly increased in AhRd mice compared to WT mice. Likewise, hyperoxia decreased alveolarization in both newborn WT and AhRd mice with the latter being more significantly affected than the former. Interestingly, activation of the AhR was inversely related to hyperoxia-induced lung inflammation and delayed alveolarization.

Conclusions: Upon exposure to hyperoxia, AhR dysfunctional newborn mice have increased inflammation and decreased alveolarization compared to newborn wild type mice. Our data suggest that strategies directed towards increasing the functional activation of the AhR would be effective in the prevention and treatment of BPD in preterm infants.

397
AMNIOTIC FLUID PREVENTS INDOMETHACIN & HYDROCORTISONE MEDIATED INHIBITION OF INTESTINAL EPITHELIAL CELLS

Jain S1, Pincukh I1, Reyes V1, UTMB, Galveston, TX and 2UTMB, Galveston, TX.

Purpose of Study: Indomethacin (IND) & hydrocortisone (HC) increase NEC in premature infants by disrupting epithelial cell proliferation (PROF) and migration (MIG). We hypothesized rat amniotic fluid (rAF) may improve PROF & MIG of IEC-6 cells. We studied effects of rAF increased PROF by 65% disrupted by IND & HC on IEC-6 cells.

Methods Used: PROF & MIG of IEC-6 cells was measured in vitro with/without rAF, and/or IND & HC. PROF was measured by WST-1 assay & MIG by scratch method.ANOVA used for analysis with p<.05 as significant.

Summary of Results: rAF increased PROF by 65% disrupted by IND p<.001 (Figure 1). rAF reversed disrupted MIG by IND p<.001 (Figure 2). Same effect seen with HC.

Conclusions: rAF reversed anti-proliferative and anti-migratory effect of IND & HC on IEC-6 cells.
Purpose of Study: Our preliminary findings suggest that the novel glucocorticoid selective for transactivation may avoid the down-regulation of pro-angiogenic proteins seen following prolonged treatment with Dex.

399
Dexamethasone but not hydrocortisone decreases proliferating cells in neonatal rat brains
Bhatt AJ1, Feng Y1, Rhodes PG1, Wang J2 1University of Mississippi Medical Center, Jackson, MS and 2University of Mississippi Medical Center, Jackson, MS.

Conclusions: Dexamethasone (Dex) significantly decreased the gain of body and brain weight in comparison to both doses of HC. However, the dose response was dose-dependent. Based on location, proliferating cells seem neuronal in origin but further experiments are needed to confirm neuronal phenotype of the cells. Our findings provide additional mechanism of Dex induced neurotoxicity and suggest that HC use is safer than Dex in newborns.

Methods Used: After randomization, rat pups in HC and Dex groups received tapering doses (TD) of i.p. HC or Dex, respectively, on postnatal day (PD) 3 to 6: HC: lower dose: 7.5, 3.8, 1.9 mg/kg; higher dose (almost equivalent to Dex): 15, 7.5, 3.8, 1.9 mg/kg; Dex: 0.5, 0.25, 0.125 and 0.06 mg/kg, respectively. pups in the Vehicle groups received equivalent volumes of saline. To determine the number of the proliferating cells, 100 mg/kg per day of bromodeoxyuridine (BrdU) was injected by i.p. on day 5 to day 7. Rats were killed at 16 h after the last BrdU injection. The BrdU labeled cells were measured in the cortex and the subventricular zone (SVZ) by immunofluorescence.

Summary of Results: Dex significantly decreased the gain of body and brain weight but both doses of HC did not. Compared to veh, Dex but not both the doses of HC decreased the BrdU labeled cells in SVZ (fig) and cortex.

Conclusions: Dex, but not HC decreases proliferating cells in the developing rat brain. Based upon the location, proliferating cells seem neuronal in origin but further experiments are needed to confirm neuronal phenotype of the cells. Our findings provide additional mechanism of Dex induced neurotoxicity and suggest that HC use is safer than Dex in newborns.

400
Antenatal Steroids do not prevent Patent Ductus Arteriosus in extreme prematurity
Philips JB, Collins MV University of Alabama at Birmingham, Birmingham, AL.

Purpose of Study: There exist conflicting data on whether antenatal steroids (ANS) reduce the frequency of patent ductus arteriosus (PDA) in extremely premature infants. We used a prospectively collected data base to address this issue.

Methods Used: We queried our data base for all infants 24-26 6/7 wks gestation for the calendar years 2006-10 for any ANS exposure, clinical diagnosis of PDA, and early use of indomethacin for intraventricular hemorrhage (IVH) prophylaxis. PDA was confirmed with echocardiography. Data were analyzed using the Student t-test and the Chi-square test.

Summary of Results: We identified 372 infants who had complete data, 39 of whom (10.5%) were not exposed to ANS. Infants not exposed to ANS weighed significantly more than non-exposed infants (839/154 vs 738/159 g, X2=6.0002) and were slightly older (25.3±0.8 vs 25.0±0.8, p=0.019). PDA occurred in 25.6% of non-ANS exposed infants vs 24.3% of exposed infants (p=NS). Indomethacin prophylaxis for IVH was associated with a reduction in PDA from 39% to 21% (p=0.001), however, the rate of PDA in the infants who received both ANS and indomethacin did not differ from that in those without ANS exposure but with indomethacin prophylaxis (21.5% vs 18.5%, p=NS).

Conclusions: We chose this patient group as it was at very high risk for development of a PDA and would therefore reveal an effect of ANS if one existed. Antenatal steroids did not reduce the rate of PDA diagnosis in our patient population. Indomethacin prophylaxis for IVH significantly reduced the diagnosis of PDA, but ANS had no effect on this response. Reduction in the rate of PDA does not appear to be one of the beneficial effects of ANS.
charts included infants who had BW between 500 and 1250g (LBW), received surfactant therapy, and were subsequently extubated (within 7 days), n= 417. Exclusions included presence of structural heart disease, lethal anomalies, infants in extremes (expired within 7 days of birth), infants not requiring surfactant at delivery and/or who remained intubated > 7 days. Data was collected from the database of the Neonatal Perinatal Section and hospital records. Data were analyzed using a multiple logistic regression model fitting BPD as the dependent variable and support type, gestational age, crib score, time to surfactant, time to extubation, time to failure, ROP, PDA, acquired sepsis, hypotension, and PVL as covariates.

**Summary of Results:** Variable selection procedures identified by mode of support at extubation, time to surfactant, time to extubation, acquired sepsis, and PDA as being significantly related to BPD, while controlling for gestational age. For every hour delay of initial surfactant delivery or extubation, the odds of BPD increase by 5% and 0.4% respectively. We present the resulting logistic regression model that may be used to predict the probability of BPD in an infant with specified values for the above variables using a tabular scoring system.

**Conclusions:** A similar model could be used as a tool for clinicians to guide therapies and to counsel families of infants requiring mechanical ventilation to discuss risks and outcomes.

**Pulmonary and Critical Care Medicine I**

2:00 PM
Friday, February 10, 2012

**403 ENDOTHELIAL CELL PPAR-GAMMA KNOCKOUT EXACERBATES SEPSIS-INDUCED ACUTE LUNG INJURY**

Polu SL, Reddy AT, Kleinheinz JM, Hart MC, Reddy RC Emory University and Atlanta VA Medical Center, Atlanta, GA.

**Purpose of Study:** Acute lung injury (ALI) is a common and devastating lung disease with no effective pharmacotherapy. It is characterized by expression of proinflammatory mediators and extensive cellular influx into the lung, followed by diffuse lung damage. Most ALI results from sepsis/circulating endotoxin, with the vascular endothelium being thought to initiate the local immune response. Peroxisome proliferator-activated receptor γ (PPAR-γ) is a nuclear hormone receptor with anti-inflammatory and antioxidant effects. The goal of this study was to determine whether endothelial PPAR-γ modulation the severity of systemic inflammation.

**Methods Used:** To investigate the role of endothelial PPAR-γ in sepsis-induced ALI, a transgenic mouse strain in which PPAR-γ was deleted in endothelial cells (ePPAR-γ KO) was generated. Markers of lung inflammation and damage were assessed following induction of sepsis by intraperitoneal LPS injection in KO and wild-type (WT) mice. Molecular markers of inflammation were also assessed following ex vivo LPS stimulation of vascular endothelial cells from the two strains.

**Summary of Results:** We found that lung injury and inflammation, assessed by histology, wet/dry weight ratio, inflammatory cytokines and oxidative stress, was more severe in ePPAR-γ KO mice compared to WT littermates. The KO mice also showed lower activity of the antioxidant transcription factor Nrf2 together with enhanced activity of the pro-inflammatory transcription factor NF-κB. Increased inflammation was paralleled by activation of TLR4 signaling pathways: MyD88, TRAF6, MAPK and Akt. Ex vivo LPS stimulation of ePPAR-γ KO pulmonary endothelial cells showed increases in adhesion molecules, facilitating transport of inflammatory cells across the vascular endothelium, and in intracellular reactive oxygen species compared to WT cells.

**Conclusions:** These data support a critical role for endothelial cell PPAR-γ activation in modulating the severity of ALI.

**404 TREATMENT WITH SULFORAPHANE, AN ACTIVATOR OF NRF2, PREVENTS ALCOHOL-INDUCED TRANSFORMING GROWTH FACTOR-Β1 EXPRESSION IN MOUSE FIBROBLASTS**

Saghafi R, Fan X, Mills T, Guidot D, Sueblinvong V Emory University, Atlanta, GA.

**Purpose of Study:** Alcohol is the most widely used and abused drug in the United States. Previous studies by our group have shown that alcohol promotes susceptibility to acute lung injury, in part by increasing the expression of the pro-fibrotic cytokine transforming growth factor-beta1 (TGF-β1). Sulforaphane (SFP), a naturally occurring antioxidant found in broccoli, has been shown to diminish the effects of TGF-β1 by activating Nrf2, the transcription factor that induces the anti-oxidant response element (ARE). We hypothesized that SFP would mitigate the alcohol-induced expression of TGF-β1 in lung fibroblasts.

**Methods Used:** Primary mouse lung fibroblasts from C57BL/6 mice were treated with alcohol (60 mM) and ± SFP (5 μM) and then analyzed by real-time PCR for TGFβ1 gene expression (at 6 hrs) and for Nrf2 gene expression (at 24 hrs). In parallel experiments, Brefeldin A (1 μg/ml) was added for the last 6 hrs of treatment to inhibit protein secretion and the relative intracellular expression of TGFβ1 protein was assessed in these cells by flow cytometry.

**Summary of Results:** Alcohol treatment in vitro increased TGFβ1 gene expression and decreased Nrf2 gene expression. Interestingly, although SFP did not restore Nrf2 mRNA levels at 24 hrs, it nevertheless attenuated alcohol-induced TGFβ1 gene expression and appeared to decrease intracellular TGFβ1 protein expression.

**Conclusions:** Alcohol exposure suppresses Nrf2 gene expression and induces TGFβ1 gene and protein expression in lung fibroblasts. Although treatment with SFP did not restore Nrf2 gene expression in alcohol-treated fibroblasts, it blocked alcohol-induced TGFβ1 expression. While the salutary effects of SFP can be explained by its well-known ability to activate and/or stabilize Nrf2 protein (independently of increasing gene expression), additional studies are necessary to confirm this conclusion.

**405 ARSENIC TRIOXIDE ABBROGATES TRANSFORMING GROWTH FACTOR-BETA1 INDUCED FIBROBLAST TO MYOFIBROBLAST DIFFERENTIATION**

Luo F, Lasky JA, Shan B, Sides M Tulane University, New Orleans, LA.

**Purpose of Study:** Excessive production of extracellular matrix by myofibroblasts has been shown to be an important pathogenic feature in idiopathic pulmonary fibrosis (IPF). Transforming growth factor beta-1 (TGF-β1) is expressed and activated in fibrotic lung and promotes fibroblast to myofibroblast differentiation both in vitro and in vivo. The present study illustrates the effects of low-dose arsenic trioxide (ATO) on TGF-β1-induced fibroblast to myofibroblast differentiation.

**Methods Used:** Normal human lung fibroblasts (NHLFs) were cultured, serum starved and treated with arsenic trioxide for 24 hours. Then cells were exposed to TGF-β1 (1 ng/ml) and harvested at multiple time points. Quantitative real-time PCR, western blot and immunofluorescence were used for evaluating the expressions of fibrosis markers induced by TGF-β1.

**Summary of Results:** ATO at very low concentrations (10-20μM) abrogates TGF-β1-induced α-SMA and α-1 type I collagen mRNA and protein expression. ATO also inhibits the TGF-β1-mediated contractile response in NHLFs. ATO’s down-regulation of profibrotic molecules was associated with inhibition of Akt, as well as Smad 2 and 3, phosphorylation. ATO-mediated reduction in Smad 2 and 3 phosphorylation correlated with upregulation of Smad7, which is a known TGF-β1 signaling inhibitor. Furthermore, ATO disrupted promyelocytic leukemia (PML) nuclear bodies and reduced PML protein expression in NHLFs, which helps explain the observed reduction in TGF-β1 Smad signaling.

**Conclusions:** In summary, our data indicate that ATO abrogates TGF-β1-induced fibroblast to myofibroblast differentiation via SMAD and PI3K-Akt signaling pathways.
406 RISK FACTORS OF CANDIDA COLONIZATION IN THE OROPHARYNX OF CRITICALLY ILL PATIENTS


Purpose of Study: Candida colonization at different body sites, including the respiratory tract, is an independent risk factor for candidemia and possibly a marker for increased risk of hospital morbidity and mortality. However, there is little information regarding risk factors for Candida colonization in critically ill patients available. This study aims to identify such risk factors.

Methods Used: This is a prospective observational study of patients admitted to MICU at University Medical Center. Patient demographics, clinical information, and APACHE II scores were recorded on admission. Oropharyngeal swabs were obtained on day one and day four from admission. Patients were categorized as individuals already colonized with Candida species at admission vs. patients who were not. Also, individuals becoming colonized during their ICU stay were compared to patients who did not. A logistic regression model adjusted for age, gender, BMI, presence of intubation, chronic lung disease or antibiotic treatment prior to admission was conducted to identify the risk factors.

Summary of Results: We enrolled 135 patients (44% females) with a mean age of 47 years, mean BMI of 28.3 and mean APACHE II score of 9.75. Forty-seven patients (34.8%) tested positive for Candida species on day one. Independent risk factors for positive Candida sample at the time of admission were: presence of diabetes mellitus (p=0.01), chronic liver disease (p=0.009), and history of usage of a proton pump inhibitor (PPI) before admission (p=0.04). Second specimens were available for 64 (47%) patients. Six patients (9%) who had a negative sample at admission became positive during their stay in the ICU. No independent risk factors could be identified for patients who gained Candida during their ICU hospitalization, although they were more likely to have longer duration of stay in the ICU (4 +/- 2.8 vs. 3.2 +/- 5.3 p=0.06), and history of glucocorticoid usage prior to admission (50% vs. 15% p=0.09).

Conclusions: Diabetes mellitus, chronic liver disease, and PPI use are risk factors for Candida species colonization in critically ill patients being admitted to the ICU. Better understanding of these associations could help explain changes in mucosal immunity associated with common diseases.

407 OUTCOME AFTER CARDIAC ARREST IN PEDIATRIC TRAUMA

Whittaker B,1,2 Winkler M1,2 1University of Alabama-Birmingham, Birmingham, AL and 2Children’s of Alabama, Birmingham, AL.

Purpose of Study: To examine the outcome of pediatric cardiac arrests associated with trauma.

Methods Used: Retrospective Chart Review of 10 years of all severe trauma patients seen at a Tertiary Care Childrens Hospital. All trauma patients documented with Cardiac Arrest and CPR prior to arrival, in the Emergency Room, the Operating Room or the CT scanner were analyzed.

Summary of Results: The odds of survival for pediatric trauma patients after a cardiac arrest are very poor. (4.6%)

Conclusions: In contrast to pediatric cardiac arrests reported in the hospital, arrests associated with trauma have an increased mortality rate. This is likely due to inability of CPR to address the underlying cause of the arrest in the pediatric trauma patient.

Demographics and Mortality

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<tr>
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<th>CPR Group</th>
<th>No CPR</th>
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<tr>
<td>Age (Ave)</td>
<td>7.1 yrs</td>
<td>8.7 yrs</td>
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<tr>
<td>Gender: %Male</td>
<td>36/65 (55.4%)</td>
<td>60/982 (61.2%)</td>
</tr>
<tr>
<td>Black</td>
<td>34/65 (52.3%)</td>
<td>328/982 (33.4%)</td>
</tr>
<tr>
<td>White</td>
<td>25/65 (38.5%)</td>
<td>596/982 (60.1%)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>4/65 (6.2%)</td>
<td>52/982 (5.3%)</td>
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<tr>
<td>Other</td>
<td>2/65 (3.1%)</td>
<td>6/982 (0.6%)</td>
</tr>
<tr>
<td>GCS = 10</td>
<td>1/65 (1.5%)</td>
<td>1/982 (0.1%)</td>
</tr>
<tr>
<td>GCS = 3- 8</td>
<td>58/65 (89.2%)</td>
<td>210/982 (21.4%)</td>
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<tr>
<td>Mortality</td>
<td>62/65 (95.4%)</td>
<td>85/982 (8.7%)</td>
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408 DIFFERENTIAL EFFECTS OF INTERLUKIN-13 ON TRANSFORMING GROWTH FACTOR-BETA

Montandon SV, Ramirez A University of Louisville, Louisville, KY.

Purpose of Study: Interukin-13 (IL-13) is a Th2 cytokine secreted by activated lymphocytes with potent anti-inflammatory properties and is a dominant profibrotic cytokine up-regulated in pulmonary fibrosis and other fibrotic conditions. The purpose of our study is to evaluate how IL-13 affects transforming growth factor-beta (TGF-B) expression in different cell types.

Methods Used: A rat type II alveolar epithelial cell line (RLE-6TN), a promonocyctic cell line (U937), and NIH/3T3 mouse fibroblasts (3T3) were cultured and serum starved for 24 hrs. IL-13 was added at increasing concentrations of 0, 5, 10, 25, 50, and 1000ng/ml. After 24 hours of exposure to IL-13, mRNA was extracted and analyzed by quantitative PCR for TGF-B1, alpha-smooth muscle actin (α-SMA), and procollagen I production. Data were analyzed by the delta-delta Ct method.

Summary of Results: In the RLE-6TNs, IL-13 increased the production of TGF-B1 at a peak concentration of 25ng/ml and then decreased at higher concentrations. The expression of α-SMA by the RLE-6TNs increased steadily in a dose-dependent fashion. In parallel, incubation with IL-13 resulted in the induction of the connective tissue matrix molecule, procollagen I. In the 3T3s, IL-13 downregulated TGF-B1 production with increasing concentrations of IL-13 while inducing α-SMA expression. TGF-B1 was not detectable in the undifferentiated monocyte U937s at any concentration of IL-13.

Conclusions: IL-13 has variable effects on the expression of TGF-B1 in a cell-specific context but despite different cell types increases the production of α-SMA. These findings likely have implications for organ fibrosis and may serve as a future therapeutic target.

409 VARIATION IN BLOOD GLUCOSE LEVELS WITH TEMPERATURE CHANGES IN THERAPEUTIC HYPOTHERMIA IN PEDIATRIC POPULATION ADMITTED TO PEDIATRIC INTENSIVE CARE UNIT

Loomba A, Vidal R University of South Alabama, Mobile, AL.

Purpose of Study: Therapeutic Hypothermia (TH) improves neurological outcome in cardiac arrest and traumatic brain injury (TBI) in neonates and adults. Hypothermia impairs blood glucose (BG) homeostasis. Hyperglycemia has been associated with poor clinical outcome in critically ill patients. A recent study on adult comatose cardiac arrest patients concluded increased BG levels and variability with TH. Increased BG variability was an independent predictor for in hospital mortality. A comprehensive literature review did not reveal similar studies in the pediatric population. Our objective was to analyze the mode of presentation, BG variability during and after therapeutic hypothermia and clinical outcomes in patients admitted to a regional PICU.

Methods Used: This was a retrospective chart review based study. Patients, 3 days to 18 years of age were included if they were treated with TH (min. rectal temp. of 91.4F) for longer than 24 hours. TH was induced with cooling blankets. Blood gas samples were drawn at least every 6 hours or earlier depending on the clinical condition. Baseline demographics collected included age, diagnosis, location of an event and underlying medical conditions. BG values during hypothermia and in the 24-hour period post-hypothermia were collected. BG variability (Delta BG) was defined as the difference between the maximum and minimum BG levels.

Summary of Results: From January 2009 to September 2011, 62 patient charts were reviewed and 18 met inclusion criteria. Patients ranged in age from 1 month to 13 yrs. All included patients had an out-of-hospital event. Seven (38%) suffered cardiac arrest, 6 (33%) near drowning (33%) and 5 (27%) had TBI which was further divided into accidental 3 (16%) non-accidental 2 (11%) TBI. Seven (38%) patients died. Median blood glucose during TH was 120, and was 100 in the post TH period. The Delta BG ranged from (34-316) and (3-71) for TH and post TH period respectively.

Conclusions: Patients undergoing therapeutic hypothermia had higher blood glucose values in the TH period compared to the post TH period. Similar to studies in adult patients, in our pediatric study blood glucose variability increased in the TH period.
410 BLADDER PRESSURE MEASUREMENTS IN PATIENTS ADMITTED TO A MEDICAL INTENSIVE CARE UNIT
Nourbakhsh E1, Nantsupawat N2, Gard R2, Raj R2, Nugent K2 1University of Arizona, Tucson, AZ and 2Texas Tech University Health Sciences Center, Lubbock, TX.

Purpose of Study: Intra-abdominal pressure measurements are used infrequently in medical patients. Intra-abdominal hypertension can change organ physiology by, for example, limiting diaphragmatic motion, reducing cardiac preload, and reducing renal blood flow. This study analyzed bladder pressure measurements to estimate intra-abdominal pressures in medical intensive care unit (MICU) patients.

Methods Used: Serial bladder pressure measurements were recorded in patients admitted to MICU. Medical records were reviewed to determine risk factors for intra-abdominal hypertension, blood pressures, peak airway pressures, PaO2/FIO2 ratios, renal function, and fluid balances.

Summary of Results: This study included 33 patients admitted to one MICU. The mean age was 58 +/- 17.5 years, 57.6% were female, the mean BMI was 29.0 +/- 8.5. The mean number of bladder pressure measurements was 12 with a range of 2 to 29. The patients had 0 to 7 risk factors for intra-abdominal hypertension; 60% had 4 to 7 risk factors. The median initial bladder pressure was 9 mmHg (IQR 5 to 11). The median maximum bladder pressure was 15 (IQR 11 to 19). There was a statistically significant correlation between the total number of risk factors and both the first pressure reading and the maximum pressure reading. Twenty-one percent had an initial pressure reading above normal (+/- 12). Peak airway pressures were higher, and PaO2/FIO2 ratios were lower in patients with an initial pressure > 12 (p < 0.01, p = 0.05, respectively). The mean abdominal perfusion pressure was 69 mm +/- 15 mmHg and was lower in patients with sepsis (p = 0.05). Patients in the lowest quartile on the initial bladder pressure measurement had variable pressures over time. Patients in the highest quartile on the initial reading tended to maintain high pressures throughout the recording period.

Conclusions: Bladder pressure measurements provide an easy method to estimate intra-abdominal pressures and reflect the number of risk factors for intra-abdominal hypertension. High pressures correlated with abnormal respiratory mechanics and gas exchange. Low abdominal perfusion pressures occurred in patients with sepsis. These measurements provide an additional tool for the physiologic assessment of critically ill patients.

Renal, Electrolyte and Hypertension I

2:00 PM
Friday, February 10, 2012

411 CHRONIC DIRECT RENIN INHIBITION IMPROVES RENAL HEMODYNAMICS IN CYP1A1-REN2 TRANSGENIC RATS WITH ANGIOTENSIN II-DEPENDENT MALIGNANT HYPERTENSION
Howard CG, Mitchell KD Tulane University, New Orleans, LA.

Purpose of Study: Chronic direct renin inhibition with aliskiren normalizes arterial blood pressure (BP) in Cyp1a1-Ren2 transgenic rats [TGR (Cyp1a1-Ren2)] with established ANG II-dependent malignant hypertension by decreasing plasma renin activity and lowering circulating and intrarenal ANG II levels. The present study was performed to determine the effects of chronic aliskiren on renal hemodynamics and excretory function in Cyp1a1-Ren2 rats with established malignant hypertension.

Methods Used: Male Cyp1a1-Ren2 rats (n=4) were fed a normal diet containing indole-3-carbinol (I3C; 0.3%, wt/wt) for 10 days to induce malignant hypertension. Subsequently, the rats were treated chronically for 10 days with the renin inhibitor, aliskiren (60 mg/kg/day, sc), while maintaining dietary I3C administration.

Summary of Results: Dietary I3C increased systolic BP (138±2 to 227±6 mmHg, P<0.001). Subsequent chronic aliskiren administration normalized systolic blood pressure within one day (102±4 mmHg, P<0.001 vs. day 10) and maintained normotensive pressures in animals for the duration of the study (139±3 mmHg, P<0.001 vs. day 10). The rats were anesthetized and surgically prepared for measurement of renal hemodynamics and excretory function. Compared to untreated rats with established malignant hypertension, aliskiren-treated rats showed lower MAP (142±5 vs. 187±6 mmHg, P<0.001), reduced renal vascular resistance (22.5±1.8 vs. 39.8±2.3 mmHg/mL/min/g, P<0.001), and lower urine flow (9.1±1.29 vs. 13.08±0.54 mL/min, P<0.05). Although glomerular filtration rates were not significantly different, (1.04±0.1 vs. 0.94±0.04, NS), aliskiren-treated rats showed elevated renal plasma flow (3.4±0.24 vs. 2.43±0.06 mL/min/g, P<0.002), lower filtration fraction (30.6±3.9 vs. 40.6±1.6%, P<0.05), and similar levels of urinary sodium excretion (230±90 vs. 450±230 nEq/min, NS) compared to hypertensive rats not treated with aliskiren.

Conclusions: These findings demonstrate that chronic renin inhibition with aliskiren is highly effective in normalizing the elevated arterial pressure and improving renal hemodynamics in Cyp1a1-Ren2 transgenic rats with established ANG II-dependent malignant hypertension.

412 THE PROTO-ONCOGENE, MDM2, IS REQUIRED FOR MAINTENANCE OF THE CAP MESENCHYME
Hilliard SA, El-Dahr SS Tulane University, New Orleans, LA.

Purpose of Study: The cap mesenchyme (CM) can be demarcated by its elevated expression of the transcription factor, Six2, and represents a self-renewing population of cells that provides the kidney with its total endowment of nephron precursors. The dorsally located CM cells with high levels of Six2 respond to canonical Wnt signals to maintain their proliferative status while those ventral to the branching ureteric bud (UB) have lower levels of Six2 and respond to Wnt signals by committing to a nephron fate. Mdm2, a negative regulator of p53 stability and activity, is expressed abundantly in the metanephric mesenchyme. The objective of this study was to examine if Mdm2-p53 signaling was critical for maintenance of the cap mesenchyme and/or the differentiation of nephron precursors.

Methods Used: We intercrossed homozygous Mdm2 floxed mice to Six2-/-gfp-Cre itg/itg/- mice. Kidneys from the progeny of these crosses were examined variously for developmental anomalies.

Summary of Results: CM Mdm2-/- mice die at birth and show severely hypoxic kidneys with few isolated glomeruli and depletion of the nephrogenic zone. Six2 immunostaining revealed marked thinning of the CM in the kidneys of CM Mdm2-/- mice. Consequently, the Meis1-expressing stroma expands to compensate for the loss of CM cells in CM Mdm2-/- kidneys. TUNEL staining revealed that the apoptotic foci were far more numerous in the CM of the null mutant kidneys. Also the fraction of proliferating cells (ph3-positive) in the Six2 staining CM is much reduced in the CM Mdm2-/- kidneys. The mutant cap mesenchyme cells show elevated p53 expression which may account for their reduced survival. Although Lhx1 expressing nephron precursors are identifiable in CMDm2-/- kidneys at E14.5 they are largely lost by E16.5. As a result there are very few functional nephrons. Ex-vivo cultures of CM Mdm2-/- kidneys reveals secondary defects in UB branching characterized by thick trunks with poor bifurcation of the UB tips. Significantly, the concomitant elimination of p53 function in the CM Mdm2-/- kidneys was sufficient to rescue metanephric development and ensure survival of the CM Mdm2-/- mice.

Conclusions: We conclude that Mdm2-p53 signaling is necessary to strike a balance between nephron progenitor cell expansion and differentiation during normal metanephric development.

413 ACTIVATION OF THE (PRO)REIN RECEPTOR CONTRIBUTES TO THE ANGIOTENSIN II MEDIATED INCREASE IN CYCLOOXYGENASE-2 EXPRESSION IN THE RAT RENAL INNER MEDULLA
Gonzalez AA, Luffman C, Green T, Vio C, Prieto MC Tulane University, New Orleans, LA.

Purpose of Study: In angiotensin (Ang) II-dependent hypertension, AngII stimulates (pro)rein receptor (PRR) expression in renal inner medullary collecting ducts (IMCD). During renin-angiotensin-system activation, cyclooxygenase-2 (COX-2)-derived prostaglandin E2 (PGE2) reduces the pressor and proinflammatory effects of AngII. The inner medulla (IM) PRR upregulates COX-2 via mitogen-activated kinases (MAPK/ERK1/2) in the macula densa; however, it is unknown if PRR activation contributes to COX-2 regulation in the renal IM in response to AngII stimulation.

Methods Used: To test this hypothesis, we examined the PRR and COX-2 expression profiles in the IM of rats infused with AngII (80 ng/min) for 3, 7 and 14 days, and in rat primary cultures of IMCD cells treated with AngII (100 nmol/L).
Summary of Results: AngII infusion increased PRR and COX-2 protein, phospho-ERK1/2 and PGE2 levels in rat kidney by Day 3 only. Primary cultures of CD151 expressed PRR, COX-2 and AT1R in both interstitial and intercalated cells. AngII increased PRR and COX-2 expression and phospho-ERK1/2 in IMCD cells via AngI type 1 receptor (AT1R). Rat recombiant proprin (rPPr; 100 nmol/L), used as an agonist of PRR, increased COX-2 expression and phospho-ERK1/2 independently of AT1R activation. Interestingly, PRR knockdown using sh-RNA reduced the AngII-mediated upregulation of COX-2 in IMCD cells and downregulated AT1R mRNA levels. 

Conclusions: These data indicate that COX-2 expression is upregulated via activation of both PRR and AT1R in rat renal interstitial and intercalated cells, which may explain the AngII-mediated COX-2/PGE2 upregulation in the medulla during the early phase of AngII-dependent hypertension.

414 URINARY TRACT ABNORMALITIES IN CD151 TRAFFICKING DEFICIENT MUTANT TRANSGENIC MICE

Kane O1, Zhang F2, Wyatt RJ1, Ault BH1, Zhang XA2

TRAFFICKING DEFICIENT MUTANT TRANSGENIC MICE

Purpose of Study: CD151 is a transmembrane protein in the tetrascin superfamly. It has a YRSL sorting motif in the C terminal cytoplasmic domain. CD 151 is strongly expressed in glomeruli and to a lesser extent in renal tubules. FVB mice lacking CD151 show glomerular basement membrane (BM) changes resembling Alport syndrome; however, C57Bl/6 mice lacking CD151 appear normal. We created a C57Bl/6 mouse transgenic for human CD151 in which the YRSL motif was mutated to ARSA (Yala mutant) to determine the role of CD151 in the kidney.

Methods Used: Mutated cDNA was microinjected into C57Bl/6 fertilized pronuclei. Pups were screened for the transgene by PCR on tail DNA. Blood was obtained by cardiac puncture. Urine was obtained by crease. Anesthetized mice were perfused with 2.5 % gluteraldehyde and 3% formalin mixture for electron microscopy (EM) studies or with formalin for HE staining. Femurs from euthanized mice were analyzed by micro-CT for ratio of calcified bone volume/total bone volume (BV/TV) and 3 dimensional structure model index (TRI-SMI).

Summary of Results: The mutant cDNA was highly expressed in the kidneys of Yala mice. Endogenous murine CD151 was equally expressed in the kidneys of wild type and Yala mice. Wasting was seen in the transgenic mice. In addition, by age 6 months, male Yala mice had developed marked urinary bladder dilation with genital prolapse. There was no significant difference in serum sodium (Na), potassium, bicarbonate, BUN, creatinine (Cr), calcium, phosphorus (P) or alkaline phosphatase at birth. However, serum P decreased in both groups (wild type: 165 ± 10 µmol/l, Yala mice: 148 ± 9 µmol/l). Systolic blood pressure increased equally in both groups (wild type: 104 ± 10 mmHg, Yala mice: 106 ± 10 mmHg).

Conclusions: We conclude that PKCδ in many cell types, we tested the hypothesis that Ang II-induced regulation of urea permeability. Since angiotensin II (Ang II) activates phospho-ERK1/2 in IMCD cells via AngII type 1 receptor (AT1R). Rat recombinant proprin (rPPr; 100 nmol/L), used as an agonist of PRR, increased COX-2 expression and phospho-ERK1/2 independently of AT1R activation. Interestingly, PRR knockdown using sh-RNA reduced the AngII-mediated upregulation of COX-2 in IMCD cells and downregulated AT1R mRNA levels. 

Conclusions: These data indicate that COX-2 expression is upregulated via activation of both PRR and AT1R in rat renal interstitial and intercalated cells, which may explain the AngII-mediated COX-2/PGE2 upregulation in the medulla during the early phase of AngII-dependent hypertension.

415 NEPHROGENIC SYSTEMIC FIBROSIS: THE CONTRIBUTION OF BONE MARROW-DERIVED FIBROCYTES TO SKIN LESIONS AND ASSOCIATION WITH L-CATHEPSIN

Vasquez K1,2, Wagner BT1,2, Davis GL1,2

NEPHROGENIC SYSTEMIC FIBROSIS (NSF) is a disorder found in patients with impaired kidney function. Risk has been highly associated with exposure to gadolinium-based contrast. Skin lesions express markers of blood-borne fibrocytes. The purpose of this study was to determine whether bone marrow-derived cells contributed to NSF lesions.

Methods Used: Experiments were conducted with Fisher 344 female rats s/p R-nephrectomy and L-2/3 renal artery ligation. Animals were lethally irradiated followed by salvage bone marrow transplant from human alkaline phosphatase-(hPAP)-expressing transgenic donors. Animals received 4 weeks of gadodiamid/cadidiamide (Ormanon) 2.5mmol/kg IP during weekdays. Im- munochemistry and electron microscopy (EM) studies or with formalin for HE staining. Femurs from euthanized mice were analyzed by micro-CT for ratio of calcified bone volume/total bone volume (BV/TV) and 3 dimensional structure model index (TRI-SMI).

Summary of Results: There was a significant increase in dermal cellularity in gadodiamid/cadidiamide treated animals. Expression of XilA-hPAP+ was 26.4% and 0% in the treated and control groups, respectively. Furthermore, L- cathepsin protease and hPAP.

Summary of Results: There was a significant increase in dermal cellularity in gadodiamid/cadidiamide treated animals. Expression of XilA-hPAP+ was 26.4% and 0% in the treated and control groups, respectively. Furthermore, L- cathepsin protease and hPAP.

416 LACK OF PROTEIN KINASE C δ LEADS TO IMPAIRED URINE CONCENTRATING ABILITY AND DECREASED AQP2 IN ANGIOTENSIN II-INDUCED HYPERTENSION

Thai TL, Blount MA, Klein JD, Sands JM

Emory University, Atlanta, GA.

Purpose of Study: Regulation of water and urea transport in the renal inner medullary collecting duct (IMCD) is essential for urine concentration. Aquaporin 2 (AQP2) water channels and the urea transporter UT-A1 lie in wait in intracellular vesicles and are inserted apically upon phosphorylation of the channels to allow transepithelial movement of water and urea, respectively. Perfusion IMCD with hypertonic solutions stimulates protein kinase C (PKC) to increase urea permeability. Since angiotensin II (Ang II) activates PKC in many cell types, we tested the hypothesis that Ang II-induced regulation of urea and water transport is mediated by PKC.

Methods Used: Osmotic minipumps delivered 400 ng/kg/min of Ang II to wild type or PKCδ−/− mice for 7 days. Inner medullas were harvested and protein abundance was determined by immunoblot.

Summary of Results: Compared to untreated controls, Ang II had no effect on urine output of wild type mice (467 ± 148 vs 650 ± 104 µl/d), but increased that of PKCδ−/− mice (1000 ± 115 vs 2025 ± 332, P = 0.05). Systolic blood pressure increased equally in both groups (wild type: 105 ± 5 vs 147 ± 15, PKCδ−/−: 114 ± 4 vs 147 ± 1 mmHg, P = 0.05). Ang II did not alter abundance of UT-A1 in wild type or PKCδ−/− mice. Protein kinase A phosphorylates UT-A1 at serines 486 and 499 to signal membrane insertion. S486 and S499 phosphorylation were unaltered in both groups as was membrane localization of UT-A1. Abundance and phosphorylation of Nfat5, an osmolarity-induced transcription factor that regulates UT-A1 were also unaltered by Ang II in either group. On the other hand, AQP2 abundance was unchanged in Ang II-treated wild type but decreased in PKCδ−/− mice (P = 0.01) with Ang II treatment, but no change in membrane accumulation was seen. While abundance of the cyclic AMP-induced transcription factor CREB was unaltered, phosphorylation of this protein was decreased significantly in PKCδ knockouts in response to Ang II (P = 0.03), but not wild type animals.

Conclusions: We conclude that PKCδ protects against Ang II-induced decreases in urine concentrating ability by maintaining AQP2 levels through phosphorylation of the transcription factor CREB. This work was supported by NIH grants T32 DK007771 and RO1 DK41707.

417 TNF-α RECEPTOR TYPE 2, BUT NOT TYPE 1, IS INVOLVED IN THE RENAL TISSUE INJURY RESPONSE TO CHRONIC ANGIOTENSIN II ADMINISTRATION IN MICE

Bahraini L, Singh P, Castillo A, Majid DS Tulane University School of Medicine, New Orleans, LA.

Purpose of Study: Recent studies implicated a role for TNF-α in the hypertensive and renal injury responses to angiotensin II (AngII). However, the specific roles for two types of TNF-α receptors (type 1 and type 2) in these AngII-induced responses are not yet clearly defined. This present study was conducted to examine the roles of these receptors in mediating hypertensive and renal injury responses to AngII.

Methods Used: Responses to chronic administration of AngII (25 ng/min−1 by implanted minipump) for 2 weeks in knockout mice lacking the gene for
either type 1 (TNFR1KO; n=6) or type 2 (TNFR2KO; n=6) were assessed and compared with those results obtained in wild type (WT, C57BL; n=6) mice. These animals were fed with a high salt (4%) diet to amplify the AngII-induced changes in renal injury. Systemic blood pressure (SBP) was monitored by radiotelemetry. At the end of the treatment period, animals were sacrificed, and kidneys were isolated and analyzed for tissue injury parameters: glomerulosclerosis index (GSi) using PAS staining, interstitial collagen deposition index (CDI) using Gomori’s trichrome staining, and CD68+ macrophage cell infiltration (MCI) using immunohistochemistry.

Summary of Results: Control mean SBP was not different in these three groups of mice (TNFR1KO, 88 ± 5 mmHg; TNFR2KO, 90 ± 5 mmHg; WT, 89 ± 6 mmHg). At the end of the 2 week period of HS and AngII treatment, SBP increased similarly in all these groups (TNFR1KO, 155 ± 26 mmHg; TNFR2KO, 141 ± 16 mmHg; WT, 147 ± 14 mmHg). Compared to the changes in renal cortical tissue injury parameters (GSi, 22.6 ± 4.2%; CDI, 8.1 ± 1.1% and MCI, 2.2 ± 0.6 cells/mm² tissue) in WT, all these parameters were similar in TNFR1KO (GSi, 26.3 ± 2.6%; CDI, 7.1 ± 2.0% and MCI, 1.1 ± 0.2 cells/mm² tissue) but interestingly, decreased significantly in TNFR2KO (GSi, 17.3 ± 3.1%; CDI 5.2 ± 0.6% and MCI, 0.02 ± 0.001 cells/mm² tissue) mice.

Conclusions: These data demonstrate that the hypertensive response to chronic AngII administration is independent of the activation of TNFR1 or TNFR2. These results also indicate that the TNFR2 receptor, but not the TNFR1 receptor, is involved in the inflammatory process leading to renal tissue injury in response to AngII administration.

418 INDOLEAMINE 2,3-DIOXYGENASE ACTIVITY AND NETRIN LEVELS FROM EX VIVO PERFUSED HUMAN KIDNEYS

Thanadar R1, Harbarger R2, Karanth R1, Kim J1, Davis E1, Merchen T2, Wyon J1, Jayakumar C1, Ramesh G1, Mellor AL1, Nahman JN1,1 Georgia Health Sciences University, Augusta, GA; 2Georgia Health Sciences University, Augusta, GA; 3Georgia Health Sciences University, Augusta, GA.

Purpose of Study: Indoleamine 2,3-dioxygenase (IDO) is an immunomodulatory enzyme that degrades tryptophan (Tr) to kynurenine (K). IDO activity mediates immune regulation by suppressing T cell immunity. Levels of Tr and K may thus act as surrogate markers of IDO activity. In this regard, IDO activity in kidney transplant allografts could modify host immune responses. Thus we theorized that the preservation solution of ex vivo perfused human kidneys may indicate allograft IDO activity immediately prior to transplant. To address this question, we assayed perfusate samples from kidneys maintained on a perfusion pump at the time of transplantation.

Methods Used: This project was approved by the institutional OPO (LifeLink of Georgia) and reviewed by the GHSU Human Assurance Committee. For each organ, a 10 ml aliquot of the perfusate sample was taken immediately after the kidney was removed from the pump. K and Tr levels were measured using HPLC. To assess for tubular damage, perfusate levels of the kidney biomarker netrin were determined using an ELISA.

Summary of Results: Six ex vivo perfused donor kidneys were studied. All organs were successfully transplanted and perfused with UW solution using the LifePort Kidney Transporter closed circuit perfusion system. A control sample of perfusate had no detectable K, Tr or netrin. K and Tr levels, and the K/Tr ratio from the perfused kidneys (mean±SD) were 0.094±0.06 and 5.53±1.01 uM, and 0.016±0.01, respectively. There was no detectable netrin in any of the perfusate samples (< 7.8 pg/ml). These data indicate low levels of K and normal levels of Tr from the perfusate of ex vivo perfused human kidneys, suggesting that IDO activity following harvest and ex vivo perfusion is minimal. In addition, the lack of detectable netrin suggests that tubular metabolic activity is negligible under these conditions.

Conclusions: At the time of transplantation, IDO activity is minimal in ex vivo perfused donor kidneys. Up-regulation of IDO activity in these allografts via pharmacologic or other means may offer novel opportunities for the induction of early allograft tolerance.

419 NITRIC OXIDE AND CARBON MONOXIDE DECREASE TRANSMITTING GROWTH FACTOR BETA TYPE 1 RECEPTOR SURFACE EXPRESSION THROUGH A DYNAMIN 2 MEDIATED PROCESS

Hovater M1, Ying W1,2, Sanders P1,2 University of Alabama at Birmingham, Birmingham, AL and 1Veterans Affairs Medical Center, Birmingham, AL.

Purpose of Study: Transforming growth factor-β (TGF-β) is a profibrotic growth factor in the vasculature, and signal propagation is responsible for deposition of extracellular matrix proteins and promotion of vascular fibrosis. Previous studies from our lab demonstrated that nitric oxide (NO) mitigates the deleterious effects of TGF-β. Studies in bladder endothelial cells and human embryonic kidney (HEK) cells lines indicated that NO activates dynamin 2. In addition to the role of NO in blood vessels, there is a growing appreciation for the role of carbon monoxide (CO) as a highly diffusible, bioactive signaling molecule. We hypothesized that NO and CO increase endocytosis of the TGF-β type I receptor (TBR1) in vascular smooth muscle cells (VSMC) through activation of dynamin 2, potentially shielding the cells from the effects of circulating TGF-β.

Methods Used: Primary cultures of VSMC from Sprague-Dawley rats were treated with 10 mM siRNA or control 48 hours prior to treatment with N03 (a NO chemical donor). CORM2 (a CO donor), ODQ (an inhibitor of soluble guanylyl cyclase), or vehicle. Dynamin 2 was detected using a commercially available rabbit polyclonal IgG antibody, 1:1000 dilution. Surface expression of TBR1 was detected with fluorescence-activated cell sorting (FACS).

Summary of Results: Physiological levels of NO and CO stimulated in a dose-dependent fashion dynamin 2 multimerization indicating activation of dynamin 2. NO and CO also stimulated a time- and dose-dependent endotheliosis of TBR1. Cells pretreated with dynamin 2 siRNA did not demonstrate a NO- or CO-stimulated decrease in surface expression of TBR1. These effects were independent of guanylyl cyclase since ODQ did not inhibit the NO-mediated decrease in surface expression of TBR1.

Conclusions: NO and CO decreased TBR1 surface expression in VSMC through a dynamin 2-mediated process. This helps explain an important way in which NO and CO protect the vasculature by decreasing TGF-β surface expression and, therefore, decreasing the cellular response to this profibrotic growth factor.

420 CYSTATIN C BASED EQUATIONS AS MARKERS OF RENAL FUNCTION IN AFRICAN AMERICAN LIVING KIDNEY DONOR

Jain SK, Wahlquist AH, Nieret PJ, Arthur JM, Budisavljevic MN Medical University of South Carolina, Charleston, SC.

Purpose of Study: There are no data on serum creatinine (sCr) or Cystatin C (CysC) based equations that estimate glomerular filtration rate (GFR) in African American (AA) kidney donors. Since AA have an increased incidence of diabetes and hypertension, these donors may be at increased risk of kidney disease. Better methods are needed to follow renal function in these kidney donors over time.

Our goals were to determine in AA kidney donors whether CysC is a better estimator of GFR than sCr and to determine which estimated GFR (eGFR) equation performs the best.

Methods Used: Data were obtained from 33 AA who donated a kidney 5-21 years ago. GFR was measured (mGFR) by 125I Iothalamate clearance. CysC was measured by particle enhanced turbidimetric assay. sCr was measured by enzymatic colorimetric assay calibrated to an isotope dilution mass spectrometry traceable method. Equations used for eGFR are listed in Table 1. Pearson correlation coefficients were calculated to determine which of the equation most highly correlates with mGFR.

Summary of Results: The mean mGFR was 76.18 ml/min/1.73 m². Pearson correlations between mGFR and eGFR from CysC and sCr based equations ranged from 0.51 - 0.81 (Table 1), all were statistically significant (p<0.01). Correlations were higher for the equations that used CysC compared to those that used sCr. Highest correlation was seen in CKD epi equation using both sCr and CysC.

<table>
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<td>&lt;0.0001</td>
</tr>
<tr>
<td>Cretinine based eGFR, CG</td>
<td>107.87</td>
<td>35.21</td>
<td>0.5084</td>
<td>0.0235</td>
</tr>
<tr>
<td>Cretinine based eGFR, Nankivell</td>
<td>123.06</td>
<td>12.05</td>
<td>0.7576</td>
<td>0.0005</td>
</tr>
<tr>
<td>CysC &amp; Cretinine based eGFR, CKD Epi</td>
<td>80.87</td>
<td>15.66</td>
<td>0.8067</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>
Conclusions: The use of the CKD epi estimating equation for GFR which uses both sCr and CysC provides best correlation with mGFR and can be used to estimate the changes in renal function in AA kidney donors.

421 COMPARISON OF RENOPROTECTIVE EFFECTS OF (+)-CATECHIN WITH A COMBINATION OF ACEI AND (+)-CATECHIN IN STREPTOZOTOCIN-INDUCED DIABETIC RATS

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Purpose of Study: The renoprotective effects of (+)-catechin (CA), a component in green tea, and a co-administration of ACEi and CA were compared in streptozotocin-induced diabetic rats.

Methods Used: Sprague Dawley rats of 8-10 weeks (250 g), were randomized into 6 groups (n=12): normal rats (N); normal rats treated with CA (NC); diabetic rats (DM); diabetic rats treated with CA (DC); diabetic rats treated with ACEi (DA); and diabetic rats treated with CA and ACEi (DAC). Plasma and urine were collected every 3 weeks for a period of 12 weeks. Concentration of albumin and endothelin (ET-1) were analyzed in urine and concentrations of creatinine, alanine amino transferase (ALT), thio-barbituric acid reactive species (TBARS) and thiol content were analyzed in plasma. Expression of fibronectin was also analyzed in kidney lysates by western blotting.

Summary of Results: After 12 weeks of CA treatment (30-40 mg/day), urinary albumin excretion (UAB) was reduced by 46% and the plasma creatinine by 50% compared to values in DM group. UAB in DA and DAC groups were same as DC group. ET-1 in urine was also decreased by 44% in DC group, 68% in DA group and 83% in DAC group. A two-fold decrease in lipid peroxidation (TBARS) was observed in DA and in DAC groups whereas in DC group, the decrease was only 35%. CA, ACEi and combination of ACEi and CA were not toxic to the liver as measured by ALT. In DC group, the thiol content was reduced by 14%, whereas in DA and DAC groups, it was reduced by 44% and 60% respectively. Fibronectin in kidney lysates was significantly higher in DW group compared to DC, DA and DAC groups.

Conclusions: The efficacy of CA in reducing UAB was comparable to that of ACEi and a combination of CA and ACEi. As measured by ALT, co-administration of ACEi and CA were not toxic to the liver. The co-administration of CA and ACEi did not have any additional benefit in reducing UAB and lowering plasma creatinine. The co-administration of CA and ACEi did not have any additional benefit in reducing UAB and lowering plasma creatinine. The renoprotective effect of the CA was not significant in comparison with ACEi alone. The co-administration of CA and ACEi did not have any additional benefit in reducing UAB and lowering plasma creatinine. The co-administration of CA and ACEi did not have any additional benefit in reducing UAB and lowering plasma creatinine.

422 ANGIOTENSIN II REDUCES SATELLITE CELLS AND SUPPRESSES MUSCLE REGENERATION

Galvez S, Yoshida T, Sukhanov S, Delafontaine P Tulane University School of Medicine, New Orleans, LA.

Purpose of Study: We have previously shown that Ang II induces skeletal muscle wasting in a mouse model and causes a reduction in satellite cell number. We hypothesized that an Ang II-induced reduction in muscle progenitors and suppression of muscle regeneration contribute to muscle wasting.

Methods Used: To test this hypothesis, we used a cardiotoxin-induced muscle injury model and measured levels of regeneration markers (MyoD, Pax7-) and quantified regenerating myofibers (i.e. fibers with centralized nuclei) in skeletal muscle. We injected 10 μM of cardiotoxin IM in three sites in the gastrocnemius muscles (gastroc) of 8-10 week old C57BL/6J mice and via osmotic minipumps infused them with either saline or 1.5 ug/kg/d Ang II for 3, 7, and 14 days.

Summary of Results: In H&E staining of cross sections of the gastroc, we found no myofibers with centralized nuclei in the 3d Ang II group but significantly less centralized nuclei in the 7d Ang II group compared with 7d Sham (p < 0.001). The 14d Ang II group also had less centralized nuclei than the 14d Sham group (p<0.09). RNA expression was analyzed by qPCR of the myogenic regulatory factors, MyoD & Pax7. A significant decrease in the fold change expression of MyoD was found between the 7d Ang II and 7d Sham groups (p<0.05). With Pax7, there was a significant reduction in the fold change expression in 3d Ang II group compared with 3d Sham group (p<0.05) as well as reduction in expression between 7d Ang II vs. 7d Sham, and 14d Ang II vs. 14d Sham.

Conclusions: Our data suggests that Ang II suppresses muscle regeneration by inhibiting the activation of satellite cells. In future studies, we will attempt to elucidate by which mechanism(s) Ang II suppresses muscle regeneration.

423 THE SEVERITY OF HYPOKALEMIA AND ASSOCIATED HYPMAGNESEMIA IN HOSPITALIZED PATIENTS WITH QTc PROLONGATION AND CARDIAC ARRHYTHMIAS

Adedayo AA, Holmes B, Flatt DM, Shaheen M, Weber KT University of Tennessee Health Science Center, Memphis, TN.

Purpose of Study: A dyshomeostasis of intra- and extracellular K+ and Mg2+ can lead to delayed myocardial repolarization with QTc interval prolongation of the electrocardiogram and an increased propensity for supra- and ventricular arrhythmias. The objective of this study was to determine the presence and severity of hypokalemia and hypomagnesemia in hospitalized patients found to have QTc prolongation (>440 ms) and cardiac arrhythmias on their standard ECG together with hypokalemia (<4.0 mmol/L).

Methods Used: In a cohort of 20 hospitalized patients (58±6.2 years; 13 men) found to have QTc prolongation, atrial fibrillation, premature atrial or ventricular contractions and hypokalemia during April and May, 2011, we retrospectively determined the presence of hypokalemia and the presence or absence of hypomagnesemia and its severity.

Summary of Results: Hypokalemia (mmol/L) of mild severity (3.9-3.5) was present in 65% of these patients while it was of moderate (3.4-3.0) and marked severity (<3.0) in 15% and 20%, respectively. Six patients had premature atrial contractions (PAC), 6 atrial fibrillation (AF), and 11 premature venricular contractions (PVC); 2 patients had both AF and PVC. Serum K+ (mmol/L) in those with PACs was 3.40±0.2; with AF 3.35±0.2; and with PVC 3.50±0.1. Serum Mg2+ was <2.0 mg/dL in 3 patients with PACs (1.50±0.10), 3 with AF (1.67±0.07), and 6 with PVC (1.70±0.01).

Conclusions: QTc prolongation with hypokalemia of mild to marked severity can be accompanied by PACs, AF and PVC and in over 50% will be associated with hypomagnesemia of moderate to marked severity. These findings raise the need for serial monitoring of serum K+ and Mg2+ and correction of hypokalemia and associated hypomagnesemia in hospitalized patients found to have QTc prolongation on their standard ECG. Maintenance of serum K+ >4.0 mmol/L and Mg2+ >2.0 mg/dL is suggested to minimize the risk of cardiac arrhythmias.

424 NATIONWIDE OUTCOMES OF PATIENTS WITH CHRONIC KIDNEY DISEASE UNDERGOING CORONARY ARTERY BYPASS SURGERY

Pant S, Deshmuah A, Mehta JL, Sachdeva R UAMS, Little Rock, AR.

Purpose of Study: Chronic kidney disease (CKD) has been associated with adverse outcomes after coronary artery bypass grafting (CABG). However data from a national perspective are limited. We sought to investigate outcomes of patients with CKD undergoing CABG with a focus on development of acute kidney injury (AKI) and the need for dialysis.

Methods Used: Retrospective analysis was performed using National Inpatient Sample from the year 2007. All adult patients (age 18 years or more) with discharge diagnosis of CKD and the procedure CABG were identified using appropriate ICD-9-CM codes. Patients with end stage renal disease with discharge diagnosis of AKI and the need for dialysis. Patients with CKD undergoing AKI and requiring dialysis.

Summary of Results: There were an estimated 212,237 patients undergoing CABG in 2007 of which, 8.3% had CKD. After multivariate logistic regression and controlling for demographic factors and co-morbid conditions, the CKD patients were more likely (OR 8.5; 95% CI 7.7-9.4) to develop AKI and require dialysis. Patients with CKD developing AKI and requiring dialysis had significantly higher in-hospital mortality (OR 3.92; 95% CI 2.21-6.94) when compared to those who did not require dialysis. Length of
stay was 3.1 days longer (95% CI 2.8-3.4) and charges were $27,440 higher (95% CI $23,502-$31,337) in CKD patients when compared to those with normal kidney function.

The CKD patients were discharged to long term care, significantly more than those with normal renal function (31% vs. 16%)

**Conclusions:** In patients undergoing CABG, CKD predicts higher in-hospital mortality and increased frequency of AKI, including need for dialysis. CKD predicts longer length of stay, higher incurred charges and discharges to long term care facilities.

**Conclusions:**

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**425**

**GOLDBERGER’S ELECTROCARDIOGRAPHIC TRIAD CAN BE AN INSENSITIVE MARKER FOR SEVERE LEFT VENTRICULAR DYSFUNCTION AS DETERMINED ECHOCARDIOGRAPHICALLY**

Ilie CC, Lopez C, Glancy DL, Quintal R. LSUHSC, New Orleans, LA.

**Purpose of Study:** To assess the sensitivity of Goldberger’s 1982 electrocardiographic (ECG) triad for detecting severe left ventricular (LV) dysfunction.

**Methods Used:** In 51 consecutive patients (36 men) with LV ejection fraction (EF) ≥ 20%, the ECG triad (SV1 or SV2 + RV5 or RV6 ≥ 3.5 mV; total QRS amplitude in each of leads I, II and III ≤ 0.8 mV, and R/S < 1 in V4) was sought in the ECG recorded closest to the timing of the echocardiogram. All 51 patients had high blood pressure, and 17 had diabetes mellitus. In 49 New York Heart Association Class was available: II in 8, III in 32 and IV in 9. The cardiomyopathy was ischemic in 7, non-ischemic in 38, and in 6 ischemic status was unknown.

**Summary of Results:** LV EF ranged from 4 to 20% (mean, 13.8) and the LV internal end-diastolic diameters ranged from 5.7 to 8.6 cm (mean, 6.55). Left atrial anteroposterior diameters ranged from 2.9 to 6.1 cm (mean, 4.66), and 47 of the 51 were ≥ 4.0 cm. The right ventricular cavity was enlarged in 22. SV1 or SV2 + RV5 or RV6 was ≥ 3.5 mV in 29 of the 51 ECGs; total QRS amplitude was ≤ 0.8 mV in each of leads I, II and III in 10; and R/S was < 1 in lead V4 in 37. Only one of the 51 ECGs met all 3 criteria.

**Conclusions:** In contrast to Goldberger’s finding the triad to be 70% sensitive for severe LV dysfunction, we found the triad to be only 2% sensitive. The difference is likely due to his patients’ having idiopathic dilated cardiomyopathy, whereas ours had hypertensive cardiomyopathy ± ischemia. Also, we used one specific ECG for each patient, whereas Goldberger reviewed all of the patient’s ECGs looking for the triad. Thus, Goldberger’s triad is a sensitive or insensitive marker for severe LV dysfunction depending on the patient population and the number of ECGs reviewed.

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**426**

**GENETIC DEFICIENCY OF SYK INHIBITS T CELL RESPONSES TO AN ANALOG PEPTIDE OF TYPE II COLLAGEN**

Majumdar S, Cullins DL, Park JE, Stuart JM, Myers LK, Kang AH. University of Tennessee, Memphis, TN.

**Purpose of Study:** Spleen tyrosine kinase (Syk) is a cytoplasmic tyrosine kinase involved in signaling in many of the cells that drive immune inflammation, including T cells. The development of new therapies that inhibit Syk kinase suggests that Syk plays an important role in inflammation. The aim of the present study was to test whether genetic deficiency of Syk affects T cell responses to collagen peptides.

**Methods Used:** We developed Syk-/− bone marrow chimeras carrying both a Syk-deficient hematopoietic system and a TCR transgene which recognizes type II collagen (CII). The chimeras were generated by transplanting Syk-/− fetal liver cells into sublethally irradiated DBA/1 wild-type recipients. Syk-/− fetuses were identified according to the characteristic petechiated appearance and their genotype was confirmed by allele specific polymerase chain reaction analysis prior to transplantation. After complete repopulation of the hematopoietic compartment, T cells were collected and cultured with APCs pulsed with either the immunodominant collagen peptide (A2) or the analog peptide A9. We have previously described this analog peptide of type II collagen (CII) that can suppress collagen-induced arthritis (CIA). This analog peptide represents CII245-270, the immunodominant epitope of CII, but with substitutions at 260, 261, and 263 (A9).

**Summary of Results:** Our studies showed that T cells with a genetic deficiency of Syk were unable to mount cytokine responses to A9 while cytokine responses to A2 remained intact.

**Conclusions:** Our results indicate that Syk is critically involved in some T cell responses to collagen peptides. Future studies will delineate the role of syk in immunoregulatory T cells.

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**427**

**RHEUMATOID FACTOR ISOTYPES IN RNP POSITIVE PATIENTS: CLINICAL AND ETHNIC PROFILE**

Blom MB1, Greidinger EL2,3. 1University of Miami-Jackson Memorial Hospital, Miami, FL; 2University of Miami-Miller School of Medicine, Miami, FL; 3Bruce W Carter Department of Veterans Affairs Medical Center, Miami, FL.

**Purpose of Study:** Rheumatoid Factor (RF) is often present in patients with anti-ribonucleoprotein (RNP) autoimmunity, including patients with Mixed Connective Tissue Disease (MCTD) and Lupus (SLE). Previous studies have reported conflicting results regarding whether RF is associated with patterns of clinical disease or if RF expression is influenced by ethnicity in RNP+ patients. We conducted the largest and most comprehensive assessment to date of the relevance of RF in anti-RNP autoimmunity.

**Methods Used:** Serum from 90 RNP+ patients, collected between 2005 and 2011 from a single University center, was tested for IgM and IgG RF isotypes by commercial ELISA. Clinical lab RF testing (by latex agglutination) was also assessed when available. Race and ethnicity were determined by self-identification.

**Summary of Results:** The diagnoses (with confirmed classification criteria) for our patients were SLE for 57 (63%), and MCTD for 33 (37%). Patients were primarily female (97%) and Hispanic (56%). Patients identified their race as African American (36%), Caucasian (33%), multi-racial (17%), Native American (12%), or Asian (2%). Clinical lab RF testing had been performed on 25 patients; the latent results correlated strongly with ELISA IgM positivity (r = 0.8, p < 0.001). Positivity for IgM-RF only, IgG-RF only, both IgM and IgG, and any RF+ (IgM and/or IgG, including latent) was present in 2.2%, 16.6%, 26.7% and 45.5% of the patients, respectively. The frequency of positive results did not differ between Hispanics and non-Hispanics or between African Americans and Caucasians. No associations existed between RF isoform positivity (or titer) and joint disease. Subgroup analysis by diagnosis (MCTD or SLE) yielded similar results. Secondary analyses with age, Sicca syndrome, SLEDAI score, and other clinical variables likewise revealed no evidence of associations with RF.
Conclusions: In a multiethnic RNP+ cohort that is the largest studied to date, RF was common, but no associations were found between RF and ethnicity, race or clinical characteristics.

428 PREVALENCE OF SKIN DISEASE SLE PATIENTS IN PRIMARILY AFRICAN-AMERICAN COHORT AT THE UNIVERSITY OF MISSISSIPPI MEDICAL CENTER

Green A, Majithia V University of Mississippi Medical Center, Jackson, MS.

Purpose of Study: Multiple skin manifestations can occur in SLE and have been reported in up to 70% of patients. The association of antibodies, racial, gender differences in its epidemiology are unclear. The purpose of this study is to assess prevalence of macro-cutaneous manifestation and determine correlations within the data obtained for our patient population.

Methods Used: Data was collected from 107 SLE patients followed at rheumatology clinic from January 2011-July 2011. Clinical data from all available records was reviewed. Information on mucocutaneous manifestations - their type, location, extent and treatment was collected. Demographic, serological and disease specific clinical data was collected, de-identified and assessed using standard statistical methods.

Summary of Results: The cohort consisted of 95 females and 12 males. 95% were African American. 88% of patients had skin involvement of SLE. 100% of males and 86% of females had skin involvement. The most prevalent skin manifestation was malar rash, occurring in 39% of patients. Results are summarized in Table 1.

Conclusions: The prevalence of skin manifestations of SLE in this cohort are higher than previously reported (88% vs 70%). Overall prevalence of malar rash (40%), alopecia (24%), and oral ulcers (19%) were similar. The overall and specific manifestation prevalence was different in males. The variation in data collected could be attributed to the difference in demographics of the patient population. Further evaluation of data is being conducted to determine if associations can be made with skin manifestations according to race, age, ANA, autoimmune laboratory titers, associated autoimmune diseases, and treatments chosen. Using demographic data, the prevalence of skin manifestations. Further study of the data will be undertaken to assess for additional statistical relationships of skin manifestations.

429 ANTI-DNA ANTIBODY PRODUCTION IS RESTRICTED BY THE GERMLINE COMPOSITION OF DH GENES

The germline composition of DH genes (DH genes) heavily influence BCR repertoire. Thus, amino acid distribution in mature repertoire is biased leading to the decreased diversity of the BCR repertoire. Conserved germline sequence, preferential reading of these sequences - their type, location, extent and treatment was collected. Demographic, serological and disease specific clinical data was collected, de-identified and assessed using standard statistical methods.

Summary of Results: The cohort consisted of 95 females and 12 males. 95% were African American. 88% of patients had skin involvement of SLE. 100% of males and 86% of females had skin involvement. The most prevalent skin manifestation was malar rash, occurring in 39% of patients. Results are summarized in Table 1. The results are reported as per cent reduction from that observed in control macrophages stimulated with antibiotic-treated LAC alone. Exposure to ketamine resulted in a 33% reduction in TNF secretion, while exposure to ketamine and rapamycin at the highest concentrations tested (10 and 100 ng/mL) increased TNF suppression to 40-50%. When comparing the effects of rapamycin, the data suggest a small increase in the magnitude of reduction in TNF secretion at the lower concentrations of rapamycin (0.1 and 1 ng/mL) only.

Conclusions: Our data indicated that the mTOR inhibitor rapamycin at the two higher concentrations studied augmented the ketamine-induced suppression of macrophage TNF secretion in response to CA-MRSA stimulation. Addition of the PI-3K/Akt inhibitor LY294020 modestly augmented the effect of the ketamine/rapamycin combination, but only at the lower concentrations of rapamycin. Ongoing studies aim to determine whether the effects of rapamycin are related to inhibition of mTOR complexes 1 and/or 2.

430 RAPAMYCIN AUGMENTS THE ANTI-INFLAMMATORY EFFECT OF KETAMINE ON MACROPHAGE RESPONSES TO COMMUNITY-ASSOCIATED STRAINS OF METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS (CA-MRSA)

Spentzas T, Meals E, English B University of Tennessee, Memphis, TN.

Purpose of Study: In our previous work, we showed that ketamine inhibits tumor necrosis factor (TNF) secretion by RAW 264.7 murine macrophages exposed to antibiotic-treated CA-MRSA bacteria in an NMMA-mediated manner. In this study, we examined the potential effects of the mTOR inhibitor rapamycin and the PI-3K/Akt inhibitor LY294020 on this process.

Methods Used: RAW264.7 murine macrophages were stimulated for 18 hrs with the USA300 CA-MRSA strain LAC, at 10^6 to 10^7 cfu/mL. Prior to stimulation, ketamine was added at 100 μM, LY294020 at 500 nM and/or rapamycin at 0.1, 1, and 100 ng/mL. The supernatants were collected and assayed for TNF concentration by ELISA.

Summary of Results: The results are reported as per cent reduction from that observed in control macrophages stimulated with antibiotic-treated LAC alone. Exposure to ketamine resulted in a 33% reduction in TNF secretion, while exposure to ketamine and rapamycin at the highest concentrations tested (10 and 100 ng/mL) increased TNF suppression to 40-50%. When comparing the effects of rapamycin, the data suggest a small increase in the magnitude of reduction in TNF secretion at the lower concentrations of rapamycin (0.1 and 1 ng/mL) only.

Conclusions: Our data indicated that the mTOR inhibitor rapamycin at the two higher concentrations studied augmented the ketamine-induced suppression of macrophage TNF secretion in response to CA-MRSA stimulation. Addition of the PI-3K/Akt inhibitor LY294020 modestly augmented the effect of the ketamine/rapamycin combination, but only at the lower concentrations of rapamycin. Ongoing studies aim to determine whether the effects of rapamycin are related to inhibition of mTOR complexes 1 and/or 2.

431 LUPUS SERA ALTERS ENOS FUNCTION IN HUMAN AORTIC ENDOTHELIAL CELLS

Buite J1,2, Oates JC1,2. MUSC, Charleston, SC and 2MUSC, Charleston, SC.

Purpose of Study: Late stage clinical mortalities in systemic lupus erythematosus (SLE) are attributed to myocardial infarction and heart disease. Preclinical disease presentation includes decreased flow mediated dilation (FMD), which is indicative of endothelial dysfunction (ED). Pathways leading to ED converge on the diminished activity of endothelial nitric oxide synthase (eNOS) and loss of endothelial derived nitric oxide (eNO). It was previously shown that C-reactive protein (CRP) activates Fgamm receptors present on endothelial cells. Activation leads to subsequent loss of eNOS expression. However, CRP responses are absent or abnormal in SLE. However, SLE patients produce high titers of IgG dsDNA autoantibodies that bind to FcRs. Thus, in the current study, we hypothesized that the presence of these autoantibodies may, in a similar fashion to CRP, reduce eNO and eNOS expression.

Methods Used: Cultured human endothelial cells were loaded with the NO sensitive dye, DAF-FM (4-Amino-5-methylamino-2′,7′-difluorofluorescein) diacetate, and NO levels were measured using flow cytometry after cells were

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exposed to sera from controls and patients with active disease + dsDNA Abs, active disease - dsDNA Abs, inactive disease + dsDNA Abs, and inactive disease - dsDNA Abs. Furthermore, gene expression was assessed via RT-PCR and protein levels were studied using western blot analysis.

**Summary of Results:** RT-PCR studies showed enhanced eNOS gene expression in cells exposed to active disease + dsDNA Abs (0.7 fold), inactive disease + dsDNA Abs (1.7 fold), and inactive disease - dsDNA Abs (4.5 fold) sera samples when compared to the normal sera control. However, eNOS gene levels in the active disease - dsDNA Abs treated cells were reduced (1.7 fold). Paradoxically, while eNOS protein levels were similar in all sera treated cells, lupus sera treated impaired Ser 1177 phospho-eNOS protein expression in cells treated with active disease + dsDNA Abs, active disease - dsDNA Abs, and inactive disease - dsDNA Abs sera samples when compared to the normal control sample (30%, 42%, and 20% respectively). However, peNOS levels in the inactive + dsDNA treated cells were up by 50%.

**Conclusions:** Taken together, the results of this study suggest that sera causes reduction of NO bioavailability, peNOS protein expression, and increased eNOS gene expression.

### 432 CLINICAL FEATURES PREDICTING PRIMARY IMMUNODEFICIENCY DISEASES

Chervinskiy SK1, Bondurant KL2, Brodie-Fowler M1, Perry TT1, Jones SM1, Scurluck AM1 'UAMS, Little Rock, AR and College of Public Health, UAMS, Little Rock, AR.

**Purpose of Study:** To assess the utility of primary immunodeficiency (PID) warning signs in identifying disease in patients evaluated in a regional immunology referral center.

**Methods Used:** Retrospective chart review of adult and pediatric patients referred to the Immunology Clinic between January 1, 2006 and June 30, 2011. Qualifying subjects were identified by ICD-9 codes for PID. Patient demographics, insurance, referral source, clinical history, family history, consanguinity, symptoms at presentation and time from initial referral to evaluation were collected. Data were analyzed using SAS software.

**Summary of Results:** 67 new cases of PID (46% male, 93% Caucasian) were identified. (Mean age=12.5 yrs) The majority (86.6%) were referred from outpatient clinics. (46% pediatrics, 24% family medicine) All patients had medical insurance at initial referral. (54% Medicaid, 46% private) The mean time from referral to evaluation was 70 days (range 3 days to >1 yr). 61% resided in areas with a population <50,000. Collectively, B-cell disorders were the largest category (43%) with common variable immune deficiency the most common B-cell disorder (13%). Other disorders included DiGeorge syndrome (12%), chronic granulomatous disease (1.5%), neutropenia (1.5%). Only 4.8% of patients had a history of PID. Frequent bacterial (45.3%) and viral (35.4%) infections, primarily respiratory (69%) were common. The most common warning signs identified for children included need for intravenous antibiotics (19.4%), 2 or more serious sinus infections (31.3%) and greater than 4 new ear infections in one year (41.5%).

**Conclusions:** In response to federal mandates, many states, including.

### 434 HYPER IGM SYNDROME IN A SEVEN MONTH OLD BOY WITH NORMAL CD 40 LIGAND FLOW CYTOMETRY

Black JG1, Zhang K2, El-Dahr J3 'Tulane Hospital and Clinic Foundation, New Orleans, LA and Cincinnati Children’s Hospital, Cincinnati, OH.

**Purpose of Study:** The Hyper Igm Syndrome (HIGM) is a group of genetic diseases resulting in defects of immunoglobulin class switch recombination. A common cause is CD 40 Ligand (CD40L) deficiency. Patients often present with respiratory infections within the first twelve months. The interaction of CD 40L on T cells and CD 40 on B cells and monocytes is important for B cell activation and protection against intracellular pathogens. Early diagnosis is essential as treatment with immunoglobulin replacement and bone marrow transplant is necessary. The diagnosis is confirmed by flow cytometry with the absence of CD 40L on activated T cells from the patient.

**Methods Used:** Our patient is a seven month old male who was hospitalized due to pneumonia and respiratory failure. His bronchial fluid silver stain was positive, consistent with a diagnosis of Pneumocystis jiroveci. Quantitative immunoglobulins showed a normal IgM level, but undetectable IgA and IgG. His CD 40L and CD 40 flow cytometry were normal.

**Summary of Results:** CD 40L gene mutation analysis found a nonsense mutation in codon 431, resulting in an amino acid switch from glycine to glutamic acid. When compared to the wild type sequence, glutamic acid is negatively charged and more hydrophobic, thus leading to changes in electrostatic potential and aberrant protein-protein interactions. Further review of the literature shows that this mutation is responsible for only 1.42% of all HIGM diagnoses. Our study indicates that this mutation leads to the expression of a dysfunctional CD 40L protein.

**Conclusions:** HIGM diagnoses originate from multiple genetic mutations. The mutation in our patient has been reported once only, and it creates a dysfunctional CD 40L protein. Genetic sequencing should be considered a valuable diagnostic tool in patients with features of HIGM who have normal flow cytometry.

**Clinical Epidemiology and Preventive Medicine**

1:00 PM Saturday, February 11, 2012
likely to be overweight or obese. There are several complications associated
with having any PSA test and, if tested, of a PSA result over 4 ng/dl.

Summary of Results: In the 15,366 men in the cohort, race-ethnicity was:
8807 (57.5%) Hispanic, 4534 (29.6%) white non-Hispanic, 1090 (7.1%)
black and 894 (5.8%) other. The overall median age was 57 years (IQ 53-62)
and similar by race-ethnicity. Over a two year period, only 3718 (24.1%) men
in the cohort had a PSA performed with testing more likely for black (25.0%)
and Hispanic men (27.1%) than white men (18.1%) (P<0.001). The pro-
portion of men with a PSA >4 ng/dl was higher for black (11.4%) than
Hispanic (4.9%) or white men (5.2%) (P<0.001).

Conclusions: In a multiracial cohort of older indigent men in South Texas,
Pulse testing is far lower than reported by men nationally (around 50% an-
nually). Testing was higher in black and Hispanic men than white non-Hispanic
men but black men were more likely to have an abnormal result. Since PSA
testing is infrequent in this cohort, stopping testing will not substantively
affect care. But stopping testing in black men raises concerns due to the
higher proportion with elevated PSA results coupled with their known higher
risk of PCa.

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OCCUPANCY TRENDS AND RELATED OUTCOMES IN BLACK
AND WHITE TEENS

Halloran DR 1, Marshall N 2, Cheng Y 3, Caughey AB 4, University of Missouri, St Louis, MO. 3Oregon Health & Science University, Portland,
and 4University of California, San Francisco, San Francisco, CA.

Purpose of Study: To determine the trend in pre-pregnancy body mass
index (BMI) in Black and White teenagers and the impact of elevated BMI on
maternal and infant outcomes.

Methods Used: This is a retrospective cohort study of birth records for
Black and White liveborn singleton infants ≥37 weeks gestation born to
Missouri residents from 1993-2006. Teenagers were defined as mothers < 18
years of age at the time of delivery. BMI category was based on 2009 Institute
of Medicine guidelines. Cochrane-Armitage test of trend was used to assess
significance. Multivariable regression adjusted for maternal race, education,
insurance, parity, level of prenatal care, smoking status, and infant gender.

Summary of Results: There were 38,042 teenagers who met study criteria
including 55% 17 years, 29% 16 years, 12% 15 years, and 4% ≤14 years old.
66% of teenagers in the study population were Black versus 34% White. The
percent of teenagers who were overweight or obese increased overtime
(P<0.01) (Figure). By 2006, 18% of teenagers were overweight and another
11% were obese. Obese teenagers were 1.4 (95% CI 1.2, 1.6) times more
likely to be induced and 2.1 (95% CI 1.8, 2.4) times more likely to have a
cesarean delivery than normal weight teenagers. Infants born to these obese
teenagers were 1.3 (95% CI 1.1, 1.5) times more likely to have a prolonged
length of stay and 2.8 (95% CI 1.5, 5.2) times more likely to have a macrosomic
infant than normal weight teenagers. Overweight teenagers had similar risks for
induction and cesarean delivery; in addition, overweight teenagers had an ele-
vated risk of postpartum hemorrhage versus normal weight teenagers (aOR 1.2,
95% CI 1.03, 1.58).

Conclusions: Pregnant Black and White teenagers are increasingly more
likely to be overweight or obese. There are several complications associated
with this increased weight including cesarean delivery. The national obesity
epidemic has become evident in pregnant teenagers, this is a particularly
concerning given the increased risk of complications such as cesarean de-

delivery in these women who have a large number of fertile years ahead.
that they would give CCM “never” or “less often than before” would still give a medicine if recommended by the PMD. This study shows that education in the ER setting can have an impact on intended future behavior. Future research into pediatrician knowledge and adherence to current CCM guidelines is warranted.

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PREVENTION OF CHILD INJURIES DURING TORNADOES: A CASE SERIES FROM THE 2011 TORNADO OUTBREAK IN ALABAMA

Campbell CM1, Baker MD2, Monroe KW2 1University of Alabama at Birmingham, Birmingham, AL and 2Children’s of Alabama, Birmingham, AL.

Purpose of Study: Tornadoes and violent weather pose a hazard to children, yet little is known about the use of personal protective devices during storms. A devastating outbreak of tornadoes and subsequent investigation highlights potential injury prevention measures.

Methods Used: 82 children were seen in a pediatric emergency department for evaluation following direct exposure to a tornado between April 27-28, 2011. Using a statewide trauma registry and chart reviews we identify three children who survived without physical harm, possibly as a result of the use of protective gear. Focused interviews with the children’s families were conducted for this retrospective case series.

Summary of Results: Of the three children, two were infants strapped into car seats and one was a child wearing a helmet. Although the buildings in which they sheltered were destroyed and other household occupants were injured or killed, these children were unharmed or suffered minimal superficial abrasions.

Conclusions: To our knowledge, this is the first report in the medical literature of helmet and infant car seat use as child injury prevention devices during a tornado. These findings suggest that children at risk of exposure to tornadoes may benefit from the use of personal protective devices that are commonly utilized as injury prevention tools in other settings, such as infant car seats and helmets, to reduce the potential for injury.

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A MODEL FOR PREDICTING SOCIO-EMOTIONAL PROBLEMS IN THE FIRST YEAR OF LIFE

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Purpose of Study: A growing body of research, in early childhood development and neuroscience, identifies the first three years as a critical period of development. During that developmental period, how the brain wires itself for future learning is highly sensitive to positive and negative influences.

This research aimed to develop a calibrated and validated model to predict development of socio-emotional problems in the first year of life using data on 673 children from the CANDLE (Conditions Affecting Neuropsychological Development and Learning in Early Childhood) longitudinal cohort study.

Methods Used: Logistic regression models were developed, screened and compared using the R statistical language version of Harrell’s rms: Regression Modeling Strategies package. The approach incorporated imputation of missing data, modeling of nonlinear association, model calibration and model validation. The study outcome variable is the Behavior Problem Scale from the Brief Infant-Toddler Social and Emotional Assessment (BITSEA). Predictive potential variables were identified by expert nomination from CANDLE baseline and follow-up measures (e.g., child gender, gestational age, maternal age, WASI IQ, traumatic event exposure, etc.). Our best predictive model to date incorporates birth weight, child age, maternal age, maternal IQ, maternal traumatic event exposure and maternal general stress index.

Summary of Results: An acceptably well-calibrated and validated model for predicting development of socio-emotional problems at one year of age was developed.

Conclusions: Development of quality predictive models of early child outcomes is important. This study offers an example of how that can be accomplished. Based upon this model we are able to predict the likelihood of possible socio-emotional problems in the first year of life.

Example of a Study Validation Table

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“EAT LESS AND EXERCISE MORE!” FOLLOW UP AT SIX WEEKS VERSUS SIX MONTHS

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Purpose of Study: Tremendous challenges exist for primary-care providers managing obese patients. The limitations of training and resources have unfortunately forced many providers to either ignore the issue or to oversimplify the problem, i.e., “eat less and exercise more.” Uncertainty exists in regards to the optimal follow-up interval for obese patients and if there exists a patient incentive for closer clinical follow-up. The purpose of this study was to determine if more frequent follow-up would make a difference in patient’s adherence to control their weight.

Methods Used: 60 obese and or overweight patients (BMI 34.6 +/- 5.8 kg/m2) were asked to eat less and exercise more (ELEM) by their primary care provider. They were then asked to follow-up in 6 weeks for a weight- recheck. Weight status was compared to a similar group of patients who had the same instructions, but regular follow-up at 6 months.

Summary of Results: On follow-up, 83% of 6 week patients returned; 79% of those patients lost weight with a mean loss of 2.4 kg (0.5-7.7 kg); p = 0.006 versus controls. Seventy-three percent of patients who followed-up regardless of outcome, felt that the intervention provided a positive incentive to managing their weight.

Conclusions: Using a simple, low resource strategy with closer clinical follow-up resulted in significantly improved weight status and incentive for overweight and obese primary-care patients. Although taking the ELEM approach grossly oversimplifies the complex nature of managing obesity, more frequent clinical follow-up may be indicated.

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TUBERCULOSIS CONTACT INVESTIGATION AT A RURAL WORKSITE

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Purpose of Study: The highest prevalence of tuberculosis (TB) occurs in foreign-born immigrants in the United States. Contact investigations at worksites with mostly immigrant workers present multiple practical problems. Recently 402 contacts were investigated at meat packing plant in rural Texas by the Texas Department of State Health Services (DSHS). Our objective was to study the approach and effectiveness of this intensive investigation.

Methods Used: We reviewed information on the source case and case files of 55 contacts managed by the Texas DSHS TB Division in Lubbock, TX. We recorded information on symptoms, BCG status, TB history, TB-ELISPOT(T-spot) tests, and X-rays.

Summary of Results: The source case was foreign-born and had cavitary TB with acid-fast positive smears. Forty-eight contacts were foreign-born; 7 contacts were US-born. The foreign-born contacts were from Sudan, Somalia, Mexico, Burma, Iraq and Haiti. Twenty-three contacts had a history of BCG vaccinations. T-spot tests were positive in 23 contacts, borderline in 5, and negative in 27. Contacts with borderline results had repeat tests; 4 were negative and 1 was positive. Twenty-seven contacts with negative T-spot tests were scheduled for repeat test in four weeks, but 17 were lost to follow-up. Fourteen contacts with positive T-spot and symptoms were referred for chest X-rays. Chest X-rays were abnormal in two patients who were started on treatment. Sputum was collected in four individuals; two were smear positive for pan-sensitive Mycobacterium tuberculosis and two were negative. Five patients with prior TB infections; four had positive T-spot tests and one had borderline T-spot. All five patients had normal X-rays and were asymptomatic. Seventeen patients were treated for latent TB.

Conclusions: Our investigation revealed an infection rate of 30.9% among all worksite contacts which is similar to 29% prevalence reported by Davidow.
in 2003 and 39% prevalence reported by CDC in 2008. The use of T-spot tests simplified the testing in immigrants with high rates of BCG vaccination. Our investigation was complicated by language barriers, varying and uncertain simplified the testing in immigrants with high rates of BCG vaccination. Our investigation was complicated by language barriers, varying and uncertain 

concentrated effort provides a model for investigating worksite contacts, especially with numerous immigrants.

**Endocrinology and Metabolism**

1:00 PM – 2:00 PM Saturday, February 11, 2012

444 TREATMENT OF CHEMOTHERAPY-INDUCED ALOPECIA IN MICE WITH A NOVEL PARATHYROID HORMONE FUSION PROTEIN: PROPHYLAXIS VS. THERAPY

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**Purpose of Study:** Alopecia is a psychologically devastating complication of chemotherapy, for which there is currently no effective therapy. Although parathyroid hormone analogs have shown promise in this disorder, PTH-CBD is a parathyroid hormone analog containing a collagen binding domain that targets drug delivery to the skin. We compared the effects of prophylactic vs. therapeutic administration of PTH-CBD in a mouse model of chemotherapy-induced alopecia.

**Methods Used:** Healthy young female mice (C57BL/6J), 3-5 weeks of age, 13-15 grams were obtained from Jackson Laboratories and housed at the animal facility at Ochsner Clinical Foundation under standard conditions. The mice were allowed to acclimatize for a 2 week period prior to the start of the experiment. C57BL/6J mice were treated with a single subcutaneous injection of PTH(1-34)-CBD (320 mcg/kg) or vehicle control, followed by 3 courses of cyclophosphamide chemotherapy (150 mg/kg/week, intraperitoneally).

**Summary of Results:** After 1 year, mice pretreated with vehicle had evident hair changes (color change and hair loss), while those pretreated with PTH-CBD had a normal appearing coat. Mice were then divided into two groups, receiving either PTH-CBD (single subcutaneous injection, 320 mcg/kg) or vehicle control. After 4 months, mice receiving PTH-CBD showed partial recovery of the hair changes, while those receiving vehicle showed no recovery. After sacrifice, histological examination revealed small, mostly catagen hair follicles in mice receiving chemotherapy alone. Mice receiving PTH/CBD prophylaxis prior to chemotherapy showed normal-appearing telogen hair follicles. Mice receiving PTH-CBD therapy after chemotherapy showed intermediate histological features, with hair follicles mostly in the anagen phase.

**Conclusions:** Overall, it appears that PTH-CBD is effective in both prophylactic and treatment of chemotherapy-induced alopecia, but pre-treatment results in a better cosmetic outcome. PTH-CBD thus shows promise as an agent to prevent this complication of chemotherapy and improve the quality of life for cancer patients.

445 FATAL PITUITARY CARCINOMA

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**Case Report:** A 64 year old woman presented with sudden onset of ophthalmoplegia. Physical exam showed a right third nerve palsy and decreased pupillary response. Laboratory data was consistent with a non-functioning pituitary adenoma: mildly elevated prolactin (36 ng/mL), normal free thyroxine (0.66 ng/dL), normal cortisol (10.1 mcg/dL), ACTH (28 pg/mL) and IGF-1 (62 ng/mL). MRI scan showed a pituitary macroadenoma (2.2 x 2.1 cm) with invasion of the right cavernous sinus. The patient underwent subtotal transphenoidal resection. Pathology showed a pituitary adenoma with negative immunohistochemistry for pituitary hormones. Postoperatively, the patient was started on hydrocortisone replacement. The next month, she returned with weakness and lethargy; exam showed a dilated and non-reactive right pupil. MRI showed a large mass (5 x 4.7 cm) involving the right cavernous sinus, sphenoid sinus, and right cranial fossa. The patient underwent a second transphenoidal surgical with subtotal resection of the diffusely infiltrative tumor with subtotal resection of the diffusely infiltrative tumor. Days after surgery, MRI scan showed multiple areas of noncontiguous dural enhancement. The pathology showed widely infiltrative cells with numerous mitotic figures, necrosis and desmoplastic tissue response. Three weeks later, the patient was readmitted with episode of visual field deficit and decline in mental status. MRI showed a 7.9 x 8.0 cm mass extending into the right orbit, sphenoid sinus, nasopharynx, posterior fossa, right tentorium cerebelli, resulting in compression of the brainstem, and obstructive hydrocephalus. The patient died a week later.

Discussion: Pituitary carcinomas represent 0.1% of pituitary tumors and are associated with severe prognosis despite surgery, radiation and chemotherapy. The diagnosis implies subarachnoid, brain, or systemic tumor spread, while histology is similar with that of pituitary adenomas. Patients are usually diagnosed after recurrence and metastatic spread (average 6.6 years) of metastatic spread (average 6 years). 66% of reported cases, 66% were positive for prolactin or ACTH. Only 31% of cases of null-cell pituitary carcinomas have been reported. Our case stands out because of its fulminating clinical course with a significant tumor growth and extensive brain metastases within 3 months despite 2 surgeries.

Conclusion: Development of a pituitary carcinoma from an adenoma is rare and predictors of such course are currently lacking.

446 BERBERINE ACTS AS A NOVEL AUTOPHAGY BLOCKER TO PROTECT HUMAN MU¨LLER CELL FROM 4-HNE INDUCED CELL DEATH

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1 OUHC, Oklahoma City, OK and 2 Harold Hamm Diabetes Center at the University of Oklahoma, Oklahoma City, OK

**Purpose of Study:** 4-Hydroxyxenon (4-HNE), a component of oxidized lipoproteins) may mediate retinal injury and promote diabetic retinopathy (DR). Berberine (BBR) has favorable effects on glucose and lipid metabolism in animal and human clinical studies, but its effects on retinal cells exposed to modified lipoproteins (as occurs in DR) are unknown. Using 4-HNE to
model effects of oxidized lipids and lipoproteins on retinal cells in DR, we investigated the potential protective effects of BBR.

Methods Used: Confluent human retinal Müller cells were exposed to 4-HNE at different concentrations (5, 10, 20, and 40 μM) for various periods (1h, 3h, 6h, 12h, and 24h) with/without BBR pretreatment for 1h at different doses (1, 5, 10, and 20 μM). Cell viability was detected by CCK-8 assay. To investigate mechanisms of the potential protective effects of BBR, cells were pretreated with BBR (5 μM) for 1h prior to 4-HNE treatments of different time points. Indices of autophagy and apoptosis were measured by western blot and immunocytochemistry (ICC).

Summary of Results: CCK-8 assay showed that 4-HNE induced cell death (n=3, p<0.001), which was partially attenuated by BBR. Results from Western blot and ICC demonstrate that 4-HNE induced Müller cell death by stimulating autophagy marker, LC3B. Additionally, 4-HNE promoted Müller cell apoptosis by decreasing PARP, BAX/BCL2 ratio and TUNEL positive cells. Pretreatment with BBR attenuated the over-expression of LC3B in Müller cells induced by 4-HNE. Such attenuation was also observed as Müller cells pretreated with 3-methyladenine (5 mM for 2hr, as positive control). However, pretreatment with BBR did not inhibit apoptotic markers induced by 4-HNE.

Conclusions: 4-HNE induced human retinal Müller cell death through both autophagy and apoptosis. BBR attenuated autophagy, but with little effect on apoptosis. BBR may act as a novel inhibitor of autophagy, therefore, has a potential to prevent Müller cell death and inhibit DR.

447 USE OF A COMPUTER-BASED INSULIN INFUSION METHOD IN MANAGEMENT OF DIABETIC KETOACIDOSIS IN A PEDIATRIC INTENSIVE CARE UNIT

Hutchins JR, Narsinghani U Medical Center of Central Georgia, Macon, GA.

Purpose of Study: The purpose of this study is to evaluate the safety and efficacy of the Glucommander® in pediatric patients admitted to the PICU in DKA.

Methods Used: A retrospective chart review was conducted on patients admitted to the PICU from January 2009-December 2009. The study included patients between ages 1-18 years with the diagnosis of DKA and/or hyperglycemia from other causes, such as type 2 diabetes, were excluded. On admission, patients were treated with the Glucommander®, a computer-based system that uses a target glucose range and weight based multiplier to direct intravenous insulin infusion. The data collected included patient demographics, such as age, race, gender and new diagnosis of diabetes. The outcome measures were assessed by time to correction of acidosis, defined as first serum bicarbonate ≥16 mmol/L, PICU length of stay, amount of time on Glucommander® and the average number of insulin units/kg/hr used. Adverse events associated with correction of DKA, which included hyperglycemia, defined as blood glucose >60 mg/dL, and neurological complications, such as cerebral edema, and other morbidities were also reviewed.

Summary of Results: Of the 60 charts reviewed, 40 were included in this study. The average age was 11.85 ± 4.31 years with 40% having a new diagnosis of type 1 diabetes. There were 70% females and 30% males with 50% Caucasian, 45% African Americans and 5% Hispanics. The mean blood glucose on admission was 401.5 mg/dL. The time to resolution of acidosis was 13.25 hours and the average PICU length of stay was 25.6 hours. The average length of time on Glucommander® was 16.64 hours with the average units of insulin used being 0.05 units/kg/hour. There were no adverse events, like hypoglycemia, neurological complications or mortality, associated with the use of the Glucommander®. There were no deviations from protocol once patient was placed on the Glucommander®.

Conclusions: This study demonstrated that the Glucommander® is a safe and effective method to treat pediatric patients with DKA. The use of the Glucommander® in the pediatric population would achieve the same advantages as seen in the adult population, such as, portability, user friendliness, provider satisfaction and being less error prone.

448 OXIDATIVE STRESS IN BETA CELLS FROM DIABETES PRONE NOD MICE

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Purpose of Study: Our previous studies in heart tissue and leukocytes have shown that NOD mice (a model of DM1) have defects in mitochondrial protein expression, and produce increased amounts of of radical oxygen species (ROS), leading to increased lipid peroxidation. In this study we investigated if pancreatic beta cells have similar defects, which could leave them more vulnerable to damage from autoimmunity and cytokines leading to DM1.

Methods Used: Islets were isolated from NOD mice and a control strain (C57BL/6) at 4 weeks of age. We measured levels of ROS, intraacellular free calcium i-Ca (a pro-oxidant) and zinc i-Zn (an anti-oxidant) in islet beta cells by flow cytometry. Islets were cultured overnight and damage from ROS by lipid peroxidation was measured as release of 8-isoprostane into the culture medium. Beta cell function was measured by determining insulin release from islets cultured in low and high glucose medium using commercially available radio immunoassay kits.

Summary of Results: Compared to C57BL/6, the beta cells from NOD mice had a 1.5 fold higher level of ROS. Levels of i-Ca were not significantly changed (699 in C57BL/6 vs. 615 in NOD). Levels of i-Zn were significantly lower in beta cells from NOD mice compared to C57BL/6 (365 vs. 813, p<0.05). However oxidative damage to the islets was not sufficient to produce any significant increase in release of 8-isoprostane (18.5 in NOD vs. 16.2 in C57BL/6). Release of insulin from the islets was not significantly different between the two strains.

Conclusions: Our experiments demonstrate a higher level of ROS in beta cells from diabetes prone NOD mice compared to control mice. Furthermore, the balance between pro- and anti-oxidant dalianent cations, Ca and Zn, was shifted in favor of the pro-oxidant state. Although these two cations also play a role in storage and glucose induced release of insulin, we did not observe any significant functional differences between the islets from the two strains. Increased levels of ROS and reduced antioxidant (i-Zn) levels in NOD beta cells may make them more vulnerable to damage by cytokines, inflammation and autoreactive lymphocytes. Furthermore, it may increase the likelihood that NOD beta cells display ROS damaged “altered self” antigens that could become targets of the immune system, producing DM1.

449 ALDOSTERONISM IN RATS INDUCES OXIDATIVE STRESS AND IMPAIRED PANCREATIC BETA CELL FUNCTION

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Purpose of Study: Treatment of rats with aldosterone and salt (ALDOST) has been shown to induce calcium loading and oxidative stress/damage in lymphocytes, skeletal muscle and cardiac myocytes. The aim of this study was to find if ALDOST also causes damage to pancreatic beta cells, and if so, if it is associated with calcium loading and oxidative stress.

Methods Used: Uninephrectomized rats were treated with 1% NaCl fortified drinking water and aldosterone by an implanted mini-pump for 3-4 weeks. Intracellular calcium and reactive oxygen species (ROS) were measured through flow cytometry. Damage from ROS was measured as increased release of 8-isoprostane from islets cultured overnight. Beta cell function was measured by determining insulin release from islets cultured in low and high glucose media. Pancreatic tissue from treated and control rats were histologically examined for evidence of inflammation and fibrosis.

Summary of Results: ALDOST did not have any significant effect on calcium content of islet cells. However the presence of ROS in ALDOST islet cells was significantly increased in both low and high glucose media (1.6 and 2.1 fold, respectively). The increased oxidative stress in islets from ALDOST rats was also reflected by higher levels of 8-isoprostane in media from ALDOST cultured islets (30 pg/ml) compared to controls (12 pg/ml) p<0.05. Both in low and high glucose media, the release of insulin was significantly (p<0.05) reduced by over 2-fold in islets from ALDOST rats compared to controls. Histologically, there was no observable inflammation or fibrosis in pancreatic tissue or islets.

Conclusions: These experiments suggest that just as in cardiac myocytes, skeletal muscle and PBMCs, ALDOST is associated with oxidative stress also in beta cells. This increase in ROS and associated lipid peroxidation was observed whether islets were cultured in either low or high glucose containing media. Similarly, functional impairment of islets was observed both in low and high glucose containing media. These data suggest that aldosteronism, such as seen in hypertension, congestive heart failure and the cardiometabolic...
450 INHIBITION OF ENDOPLASMIC RETICULUM STRESS BY VITAMIN D IN ENDOTHELIAL CELLS

Purpose of Study: Damage to endothelial cells is regarded to play an important role in atherosclerosis. Pro-inflammatory cytokines, fatty acids, and hyperglycemia have been shown to disrupt endothelial cell barrier function as well as enhance the expression of chemotactic molecules by inducing cellular stress.

To determine whether or not vitamin D inhibits endoplasmic reticulum (ER) stress, human umbilical vein endothelial cells were treated with tunicamycin with or without vitamin D and several vitamin D-related analogs.

Methods Used: Endoplasmic reticulum stress was assessed using the endoplasmic reticulum stress-sensitive secreted alkaline phosphatase assay.

Summary of Results: When added together, vitamin D prevented ER stress. However, the effect was much stronger when cells were pre-treated with vitamin D for 24-hours. Endoplasmic reticulum stress was not inhibited by 25-OH vitamin D3 or the non-calcemic vitamin D analog EB1089. However both ZK19874 and the vitamin D metabolite 24, 25-dihydroxyvitamin D3 were as effective as vitamin D in preventing ER stress. Similar effects were observed when ER stress was induced by hyperglycemia.

Conclusions: These results suggest that vitamin D has a protective effect on vascular endothelial cells.

451 CORONARY ENDOTHELIAL DYSFUNCTION AND CARDIOVASCULAR PERFORMANCE DURING POLYCYSTIC OVARIAN SYNDROME
Chang AY, Thompson S, Auchus R, Levine BD UT Southwestern Medical Center, Dallas, TX.

Purpose of Study: Polycystic Ovarian Syndrome (PCOS) is a condition of androgen excess associated with obesity, impaired insulin sensitivity (IS), and the metabolic syndrome (MetS). Although PCOS has been associated with peripheral endothelial dysfunction at rest and lower peak oxygen uptake (VO2max) compared to healthy controls, we sought to determine if women with PCOS have greater impairment in coronary endothelial function, lower VO2max, stroke volume (SV) or cardiac output (CO) during stress than women with MetS.

Methods Used: We recruited obese women with PCOS (n=15) or MetS (n=18) matched for age and body mass index. Coronary flow was measured with 3T MRI (velocity-encoded images of the right coronary artery) during a 2 min cold pressor test (CPT). VO2max, SV and CO were obtained during a treadmill exercise protocol. SV and CO were indexed by body surface area. IS was calculated from a frequently sampled intravenous glucose tolerance test.

Summary of Results: Compared to MetS, PCOS was associated with lower IS (PCOS, 1.5±0.7; MetS 3.2±1.4 (mU/L)-1/min-1, p=0.01). During CPT, PCOS was associated with impaired coronary flow during the 2nd min (Figure 1, p=0.03). During exercise, there was no significant difference in VO2max (PCOS:23.4; MetS:21.3 L/kg/min, p=0.4), cardiac index or stroke index. Stroke index was significantly associated with IS (r=0.6, p=0.01) but not testosterone.

Conclusions: Women with PCOS have greater impairment in coronary endothelial function and IS than obese women with MetS. We found no significant differences in VO2max, SV or CO during exercise, but rather an association of stroke index with IS.

452 METFORMIN AND PROTON PUMP INHIBITORS EFFECT ON VITAMIN B12 LEVELS
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Purpose of Study: Vitamin B12 deficiency can present as peripheral neuropathy that is similar to that commonly seen in diabetic patients. Metformin (MET) is a drug widely used to treat Diabetes Mellitus (DM2), and there are conflicting studies on MET’s impact and the mechanism by which it may effect B12 levels. Calcium supplementation has been shown to reduce the incidence of MET related B12 deficiency, suggesting a calcium dependent mechanism. Proton pump inhibitors (PPI) decrease gastric acid, an important part of B12 dissociation from protein binding, and have been shown to be associated with decreased calcium absorption. We conducted this study to ascertain the effect of MET and PPI therapy separately and in combination on Vitamin B12 levels.

Methods Used: Using the computerized patient record system at the VAMC in Memphis, TN, a retrospective chart review was done to identify 4 groups of patients, all of which had DM2: A) control patients with no MET or PPI therapy; B) patients who received MET therapy only; C) patients who received PPI therapy only; and D) patients who received both MET and PPI therapy simultaneously. We defined B12 values <300 pg/ml as abnormal or low. Using 614 patients, we calculated the prevalence of B12 deficiency in all 4 populations to determine the link between these specific drug therapies and Vitamin B12 deficiency.

Summary of Results: Of the 614 patients, 216 were in group A; 146 group B; 129 group C; and 123 group D. Percent positive for B12 deficiency in each group were: A)22.2%; B)21.9%; C)25.8%; and D)34.15%. Using chi-square test, p-values were significant (p<0.05) only for group D (MET + PPI), which showed a decrease in B12 level compared to control. No other comparisons to control were significant.

Conclusions: While there are conflicting reports about the association of PPI, MET, and B12 deficiency, the two together may cause a synergistic effect that has been underappreciated. In this study, PPI and MET separately did not cause significant decreases in B12 levels, but the combination did cause a significant decrease in B12 levels. Although further study is needed, this observation should be recognized especially for its potential clinical significance.

453 THE ASSOCIATION OF EPICARDIAL ADIPOSE TISSUE WITH CARDIOVASCULAR PERFORMANCE DURING EXERCISE IN WOMEN WITH THE METABOLIC SYNDROME
Fernandez NE, Lakoski S, Thompson S, Matulevicius S, Chang A UT Southwestern Medical Center, Dallas, TX.

Purpose of Study: Epicardial adipose tissue (EAT) has been proposed to be a potentially important storage depot for free fatty acids to protect the heart and provide an easily accessible energy source. Previous studies have shown that EAT volume indexed to body size is significantly reduced in patients with heart failure and that lower EAT volume correlates with lower left ventricular ejection fraction. Other studies have found an association of EAT with insulin resistance. We sought to determine if EAT is associated with measurements of cardiovascular performance during a stress test in overweight and obese patients independent of body size and insulin sensitivity.

Methods Used: We recruited 27 premenopausal, overweight or obese women with the metabolic syndrome. Cardiac magnetic resonance imaging (MRI) was performed at 3 Tesla (Philips, Best, Netherlands). EAT thickness was determined from a two chamber breath-hold, ECG-gated cine image using MASS software (Medis, Leiden, The Netherlands) from the left anterior ventricular wall in end diastole. Insulin sensitivity was calculated from...
the frequently sampled intravenous glucose tolerance test. Measurements of VO2, cardiac output and stroke volume were obtained during an exercise treadmill test, and percent body fat determined from an underwater weight. Univariate analyses were performed using the Spearman Rank Order test of correlation. Adjustment for insulin sensitivity was performed with general linear models of log-transformed outcomes.

Summary of Results: The median age for the group was 38.5 years [interquartile range IQR 34-45] and median body mass index (BMI) was 34.7 [IQR 29.4, 35.8] kg/m2. In univariate analyses, EAT significantly correlated with BMI (p = 0.04), waist circumference (p=0.03), and hip circumference (p=0.02), but not percent body fat (p=0.13). EAT only correlated with VO2 during steady state exercise (0.495, p=0.03), but not VO2 at rest or VO2max. In models adjusting for insulin sensitivity, EAT remained significantly associated with steady state exercise VO2 (p=0.01).

Conclusions: In women with the metabolic syndrome, epicardial adipose tissue was significantly and positively associated with VO2 during exercise adjusted for weight and independent of insulin sensitivity.

Gastroenterology II
1:00 PM Saturday, February 11, 2012

454 DISSOCIATION OF INDUCTION OF APOLIPOPROTEIN A-IV AND MICROSMAL TRIGLYCERIDE TRANSFER PROTEIN BY ENTRAL FEEDING IN PRETERM PIGLET SMALL INTESTINE

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Purpose of Study: Microsomal triglyceride transfer protein (MTP) and apolipoprotein (apo) A-IV play crucial roles in intestinal lipid absorption, especially in the neonate. MTP mediates initial chylomicron assembly and subsequent lipidation in the ER, and apo-A-IV facilitates packaging of additional lipid into the chylomicron core. Both are highly inducible by dietary lipid in the term newborn swine small intestine, but have not been studied in the preterm piglet, a model for the human premature infant. We hypothesized that enteral feeding induces expression of both MTP and apo-A-IV in preterm piglets as an adaptive mechanism.

Methods Used: Piglets were delivered at 92% of gestation by c-section and nourished by either full enteral formula feeding (EN group) or total parenteral nutrition (PN group) for one week. At the end of 7 days the liver and small intestine showed no significant difference.

Summary of Results: Intrauterine range IQR 34-45) and median body mass index (BMI) was 34.7 [IQR 29.4, 35.8] kg/m2. In univariate analyses, EAT significantly correlated with BMI (p = 0.04), waist circumference (p=0.03), and hip circumference (p=0.02), but not percent body fat (p=0.13). EAT only correlated with VO2 during steady state exercise (0.495, p=0.03), but not VO2 at rest or VO2max. In models adjusting for insulin sensitivity, EAT remained significantly associated with steady state exercise VO2 (p=0.01).

Conclusions: In women with the metabolic syndrome, epicardial adipose tissue was significantly and positively associated with VO2 during exercise adjusted for weight and independent of insulin sensitivity.

Gastroenterology II
1:00 PM Saturday, February 11, 2012

454 DISSOCIATION OF INDUCTION OF APOLIPOPROTEIN A-IV AND MICROSMAL TRIGLYCERIDE TRANSFER PROTEIN BY ENTRAL FEEDING IN PRETERM PIGLET SMALL INTESTINE

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Purpose of Study: Microsomal triglyceride transfer protein (MTP) and apolipoprotein (apo) A-IV play crucial roles in intestinal lipid absorption, especially in the neonate. MTP mediates initial chylomicron assembly and subsequent lipidation in the ER, and apo-A-IV facilitates packaging of additional lipid into the chylomicron core. Both are highly inducible by dietary lipid in the term newborn swine small intestine, but have not been studied in the preterm piglet, a model for the human premature infant. We hypothesized that enteral feeding induces expression of both MTP and apo-A-IV in preterm piglets as an adaptive mechanism.

Methods Used: Piglets were delivered at 92% of gestation by c-section and nourished by either full enteral formula feeding (EN group) or total parenteral nutrition (PN group) for one week. At the end of 7 days the liver and small intestinal segments (proximal, mid- and distal) were harvested for measurement of MTP large subunit and apo A-IV mRNA by quantitative RT-PCR.

Summary of Results: Average piglet weights at the beginning (EN 1060 g, PN 1011 g) and end (EN 1343 g and PN 1335 g) of the experiment were not significantly different between the two groups. Hepatic and intestinal (proximal, mid-, and distal) MTP large subunit mRNA and lipid transfer activity were not significantly different between the two groups. There were significant differences in apo A-IV mRNA levels in proximal (2.8-fold higher, p=0.00517) and mid-, and distal intestine showed no significant difference.

Conclusions: The preterm small intestine is capable of adaptive regulation of apo A-IV by enteral feeding. However, MTP, which is induced by lipid absorption at term, is not inducible in the preterm piglet small intestine. The dissociation of MTP and apo A-IV inducibility by enteral feeding in preterm small intestine may contribute to fat malabsorption observed in premature infants.

455 ANXIETY, FAMILY PLANNING AND QUALITY OF LIFE IN INFAMMATORY BOWEL DISEASE

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Purpose of Study: Inflammatory bowel disease (IBD) affects patients in their prime reproductive years. Anxiety surrounding family planning issues can negatively affect quality of life (QOL). We aimed to measure levels of anxiety over specific reproductive health concerns in patients with IBD, and their spouses/partners, to identify factors contributing to anxiety and lowered QOL. The long term goal is to develop targeted educational interventions as a complimentary treatment for IBD.

Methods Used: Eligible patients were women 19-45 yo, men ≥19 yo, with Crohn’s (CD) or ulcerative colitis (UC), and seen at UAB within the past 3 yrs. Questionnaires collecting data on demography, IBD status/history, reproductive health concerns (heritability, drug toxicity, teratogenicity, health burden, and infertility) as well as QOL (the Inflammatory Bowel Disease Questionnaire, a validated QOL instrument) were mailed to 600 patients. Questionnaires collecting demographic data and the same reproductive health issues were included for spouse/partners.

Summary of Results: 95 of 115 respondents were included in the analysis; 52% were women, 87% were Caucasian, 61% had CD and 37% had UC. The key response was presence of anxiety; measured by answer “a great deal or a little (“Anxiety”), and none at all (No Anxiety).” Significance association with other parameters (such as education level or past surgery) was not seen. 90% patients with the highest anxiety were concerned with heritability of disease and IBD drug teratogenicity. There was significant discordance between high levels of anxiety of female patients (41%) and their male partners (15%).

Conclusions: Female gender and low QOL are significantly associated with anxiety over family planning issues in IBD. Discordant level of anxiety between patients and spouse/partners may contribute to lower QOL. The overwhelming concern about heritability and teratogenicity is disproportionate to current data on their actual incidence. Effective education about family planning risks may improve anxiety and QOL in IBD.

Association of IBD Demographic and QOL Data with Reproductive Health Concerns

<table>
<thead>
<tr>
<th>Gender</th>
<th>Anxiety (%)</th>
<th>No anxiety (%)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>19(35.6%)</td>
<td>26(50.9%)</td>
<td>0.014</td>
</tr>
<tr>
<td>Women</td>
<td>33(60.3%)</td>
<td>16(30.2%)</td>
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IBDQ score ≥170 (remission) 17(34.3%) 11(22.5%) <0.001

456 INTERFERON GAMMA-DEPENDENT REGULATION OF SIALYL LEWIS A ON CD44V6: IMPLICATIONS FOR NEUTROPHIL TRANSEPITHELIAL MIGRATION

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Purpose of Study: The histological hallmark of active inflammatory bowel disease (IBD) is neutrophil infiltration into the intestinal lamina propria and crypts, and interferon-gamma (IFN-γ) is a key mediator of IBD-associated inflammatory changes. In previous work, we described a novel monoclonal antibody (GM35), which binds to an IFN-γ-dependent glycan. This glycan is preferentially expressed on apically localized CD44v6 on IECs of IFN-γ-stimulated intestinal epithelial cells (IECs). Neutrophil transepithelial migration (TEM) is associated with cleavage of CD44v6 from the apical surface of IECs, and GM35 blocks both TEM and CD44v6 cleavage. Further work identifies O-linked sialyl Lewis A (sLeA) as a critical component of the GM35 epitope. Here we examine candidate mechanisms for the IFN-γ-dependent regulation of expression of the GM35 glycoepitope.

Methods Used: The effect of IFN-γ on the gene expression of component exons of CD44 variant isoforms was determined in T84 and HT29 IECs by qRT-PCR. Subsequently, IFN-γ-dependent changes in mRNA of candidate sialyltransferases (STs) and fucosyltransferases (FTs) implicated in the synthesis of sLeA, were analyzed by glycochip gene array and real-time PCR. The effect of IFN-γ on levels of disialyl Lewis A (dsLeA), an alternative glycan product of the early stages of sLeA synthesis, was also investigated.

Summary of Results: No IFN-γ-dependent changes were detected in the expression of CD44v6 or in the candidate enzymes for synthesis of sLeA.

Conclusions: IFN-γ-dependent expression of the GM35 epitope on CD44v6 does not derive from changes in CD44v6 protein expression, suppression of alternative glycosylation pathways, or in regulation of the gene expression of key enzymes implicated in the synthesis of sLeA. A precedent exists for IFN-γ-dependent regulation of cellular localization of glycosylating enzymes leading to alterations in the sequence of glycosylation and synthesis of alternative end products. Ongoing studies examine the contributions of IFN-γ-dependent changes in the cellular localization of STs and FTs to relative expression of sLeA on CD44v6.
457 CAN KENNEDY DISEASE BE A RARE CAUSE FOR ACHALASIA?
Sadi M, Sarosiek I, McCallum RW. TTUHSC, El Paso, TX.

Case Report: Kennedy Disease (KD)(Spinal Bulbar Muscular Atrophy) is an X linked recessive inherited disorder characterized by degeneration of both motor and sensory neurons. It involves loss of motor neurons supplying the limb and bulbar musculature. Oropharyngeal muscular dystrophy as a cause for dysphagia has also been reported in KD patients. The loss of larger dorsal root ganglion cells may establish a sensory neuron component of KD. Although, KD typically affects men, women can be symptomatic and have one allele containing an expanded number of CAG repeats with the normal allele showing 28 repeats (upper normal range).

We report a case of 49 year old F presenting to the GI clinic with 8 years history of slowly progressing difficulty in swallowing solids as well as liquids. Pain was located in the anterior aspect of the neck in the cervical 6,7 areas associated with eating and drinking liquids. Patient also noticed the changes in her voice since age of 21. On examination right sided tongue deviation as well as scapping of the tongue borders were detected, but no tremor, weakness, fasciculation or rigidity were noticed. Patient reported that her voice started with CT scan. Angiography was undertaken with the oulisc, her early 40s, is starting to have similar symptoms. The patient was geneti- cally tested for KD, and her report showed a carrier status to this condition.

Patient was worked up with an Upper GI Series showing esophageal dilation with classic ‘bird’s beak’ narrowing at the GE junction indicative of achalasia. An esophageal manometry showed that the upper esophageal sphincter was aperistaltic, and the lower esophageal sphincter did not relax. Achalasia symptoms had resolved.

459 AN UNUSUAL CAUSE OF GASTRIC OUTLET OBSTRUCTION IN A CHILD
Vashishtha N, Ponnambalam A. University of South Alabama, Mobile, AL.

Case Report: Eosinophilic Gastroenteritis is characterized by eosinophilic infiltration of the bowel wall to a variable degree and symptoms associated with the gastrointestinal tract. Although eosinophilic gastroenteritis can involve any part of the gastrointestinal tract, the stomach and duodenum are the most common sites of involvement. Our patient is a 12 year old boy who presented with abdominal pain for 3 years with intermittent vomiting and regurgitation. He was on omeprazole for one year. Blood work was normal except for an elevated eosinophils count of 12.7%. Immunocap showed allergy to wheat and milk. Endoscopic biopsy showed eosinophilic esophagitis. He was started on fluticasone, lansoprazole and hypoallergenic diet. At 3 months follow up his symptoms improved. However, on the subsequent visit 3 months later, he complained of worsening epigastric pain, intermittent vomiting and regurgitation of undigested food. Parents heard a ‘spasching sound in his stomach’ if he jumped after eating. On abdominal examination, succussion splash was heard. Gastric outlet obstruction was suspected. Upper GI series demonstrated an ulcer in the duodenal bulb. CT scan of the abdo- men showed structure at the junction of the duodenal bulb and second portion of the duodenum with significant dilation of stomach. Endoscopic findings included normal stomach mucosa, ulceration in duodenal bulb, with narrowed second portion of duodenum, which was not able to pass beyond that point. Biopsies from duodenum reported >100 eosinophils/hpf suggestive of Eosinophilic Gastroenteritis. Gastrin levels were normal. He was started on prednisone, omeprazole instead of lansoprazole and a protein hydrolysate formula. One month later his symptoms resolved. On repeat endoscopy, the duodenal narrowing improved and the endoscope was able to be passed to the second part of duodenum. Eosinophilic Gastroenteritis is an unusual cause for gastric outlet obstruction. The etiology is unknown and the incidence is increasing. It can be treated with steroids and hypoallergenic diet. Based on clinical sus- picion, early diagnosis avoids unnecessary surgery. Other causes of duodenal obstruction needs to be excluded like annular pancreas, Crohn’s disease, malignancies and superior mesenteric artery syndrome.

458 BALLOON-OCCCLUSION RETROGRADE TRANSVENOUS OBLITERATION IN THE TREATMENT OF BLEEDING SMALL BOWEL VARICES
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Case Report: A 29 year old female with autoimmune hepatitis and cirrhosis complicated esophageal varices and portosystemic encephalopathy presented to the ER with acute abdominal pain and hematochezia. Initial examination revealed a blood pressure of 73/33 and pulse of 94. Bright-red blood was present on rectal examination. Hematoctrit was 19.8%, platelets of 55,000 and an INR of 2.4. Aminotransferases and pancreatic enzymes were normal. CT revealed a cirsorcotic liver with splenomegaly, ascites and small bowel varices. Colonoscopy and EGD were performed without an identifiable source. A radionuclide blood scan showed no active bleeding, but persistent activity in the lower abdomen extending into the bladder and rectum correlating with varices seen on CT scan. Angiography was unhelpful. Heavily sicker in his early 40s, he is starting to have similar symptoms. The patient was geneti- cally tested for KD, and her report showed a carrier status to this condition.

Kennedy Disease as a rare condition involving the skeletal muscles group, and predominantly affecting males can also be present with mild symptoms in females carriers. Our case was unique with the development of achalasia, and poses the question as to whether achalasia can be considered as a part of the spectrum of KD.

460 CHIEF COMPLAINT: CONSTIPATION - DIAGNOSIS, TREATMENT, AND COMPLICATIONS
Luken EC, Monroe KW, Nichols MH. University of Alabama at Birmingham, Hoover, AL.

Purpose of Study: A case of appendicitis diagnosed as constipation in the initial Pediatric Emergency Department (E.D.) visit made us further evaluate our diagnosis, treatment, and complications of constipation.

Methods Used: We retrospectively reviewed one year of charts (2010) from our Pediatric Emergency Department and After Hours Clinic with a discharge diagnosis of “constipation”. Our study was approved by our Institutional Review Board.

Summary of Results: 621 charts were reviewed. 361 patients (58%) were female. Average age was 4.7 years with a range of 4 days to 19 years old. 94 patients were 1 year old, 31 were under 1 year of age. 111 patients (18%) presented with a chief complaint of constipation, 487 with abdominal pain or constipation, 80 with vomiting as a complaint (20 with vomiting alone), and 28 with blood in stools. On PE, 53 patients (8.5%) had abdominal tenderness. X-rays were obtained in 446 patients (72%) with 412 positive for moderate/large amount of stool. Two x-rays were read as normal and required repeat visits. ED Treatment included: 218 enemas (m&m, fleets), 71 Milk of Magnesia, 29 glyc- erin suppositories. Positive results occurred in 186 patients, results not docu- mented in 47, and 13 with negative results. 389 (63%) were discharged home on Miralax. 222 (36%) had discharge instructions regarding their diet. Within the following two weeks after their ED visit, 22 (3.5%) had repeat ED visits for constipation. Overall, 20 (3%) of patients were admitted, 4 on their repeat visit.

Conclusions: The majority of patients presenting to the ED with constipation are being x-rayed. Few patients have an acute abdominal exam. Treatment in ED having returned to her baseline state of health without further episodes of bleeding. BRTO is a potential treatment option for the management of ectopic varices, not amenable to the endoscopic therapy, particularly in those with anat- omy preclusive of TIPS. Two months after BRTO, the patient has remained free from further episodes of GI bleeding.
TACE ASSOCIATED GI ULCERATION AND PANCREATITIS

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Case Report: Transcatheter arterial chemoembolization (TACE) is an established modality for treatment of unresectable hepatocellular carcinoma (HCC). Common complications after TACE are the post-embolization syndrome (fever, abdominal pain, nausea, vomiting) and transient impairment of liver and kidney functions. Rarely, ischemic damage involving extra-hepatic organs may occur. This may take the form of gastrointestinal tract ulceration, acute cholecystitis, and acute pancreatitis. We present a very rare case of acute pancreatitis and ischemic gastric ulceration developing after TACE in a patient with HCC.

A 69-year-old man with HCC and Cirrhosis secondary to Chronic Hepatitis C, was admitted to the hospital for severe abdominal pain, a few hours after TACE of the Left Hepatic Artery. He had previously undergone an uneventful TACE of the Right Hepatic Artery a few months prior. After admission to the hospital, he was noted to have melena and acute blood loss anemia, along with pre-renal azotemia. CT scan of the abdomen and pelvis revealed changes consistent with acute pancreatitis and duodenitis. Elevation of serum lipase corroborated the CT findings. An upper GI endoscopy performed 2 days later revealed multiple gastric and duodenal ulcers of ischemic etiology (See Figures and Video). Patient was managed conservatively and was discharged home in a few days.

Discussion: To our knowledge, this is the first case of a patient developing two ischemic complications secondary to TACE. Selective catheterization of the tumor vessels is the established standard in TACE. Ischemia is important in the development of acute pancreatitis and GI tract ulcers. The proposed mechanism of these complications is inadvertent embolization through collateral vessels or regurgitation of chemotherapeutic agents to the arteries of other organs. To prevent these complications, the catheter tip should be placed as close to the distal branches of hepatic artery as possible, although a highly selective procedure may not be possible in all patients. Treatment of GI tract ulcers and acute pancreatitis in this setting is not different from what it would have been for other etiologies.

PLATELET FUNCTION ASSAYS IN THE MANAGEMENT OF UPPER GASTROINTESTINAL BLEEDING

Jones C, Doctolero S, Alalawi R, Nugent K Texas Tech University Health Sciences Center, Lubbock, TX.

Purpose of Study: Antplatelet medications increase the risk of bleeding in some surgical procedures. Some GI bleeds have no obvious etiology, and platelet function analysis might identify unsuspected platelet disorders in these patients.

Methods Used: We prospectively studied platelet function using the PFA-100 test in patients with GI bleeding admitted to the medical intensive care unit from July 2010 to August 2011. Patients on warfarin or with a diagnosed bleeding disorder were excluded.

Summary of Results: 41 patients (30 men) participated in the study. The mean age was 55 (range 25-74 years). Most patients (31/41) presented with blood in their stools as at least one of their presenting symptoms. Twenty-seven had hematemesis, 15 had abdominal pain, 15 had anemia, and 20 had other symptoms. Fourteen of the 41 patients were on aspirin, 4 on NSAIDs, and 5 on clopidogrel or other antplatelet drugs. The average hemoglobin was 9.2 g/dl (range 5.1-16.1 g/dl). The average platelet count was 170 kU/L (range 41-496 kU/L). The average INR was 1.37 (range 1.01-2.08). Analysis of platelet function was performed in 14/41 patients. Nine tests yielded a result which ranged from 98 sec to >300sec with an average time of 107.3 sec (normal range 92-193). EGD was performed in 39 patients; gastritis was present in 14 patients, gastric ulcer in 10, esophageal varices in 11, duodenal ulcer in 6, esophagitis in 3, gastric varices in 8, and esophageal tear in 2. During initial treatment patients received on average 2.86 liters of IV fluids, 2.09 units of packed red blood cells, 0.6 units of fresh frozen plasma, and 0.02 units of platelets. Most patients (34/41) received a continuous infusion of proton pump inhibitor for the first 24 hours. Octreotide infusion was used in 22 patients during the first 24 hours. All patients survived the ICU admission; one required surgery.

Conclusions: These patients did well with conventional care for GI bleeds. Platelet function analysis was not possible in most patients using a commercially available assay because the test requires a hematocrit>35% and a platelet count>150,000kU/L for accuracy. Information on platelet function would probably not change the outcomes in these acute bleeds but might be useful in stable patients with recurrent GI bleeds.

ASYMPTOMATIC MUCINOUS ADENOCARCINOMA DETECTED BY SCREENING COLONOSCOPY

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Case Report: Primary mucinous adenocarcinoma of the appendix is a rare neoplasm that mostly presents with acute appendicitis, palpable mass with or without ascites, or an incidental finding from an unrelated investigation.

This is a 58-year-old non-smoking woman referred for her first colorectal cancer screening with no other complaints or family history of cancer. Colonoscopy revealed only a partially obstructing submucosal mass at the appendiceal orifice, which was then biopsied. Pathology report showed inconclusive findings; computed tomography of the abdomen revealed a 4.5 cm x 3.2 cm mass-like structure effacing the cecal tip. Diagnostic laparoscopy demonstrated a multiculculated mucinous appearing mass at the base of the cecum. Cecectomy was then performed, and the frozen section was suspicious for mucinous adenocarcinoma. An uneventful laparoscopic right half hemicolectomy was performed with a complete diagnostic survey throughout the abdomen showing no evidence of ascites, gross pseudomyxoma peritonei, or tumor implantation in the omentum, peritoneum, intestines, and pelvic cavity. The final pathology confirmed Stage IIb (T3N0M0) mucinous adenocarcinoma of low malignant potential of the vermiform appendix. Transvagal ultrasonography after surgery failed to demonstrate any pelvic lesion. The patient recovered well from the surgery.

This case had a mucinous adenocarcinoma of the appendix detected after a suspicious submucosal mass found during screening colonoscopy in an asymptomatic healthy individual. Even for an experienced endoscopist, a submucosal mass in the ileocecal area is technically challenging to properly manage and obtain tissue for diagnosis due to its shape and contour around the area. Endoscopic ultrasound could potentially be of benefit in this particular lesion to establish the diagnosis and management strategy by simultaneously identifying the disease extension.

Mucinous adenocarcinoma of the appendix remains an uncommon GI malignancy rarely found during screening colonoscopy. Pre- and peri-operative evaluation may suggest the presence of this unique tumor which, in most cases, requires further operative management beyond simple appendectomy.

NAUSEA, VOMITING, AND DIARRHEA IN A PATIENT WITH HEPATITIS C AND ACQUIRED IMMUNE DEFICIENCY SYNDROME

Mahbry C, Hutchings JJ, Sanders CV LSU-Health Sciences Center, New Orleans, LA.

Case Report: A 42-year-old male with a past medical history of HIV/AIDS and hepatitis C presented to the Emergency Department complaining of one week of persistent nausea, vomiting, and diarrhea. His admit labs were as follows: hemoglobin of 11.8, hematocrit of 35, total white blood cell count of 3.9, albumin of 1.6, total bilirubin of 2.3, aspartate aminotransferase of 141, alkaline phosphatase of 146, and alanine aminotransferase of 31.Computed tomography (CT) images of the abdomen and pelvis with contrast were obtained and revealed diffuse, severe gastric-wall thickening, consistent with edema. An esophagastroduodenoscopy was then performed and a diagnosis of portal hypertensive gastropathy was made.

Discussion: Portal hypertensive gastropathy (PHG) is a known complication of cirrhotic and non-cirrhotic portal hypertension. The mosaic-like pattern with intermittent red spots seen on endoscopy was originally thought to be inflammatory in origin. It is now known that the disease stems from vascular ectasia and not erosive inflammation, which explains why anemia is a common and life-threatening presenting symptom. Another term for PHG is...
A cross-sectional descriptive study was conducted in a

**Purpose of Study:**

LOUISIANA: A CROSS-SECTIONAL STUDY

FACTORS IN A NURSING HOME POPULATION OF

FRAILTY SYNDROME AND ITS ASSOCIATED RISK

SUMMARY OF RESULTS:

METHODS USED:

Purpose of Study: Healthcare employees are often deployed at the bedside for continuous observation of patients with risk of falls or elopement. Continuous observation is costly, removes staff from other clinical activities, and does not entirely prevent adverse outcomes. We sought to determine whether applying a standardized nurse-driven protocol for use of patient safety assistants (PSAs) would better utilize resources without compromising patient safety as measured by rates of falls, injuries and elopement.

Methods Used: We determined the baseline utilization patterns of PSAs at University Hospital in San Antonio using staffing data from the nursing service, and baseline falls and elopement data from hospital incident reports. Based on a literature review of best practices, we developed a process algorithm to guide appropriate PSA utilization. An appropriate safety plan was determined based on the patient's risk for injury. The tool was implemented on a single general medicine ward July 5, 2011. Data was measured for 60 days with control charts on PSA utilization pre and post intervention, as well as on rates of falls and elopements.

Summary of Results: The total hours of PSA utilization decreased by 69% (average of 38.32 hours per month from January 1 through June 30, 2011 decreased to 11.88 hours per month by the end of August). The average number of PSAs used decreased by 60%. The average number of patients requiring a PSA per shift decreased from 5 to 2. The total amount spent on overtime for PSA staffing for the hospital decreased by 41% (from an average of 628 hours biweekly over 9 pay periods to an average of 371 hours biweekly over 4 pay periods). Overall, this project decreased costs by $49,003 with projected annual savings of $576,000. There was an initial increase in falls in July (13) but during August, the rate returned to pre-pilot baseline of 6 falls, none with injury. Elopement data was insufficient to show a trend (1 in July, 2 in August) but was not above the baseline of 1-3 elopements per month. Conclusions: Implementing an algorithm for appropriate utilization of patient safety assistants has led to improved use of hospital employee resources with a substantial cost savings without a trend of increase in falls or elopements.

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FRAILTY SYNDROME AND ITS ASSOCIATED RISK FACTORS IN A NURSING HOME POPULATION OF LOUISIANA: A CROSS-SECTIONAL STUDY

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Purpose of Study: To assess factors associated with frailty status in nursing home patients

Methods Used: A cross-sectional descriptive study was conducted in a university affiliated-nursing home population. 103 charts were reviewed. The study was approved by the LSU/HSC-NO IRB. The information retrieved was de-identified and stored electronically. Chi square statistics and Fisher’s exact test were used to compare proportions and group means. Proxies of frailty status were assessed by measurement of deficits in Activities of Daily Living (ADL) falls, comorbidities, and hospitalizations in the previous 6 months.

Summary of Results: 66% of the population was African-American and 34% Caucasian. 58% were ≤65 years of age, 14% were 66-75 years of age and 28% >75 years of age. The most frequent co-morbidities were hypertension (75%), GERD (40%), obesity (39%), and dyslipidemia (35%). Almost 60% of patients were totally dependent (TD); 40% independent (I). In relation to hospitalizations the TD group had a higher hospitalization rate compared to the I group (44% vs. 14% P<0.05). Ability to walk predicted a lower rate of hospitalization in the TD group (86% vs. 56%; P<0.05). The I and TD groups had similar rates of falls (43% vs. 42%; P=0.09). Comorbidities are correlated with decreased ability to walk in the room/facility (14% vs D: 86%; P=0.05). Comorbidities appear to affect rate of hospitalization (14% vs D 57% P<0.05). Fall risk is directly correlated with the presence of comorbidities (123% of risk for falls vs. D 77% of risk for falls; P<0.05).

Conclusions: Ability to walk in the room/facility seems to be a predictor for lower rates of hospitalization and indirectly lower rate for frailty status. Co-morbidities increase the fall risk and decrease ability to walk in the room/facility and as a result may indirectly contribute to frailty status. Interventions that preserve ability to walk, and management of co-morbidities could potentially prevent worsening of frailty status in the nursing home setting.

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DOES LITERACY IMPACT FQHC PATIENTS’ KNOWLEDGE, ATTITUDE, BEHAVIOR, AND RECOMMENDATION ABOUT BREAST CANCER SCREENING?

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Purpose of Study: To present baseline data on breast cancer knowledge, attitudes, self-efficacy, self-reported behavior and physician recommendation by literacy level from a randomized control trial in FQHCs in North Louisiana.

Methods Used: Eligible patients (women ≥40 who had not received a mammogram in the last 2 years) in eight FQHCs were given a breast cancer structured interview and literacy test.

Summary of Results: Of the 1189 patients interviewed to date: ages ranged from 40-89; 65% were AA, 35% white, 33% had not completed high school and 44% read on < 9th grade level. Overall, awareness of breast cancer was high (98%) for both patients with low literacy (LL) (<9th gd) and those with adequate literacy (AL) (9th gd or above). Knowledge was also high for both groups; however, LL patients were significantly less likely to report they had heard of tests to screen for breast cancer (78% vs. 90%, p=0.0001). LL patients were less likely to have positive attitudes about breast cancer screening. They were less likely to believe: it is helpful to find breast cancer early (80% vs. 91%, p=0.0001); if breast cancer is found early (80% vs. 91%, p=0.0001); or easily arranging transportation to get one mammogram. LL patients were significantly less likely to report they had heard of tests to screen for breast cancer (78% vs. 90%, p=0.0001). LL patients were less likely to have positive attitudes about breast cancer screening.

Conclusions: Overall, among women cared for in FQHCs, LL patients had less knowledge, poorer attitudes, and lower self-efficacy about breast cancer screening than their AL counterparts. Overall, the majority of women had an initial mammogram and most had received a recommendation from their doctor. The issue for women in this study was they were not up-to-date with their screening.

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COMMUNITY OUTREACH PROGRAMS ARE EFFECTIVE AT IMPROVING HEPATITIS B KNOWLEDGE AMONG ASIAN/PACIFIC ISLANDER ADULTS

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**Purpose of Study:** To determine the effectiveness of a community outreach program in increasing patient awareness and providing appropriate HBV-related medical care.

**Methods Used:** Asian Americans from Dallas-Fort Worth were invited to a community outreach program initiated by the Asian Pacific Medical Student Association at the University of Texas Southwestern Medical School at Dallas. The program provides free HBV testing and an education session. Attendees were invited back three weeks later to obtain their testing results and medical care or free vaccination as needed. Self-administered surveys, adapted from previously validated surveys, were administered to attendees prior to both sessions. Surveys included questions regarding care-seeking behaviors, attitudes, and HBV knowledge. There were 12 questions assessing knowledge about routes of transmission and clinical consequences of HBV. Multivariate linear regression was performed to determine predictors of improvement in level of knowledge.

**Summary of Results:** 80 people attended both the screening and follow-up sessions. Median age was 56 years and 54% were female. The majority (92%) was born in Vietnam and median time since immigration was 16 years. 35% had a college education, 60% were actively employed, and 32% reported having health insurance. 70% of attendees had previously heard of HBV, but only 37% had previously tested. Missing work and cost were concerns regarding HBV testing in 83% and 78% of patients, respectively. After testing, 61% of attendees were immune, 24% were HBV naive, and 15% had previously unrecognized HBV infection. Our education session resulted in a persistent improvement in knowledge regarding HBV (42% vs. 67%, p<0.001). Although there were high levels of knowledge about consequences of HBV (75%), knowledge about HBV transmission was low and significantly improved after our education (38% vs. 62%, p=0.002). Initial levels of knowledge (p=0.001) and male gender (p=0.05) were inversely correlated with improvement in knowledge on multivariate analysis. All patients with active infection were linked to medical care, and all HBV naive patients were immunized.

**Conclusions:** Community outreach programs are an effective means to increase HBV awareness and link patients to appropriate care.

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**Cough and Cold Medicine Ingestions: Has There Been a Culture Change?**

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**Purpose of Study:** Cough and cold medicines are frequently used in the world of pediatrics to treat the symptoms of viral illness. However, the safety and efficacy of such medications has been long questioned by many pediatricians. In 2007 the Federal Drug Administration (FDA) issued a public health advisory warning against using cough and cold medicines in children under the age of two.

The purpose of this study was to determine if the FDA's 2007 recommendations regarding cough and cold medication use in children under the age of two has changed the number of ingestions requiring calls to the poison center, emergency department (ED) visits, and or inpatient admissions at Children's of Alabama.

**Methods Used:** A review was completed using regional poison control center data and data from ED visits and admissions at Children's of Alabama. Poison control center calls, ED visits related to cough and cold medicine ingestions and admissions pre (2005-2007) and post (2008-2010) 2007 FDA advisory changes were analyzed.

**Summary of Results:** In children ages 0-5 there were 50 visits to the ED from pre-advisory period as compared to 45 visits in the post-advisory period. In comparison there were much less calls to the regional poison control center and less admissions after the FDA advisory in 2007. The data suggests that the culture regarding the use of cough and cold medicine in children has not changed dramatically since the FDA advisory. The hospital cost of treating unintentional ingestion of cough and cold medicine is essentially unchanged even after the FDA advisory.

**Conclusions:** Our results show that while there were similar numbers of child presentations to the ED after cough and cold ingestions, there were less calls to the regional poison control center and less admissions after the FDA advisory in 2007. The data suggests that the culture regarding the use of cough and cold medicine in children has not changed dramatically since the FDA advisory. The hospital cost of treating unintentional ingestion of cough and cold medicine is essentially unchanged even after the FDA advisory. There are further questions to be answered regarding the safety and efficacy of cough and cold medicines in children. Likely stricter regulations will be required to impact the number of pediatric emergency department visits due to unintentional ingestions.
747 IMPACT OF PROVIDER BODY MASS INDEX SCREENING AND COUNSELING ON CHILD WEIGHT LOSS ATTEMPTS
Lindon A 1, Gokun Y 1, Talbert J 1, Conigliaro J 2, Rose S 1 University of Kentucky, Lexington, KY and 2 New York University, New York, NY.
Purpose of Study: Guidelines recommend that height, weight and Body Mass Index (BMI) be measured at well child checks at least annually. We used the 2009 and 2010 Kentucky Medicaid Provider and Child Medicaid Recipient Surveys to assess provider overweight screening and counseling and patient attempts to lose weight. We hypothesized that provider screening and counseling is associated with more patient attempts to lose or maintain weight.
Methods Used: We analyzed obesity-related survey questions answered by caregivers regarding the health of their children. We excluded patients without a pediatrician visit in the past 6 months, overweight children (BMI <5th percentile), patients <2 years of age as BMI normative values are unavailable for this age category, patients with missing age and BMI, and providers not providing care to children and for whom obesity care is not part of routine care.
Summary of Results: 1,394 children ( 23% obese (OB) (BMI >95th percentile), 13% overweight (OW) (BMI 85 to <95), and 36% normal weight (NW) (BMI <5 to <85) and 75 providers (88% primary care providers) met criteria for analysis. 28% of children were 2-5 years of age, 34% 6-11 years of age, and 33% 12-18 years of age. 60% of caregivers reported having their child’s weight checked by their pediatrician, while 63% of pediatricians reported calculating BMI for some or all of their patients. 23% of caregivers reported pediatrician counseling about weight loss (7% NW, 14% OW, 48% OB, p=0.0001), while 97% of pediatricians reported advising a patient to lose weight. 16% of caregivers reported weight loss attempt by their child in the past six months (4% NW, 16% OW, 34% OB, p=0.0001). Caregivers who reported that their pediatrician talked to their child about ways to lose weight were more likely to report that their child attempted weight loss than those who did not who reported doctor advice (54% vs 6%, p=0.0001).
Conclusions: Medicaid pediatricians do not routinely counsel children regarding ways to lose weight. Caregivers of child Medicaid recipients report more weight loss attempts by their child if their pediatrician has talked to their child about ways to lose weight. Medicaid providers may be missing opportunities to provide guideline-concordant obesity care to their patients.

748 MATERNAL MORBID OBESITY: RISK OF ADVERSE MATERNAL & NEONATAL OUTCOME
Caldas MC, Jain S, McCormick DP UTMB, Galveston, TX.
Purpose of Study: Obesity is associated with increased risk of adverse outcomes for mother & infant. We evaluated maternal & neonatal outcome in morbid obese (BMI >40) mothers.
Methods Used: Using electronic medical records we compared maternal & neonatal outcomes with initial BMI >40 (cases) & BMI <25 (controls) June-Dec 2009. Women with twins & 1st prenatal visit >20 wks were excluded.
Summary of Results: 2215 women were eligible with 82 cases & randomly selected 85 controls. Obese women had higher chronic hypertension p=0.02, preeclampsia 1 p=0.01, gestational p=0.01 & type II diabetes p=0.005. There was increased hospitalization (p=0.009). cesarean delivery (p=0.01) in obese women. There was no difference in neonatal wt, large or small for gestational age, prematurity, respiratory distress, neonatal sepsis, hypoglycemia, jaundice, NICU admission, fetal anomalies or hospital stay in two groups.
Conclusions: Weight loss during pregnancy is not associated with increased neonatal morbidity but maternal morbidity increases due to obesity.

Table 1. Maternal Outcomes

<table>
<thead>
<tr>
<th>Cases (82)</th>
<th>Controls (85)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hispanic</td>
<td>58 (70.75)</td>
<td>70 (82.5)</td>
</tr>
<tr>
<td>Chronic hypertension</td>
<td>11 (12)</td>
<td>1 (1)</td>
</tr>
<tr>
<td>Preeclampsia</td>
<td>5 (6)</td>
<td>6 (7)</td>
</tr>
<tr>
<td>Gestational diabetes</td>
<td>16 (19)</td>
<td>3 (4)</td>
</tr>
<tr>
<td>Type II diabetes</td>
<td>7 (9)</td>
<td>0</td>
</tr>
<tr>
<td>Use of insulin</td>
<td>7 (9)</td>
<td>1 (1)</td>
</tr>
<tr>
<td>Mean weight gain (Kg)</td>
<td>6.1 ±0.2</td>
<td>13.2±5.8</td>
</tr>
<tr>
<td>Weight loss during pregnancy</td>
<td>19</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 2. Neonatal Outcomes

<table>
<thead>
<tr>
<th>Neonatal Variables</th>
<th>Cases</th>
<th>Controls</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean hospital stay (days)</td>
<td>3.5</td>
<td>2.7</td>
<td>0.33</td>
</tr>
<tr>
<td>Birth weight (gms) (SD)</td>
<td>3408 (490)</td>
<td>3286 (402)</td>
<td>0.08</td>
</tr>
<tr>
<td>SGA</td>
<td>14</td>
<td>7</td>
<td>0.07</td>
</tr>
<tr>
<td>Preterm</td>
<td>10</td>
<td>5</td>
<td>0.15</td>
</tr>
<tr>
<td>Respiratory Distress</td>
<td>5</td>
<td>5</td>
<td>0.93</td>
</tr>
<tr>
<td>Hypoglycemia</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Suspected sepsis</td>
<td>3</td>
<td>5</td>
<td>0.49</td>
</tr>
<tr>
<td>Jaundice (%)</td>
<td>14 (17)</td>
<td>11 (13)</td>
<td>0.43</td>
</tr>
<tr>
<td>NICU admission (%)</td>
<td>10 (12)</td>
<td>11 (13)</td>
<td>0.90</td>
</tr>
<tr>
<td>Severe fetal anoxia (%)</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

LGA - large for gestational age SGA - small for gestational age Preterm ~<7 weeks gestational age jaundice - hyperbilirubinemia requiring phototherapy.
Purpose of Study: This pilot compares the utilization of off site health services in 2 pediatric behavior health residential facilities, one utilizing visiting psychiatrists. Only one reference was found on use of offsite use of medical services for children in long-term residential behavior facilities.

Methods Used: Facility A and Facility B serve patients from the same population populations, and same payment mix, majority SCHIP and Medicaid. Both are private and not for profit charitable organizations. Program A, 59 beds, is covered Monday, Wednesday, Friday by visiting academic geriatric. Facility B has 70 beds; attending child psychiatrists perform history/physicals, other medical services provided off site. Off site services for both A and B are provided at Children’s Hospital. State Medicaid allows pediatricians at A to be PCP of record during the residential stay. The pediatrician attends with a third year medical student.

Procedures performed on site at A - incision and drainage, ear/soft tissue foreign body removal, remove ingrown nail.

Summary of Results: TABLE

<table>
<thead>
<tr>
<th>Off Site Class</th>
<th>Emergency Department Visit</th>
<th>Procedure On Site (total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FACILITY A</td>
<td>2.4</td>
<td>0.08</td>
</tr>
<tr>
<td>FACILITY B</td>
<td>3.3</td>
<td>0.42</td>
</tr>
</tbody>
</table>

Summary of Results: This pilot shows a decrease in off site utilization, with less time out of facility therapeutic milieu, decreased use of staff/vehicle off site medical, and allowed improved continuity of care between pediatrician and psychiatry. A residential facility can be a non-traditional teaching site for community pediatrics. Further study is warranted to investigate costs.

Hematology and Oncology II
1:00 PM
Saturday, February 11, 2012

476 PROGNOSIS AND OUTCOME OF PRIMARY AMYLOIDOSIS - A SINGLE CENTER EXPERIENCE

Agliora M1,2, Cheema FN1,2, Shi R1,2, Hildebrandt GC1,2, LSUHSC Shreveport, Shreveport, LA and 1Feis-Weiller Cancer Center, Shreveport, LA.

Purpose of Study: To assess outcome of primary systemic amyloidosis (AL) at Feist-Weiller Cancer Center (FWCC). AL is a clonal plasma cell disorder with an incidence of 8.9 per million person-years. It is characterized by a relatively low plasma cell burden and multi-organ deposition of immunoglobulin light-chain-derived amyloid fibrils. The median survival ranges from 10 to 60 months depending on type and severity of organ involvement. Recent advances have been associated with better hematological response and improved survival.

Methods Used: A retrospective cohort study of patients with incident AL diagnosed 1994 - 2010, identified in the electronic medical database at FWCC. Data on age, gender, race, date of diagnosis, date of death or last contact, organ involvement, treatment received and prognostic markers was extracted. Median overall survival (OS) was assessed by using the Kaplan-Meier method. Comparison stratified by treatment group (Melphalan containing vs. other), BNP, GFR and light chain predominance were performed by log rank test.

Summary of Results: 10 patients were identified (5m, 5f, 5 Caucasian, 5 African American, median age 55 years (42 - 72 years) Median OS was 18.6 months (4 - 100 months). Treatment with Melphalan containing regimen was associated with a better median OS compared with other (73 vs. 12 months; p=0.01). Having a BNP > 300 pg/ml resulted in a longer OS compared to a BNP > 300 pg/ml (26 vs. 4 months; p=0.02). Other factors indicative of a trend towards improved median OS were a GFR >20ml/min vs. GFR <20ml/min (20 vs. 7 months, p = 0.9) and type of light chain restriction (kappa: 13.5 months vs. lambda 7.0 months, p=0.8).

Conclusions: Our data reconfirms Melphalan containing regimen as a valid and effective treatment approach in AL, a rare but deleterious disease. Compared with recent literature our cohort on Melphalan had an equal if not longer OS (73 vs 60 months). Elevated BNP levels proved as a critical parameter for OS. Kappa predominance trended towards a longer survival but could not reach statistical significance. Large study population may help to investigate the value of light chain function and other prognostic parameters.

477 L-ARGININE DEPLETION BY PEG-ARGINASE I, A NEW POTENTIAL THERAPY FOR ACUTE LYMPHOBLASTIC LEUKEMIA

Crombet O1,3, Hernandez C1,2, Morrow K1,2, Rodriguez P1,2, LSUHSC, New Orleans, LA; 2Stanley S. Scott Cancer Center, New Orleans, LA and 3New Orleans Children’s Hospital, New Orleans, LA.

Purpose of Study: Advancements in therapies have resulted in an overall complete remission rate of approximately 85% for childhood ALL. In contrast, the overall remission rate of adults with leukemia continues to be poor, only about 40% in cases of T-ALL. Therefore, it is imperative to generate new therapies that alone or in combination with other treatments could potentially increase the percentages of complete responders or be used to treat the refractory ALL population. Our published results show that peg-Arg I prevented T-ALL cell proliferation in vitro and in vivo through the induction of tumor cell apoptosis. Interestingly, the anti-leukemic effects induced by peg-Arg I did not affect the anti-tumor activity of normal T cells, suggesting an anti-tumor specific effect. Our hypothesis states that peg-Arg I has an anti-tumoral effect on B-ALL and T-ALL cells in vitro and that the sensitivity of ALL cells to peg-Arg I depends on their expression of argininosuccinate synthetase (ASS) and their ability to produce L-arginine de novo from citrulline. The main goal in our investigation is to prove that the de novo L-arginine production is dependent of ASS.

Methods Used: Malignant T cell proliferation was tested using nonradioactive cell proliferation yellow tetrazolium salt kit. Apoptosis studies were based on the expression of annexin V Western blot assays were conducted to determine enzymatic expression in different cell lines.

Summary of Results: The results of our in vitro experiments showed that peg-Arg I had an apoptotic and anti-proliferative effect on B-ALL cells similar to the one previously seen on T-ALL cells. These effects can be overcome in cell lines able to express ASS and therefore to produce L-arginine de novo.

Conclusions: Our data suggest the role of ASS in the ALL-apopisis induced by peg-Arg I. Our next steps include: Understand why ASS-expressing ALL cells do not undergo apoptosis when cultured with peg-Arg I - Determine the role of ASS in the anti-leukemic effect induced by peg-Arg I in vivo. Completion of this research is expected to lead to a better understanding of how peg-Arg-I kills ALL cells and could provide the foundation for a novel therapy for ALL patients.

478 INCREASED RISK OF HEART FAILURE IN BRCA MUTATION CARRIERS

Sajad Mo1, Ismail-Khan R2 1University of South Florida, Tampa, FL and 2H.L. Moffitt Cancer Center, Tampa, FL.

Purpose of Study: Breast cancer type 1 and 2 susceptibility proteins (BRCA-1 and BRCA-2) are tumor suppressor genes responsible for DNA repair. Mutations in these genes increase breast and ovarian cancer risk. In a recent study by Mai, P.L., et al, excess mortality exists in BRCA mutation carriers. We hypothesize that this includes a higher innate risk for heart failure (HF) and risk of cardiotoxicity from anthracycline (ATC) therapy.

Methods Used: An online survey was submitted to 401 BRCA positive patients through the iCARE and FORCE cancer registries. Data including formal diagnosis or symptoms of HF were obtained. Patients were divided into 2 categories based on history of ATC therapy. The prevalence of HF was calculated in both groups. The data from the ATC naïve group was compared to established incidences of HF in the general population. Data from those that received ATC was compared to published HF rates from prior therapy.

Summary of Results: Analysis of 237 BRCA-1 and 164 BRCA-2 patients yielded an alarming total of 8% reporting decreased cardiac function, low LVEF, or a formal diagnosis of HF based on echocardiogram. Subgroup analysis showed that 4.5% and 3.5% had HF in the ATC naïve group and treatment group, respectively. Furthermore, an additional 37 patients in the ATC naïve group, and 28 in the ATC treatment group endorsed 2 or more symptoms of HF, but lacked official diagnosis of the disease.

Conclusions: Our data suggests that the increased non-malignant mortality in BRCA patients may be due to cardiotoxicity. ATC naïve mutation carriers have 4.5% risk of HF compared with 2% in the general population. BRCA patients treated with ATC have 3.5% risk of heart failure compared with 1-2% known ATC risk in previously reported data. These findings reveal a need for earlier cardiac screening and call for review of the current guideline.
In such cases concurrent iron deficiency and/or sickle cell and thalassemia trait/disease should be evaluated. Intraduodenal destruction of erythrocytes secondary to structural abnormalities in the early and late polychromatophilic megaloblasts causes hemolysis. Common causes of B12 deficiency include pernicious anemia, malnutrition, vegan diet, gastrectomy or malabsorption. These can be corrected with vitamin B12 treatment. Our case is unique as our patient presented with B12 deficiency and significant hemolysis but normocytic anemia.

481 TO B12 OR NOT TO B12

Case Report: A 45 year old African American woman with vitiligo and irritable bowel syndrome complained of a 3 month history of progressively worsening dyspepsia on exertion, weakness, fatigue, nausea and emesis. Past surgical history was significant for bowel resection several years ago. Physical exam revealed large hypopigmented patches along her arms, chest and face, mild scleral icterus, sublingual jaundice, and mild epigastric tenderness. Neurologically, she had significant paraparesis in the left lateral deltoid and humeral regional with intact motor strength and reflexes. On laboratory examination, she had a hemoglobin of 6.9 g/dL, hematocrit of 20.7%, platelets of 99,000/UL, mean corpuscular volume of 98 FL, reticulocyte count of 0.8%, LDH of 2730 U/L, haptoglobin of 7 mg/dL, and vitamin B12 level of <50 pg/mL. Peripheral smear showed hypersegmented neutrophils, ovalocytes, and spherocytes. An iron panel, Coombs test, serum electrophoresis, and folate level were all normal. Methylenalonic acid and Homocysteine levels were 1363nmol/L and 45nmol/L, respectively. She received 2 units of PRBCs and responded appropriately. She was found to have an autoantibody to intrinsic factor which was most likely the cause of her pernicious anemia. Treatment with B12 injections produced a good bone marrow response.

Discussion: The combination of a fairly normal MCV and findings of a high LDH, low haptoglobin, and mildly elevated bilirubin (suggestive of hemolytic anemia) made this case an interesting presentation of B12 deficiency. Pernicious anemia is seen predominantly in African American women older than 35. Autoantibody to intrinsic factor seems to be the cause in >50% of patients and autoantibody to gastric parietal cells in atrophic gastritis in >70% of patients with pernicious anemia. Our patient’s age, ethnicity, history of vitiligo, bowel resection, and irritable bowel syndrome put her at a higher risk of dietary deficiency, autoimmune, or malabsorptive causes of Vitamin B12 deficiency.

482 OUTCOMES OF PEDIATRIC LOW GRADE GLIOMAS TREATED WITH RADIATION THERAPY: A SINGLE INSTITUTION STUDY
Raiker SS1, Halloran D1, McHugh M2, Gauvain K-3, Saint Louis University, Saint Louis, MO and 4Saint Louis University, Saint Louis, MO.

Purpose of Study: Radiation therapy is often considered the treatment of choice for low grade gliomas. The long-term effects of radiation to the developing brain are a concern in pediatrics; therefore, the appropriate use of radiation therapy in treating pediatric patients with low grade gliomas remains controversial. The purpose of this study was to evaluate progression free survival of pediatric low grade glioma patients treated with radiation therapy.

Methods Used: Data was obtained through retrospective chart review of patients treated between 1991 and 2008 from a single tertiary care center in the midwest. We included all patients ≥ 21 years with a low grade glioma treated with radiation therapy. Diagnosis was confirmed by biopsy when feasible. Progression free survival was defined as time to first disease progression or recurrence after radiation therapy and was estimated using a Kaplan-Meier survival curve. Log-rank test was used to compare differences in outcomes between survival curves.

Summary of Results: The study population consisted of 17 patients of which 7 (41%) had a tumor recurrence after radiation therapy. Mean progression free survival was 112.3 ± 21.4 months. The 3- and 10-year progression free survival was 75% and 50%, respectively (Figure 1a). Progression free survival ranged from 9 months to 190 months. There was a trend (p=0.064) in progression free survival based on age at diagnosis, extent of initial surgery and prior use of chemotherapy were not significant.
Conclusions: Radiation therapy is an effective treatment for low grade gliomas; however, does not always provide long term control of these tumors. Given our small sample size, it was difficult to find any significant trends in terms of differences in outcomes. A larger multi-center study is needed to better assess for progression free survival in these patients.

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ROSAI-DORFMAN DISEASE PRESENTING AS A SOFT TISSUE TUMOR OF THE LOWER LIMB
El-Osta H, Peddi P, Koshy N, Veillon D, Takalkar A, Jafri S, Mills G, Hildebrandt G Louisiana State University Health Science Center, Shreveport, LA.

Case Report: Rosai-Dorfman disease (RDD) is a rare histiocytic proliferative disorder originally described in lymph nodes. Involvement of soft tissues is less well recognized.

A 38-year-old African American female presented for 7 months history of enlarging left thigh mass, intermittent fever with axillary and inguinal pain bilaterally. Prior medical history included hypertension, sleep apnea, right thyroidectomy, lumpectomy and tonsillectomy with uvulopalatopharyngoplasty. A 3 x 4 cm left anterior thigh mass tender on palpation was noticed on physical exam, along with small tender inguinal and axillary lymph nodes and thymogragy. MRI noted a 5 x 3 cm ill defined signal intensity in the subcutaneous tissue of the anterior thigh. Excisional biopsy revealed atypical follicular hyperplasia, polyclonal plasmacytosis, no evidence for B or T cell clonality, some emperiploïdes and histiocytes conspicuous on S-100 and CD163 stains suggestive of RDD. Following surgery, PET/CT scan showed non-FDG avid mediastinal and small axillary adenopathy.

At 4 months of follow-up, she remained minimally symptomatic with no recurrence on the surgical site.

RDD is an uncommon proliferative disorder of histiocytes. While it is classically characterized by massive lymphadenopathy, it can affect any organ. It can be accompanied by systemic symptoms and increased inflammatory markers. In general it has a benign clinical course, although aggressive behavior of the disease has been described. Its underlying pathophysiology is poorly understood and its treatment is largely empirical. Chemotherapy including vincristine and alkylating agents as well as corticosteroids have been used with various successes. Severe cases may require surgery or radiation therapy.

In conclusion, our case emphasizes that extranodal soft tissue involvement can be the initial key finding on presentation and should be considered in the differential diagnosis of soft tissue mass of extremities.

No pathognomonic findings indicative of RDD could be attributed to advanced imaging technology including MRI and PET/CT, especially as lymph nodes were metabolically inactive on PET/CT scan, a unique finding in the differential diagnosis of soft tissue mass of extremities.

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TOO YOUNG FOR PRIMARY CLEAR CELL ADENOCARCINOMA
Thelin C1, Raasch Alquist C2, Vlenc J1, Engel L 1, LSU-Health Sciences Center, New Orleans, LA and 1LSU-Health Sciences Center, New Orleans, LA.

Case Report: Introduction: Primary clear cell adenocarcinoma of the colon is a rare oncologic variant, generally afflicting the descending colon of elderly males. The youngest patient reported to date with this cancer was in his late thirties. Here, we report an unfortunate case of a 25-year old male with stage IV primary clear cell adenocarcinoma of the distal ascending colon.

Case: A 25-year old man originally presented with a partial large bowel obstruction secondary to a stenotic tumor mass at the hepatic flexure. He underwent a left hemicolectomy and a right liver lobe biopsy. Tumor cells were strongly and diffusely positive for cytokeratin 7, which is not typically expressed in the gastrointestinal epithelium, and uncharacteristic for primary colonic adenocarcinoma. However, computer tomography showed no evidence of a malignancy other than in the colon. Further biopsies of his duodenum, gastric fundic polyyp, stomach, appendix, and right liver lobe revealed benign tissue. The morphologic features of this adenocarcinoma include rounded cells with well defined cell membranes and large amounts of clear cytoplasm, consistent with the clear cell phenotype. The tumor occupied his ascending colonic wall, circumferentially with only minimal mucosal involvement. One of nineteen lymph nodes revealed nodal spread of this malignancy. Subsequently, the patient underwent two cycles of Oxaliplatin/Bevacizumab chemotherapy. The patient unfortunately developed another bowel obstruction and during the surgery, the patient was found to have carcinomatosis and biopsy of an omental mass biopsy confirmed metastatic adenocarcinoma. With a dismal prognosis the patient chose to enroll in hospice care.

Discussion: Primary clear cell adenocarcinoma of the colon or rectum is atypical. Morphologically, it shares traits with organs that commonly account for clear cell adenocarcinomas, such as the uterus, kidney and ovaries. Clear cell tumor cells are rounded or polygonal shapes with large amounts of clear or granular cytoplasm. Only twelve cases of primary clear cell adenocarcinoma of the colon and rectum have been reported. Of those twelve cases the average reported age was 62 years. Thus, this specific tumor is not only rare in occurrence but also in early age of onset.

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MALIGNANT TRANSFORMATION OF TRICHILEMAL CYST TO SQUAMOUS CELL CARCINOMA
Tay G, Prejean SP, Saffey M, Barker B, Engel L LSU-Health Sciences Center, New Orleans, LA.

Case Report: A 60 year old African American man was admitted to an outside facility with fluctuating levels of consciousness and extensive scalp abscesses that were draining foul smelling, purulent fluid. The patient could not recall when the scalp lesions first appeared or if they had been progressing but his sisters reported that he had recurrent skin cysts since he was a teenager. Three of these lesions were excised he was started on IV vancomycin prior to transfer. Physical exam at our facility demonstrated three large fungating ulceroprotrusive lesions of 10 to 12 cm on the parietal and occipital areas of his scalp. The fungating lesions were non-tender and were fixed to underlying muscle. The patient also had an intact nodule of about 4 cm in the frontal area, a nodule on his left forearm and an additional 3 nodules on his neck. The patient underwent biopsy and histopathology of some lesions was consistent with a trichilemmal cyst while other lesions were identified as trichilemmal cysts. MRI of the head demonstrated multiple large soft tissue masses in the neck and scalp bilaterally. There was erosion of the skin and deeper scalp but no definite tumor extension through the cranium was noted. CT scan of the chest demonstrated multiple bilateral mass lesions in the lungs suggestive of metastasis. The patient was diagnosed with metastatic squamous cell carcinoma derived from malignant transformation of a trichilemmal cyst. Unfortunately, the patient's poor functional status precluded chemotherapy and hospice care was recommended.

Discussion: Trichilemmal cysts are found more commonly in the scalp of women. Proliferating trichilemmal tumors may arise from trichilemmal cysts and very rarely undergo malignant transformation. These malignant proliferating trichilemmal tumors are aggressive and may present with distant metastasis. Wide excision of the cancerous lesion forms the mainstay of treatment, however, distant metastases confers a significant increases in morbidity and mortality. We report a rare occurrence of malignant transformation of trichilemmal cysts on the scalp of a male patient.

Infectious Diseases II
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ETOLOGY OF INTRATHORACIC MASSES IN CHILDREN IN A HISTOPLASMA ENDEMIC REGION
Naeem F1,3, Arnold S 3, Metzger M2, Addison E1,3 1St Jude Children's Research hospital, Memphis, TN; 2St Jude Children's Research hospital, Memphis, TN and 3University of Tennessee Health Sciences Center, Memphis, TN.

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Purpose of Study: Histoplasmosis is a common endemic mycosis in the Ohio and Mississippi river valleys. Many symptomatic patients with histoplasmosis present with systemic symptoms and mediastinal adenopathy, features that may be common to malignant diseases. The ability to distinguish between patients with histoplasmosis and those with malignancies would allow healthcare providers to limit unnecessary invasive procedures in children who are at low risk of cancer.

Methods Used: Demographic, clinical and diagnostic imaging results of patients ≤19 years of age referred to 2 free-standing children’s hospitals between 1/1/2005 and 12/31/2010 for evaluation of mediastinal masses were retrospectively reviewed. The association between these variables and ultimate diagnosis of histoplasmosis (H) or malignancy (M) were compared by logistic regression.

Summary of Results: 115 patients presented with mediastinal masses during the study period, including 58 with H and 57 with M. Fever (44%H vs 29%M), night sweats (17%H vs 22%M) and weight loss (19%H vs 28%M) were equally likely to be present in children with histoplasmosis or cancer. On univariate analysis, cough (56%H vs 14%M, P=0.0001), chest pain (32%H vs 8%M, P=0.003) and presence of mid-mediastinal mass alone (84%H vs 7%, P=0.0001) were associated with histoplasmosis while neck swelling (3%H vs 56%M, P=0.0001) and anterior and/or posterior mediastinal mass alone (3%H vs 60%M, P=0.0001) were associated with malignancy. In multivariable analysis, only mid-mediastinal mass alone (OR=19.9, 95% CI 3.6-109.9) and anterior and/or posterior mass alone (OR=0.04, 95% 0.004-0.6) remained significantly associated (positively or negatively) with the diagnosis of histoplasmosis.

Conclusions: RSV. Preliminary data demonstrates that, in a histoplasmosis endemic area, mid-mediastinal mass alone is positively associated with histoplasmosis and these patients can be managed conservatively without the need for biopsy. Anterior and/or posterior masses, however, are suggestive of malignancy and a definitive diagnosis should be established expeditiously.

487 EFFECT OF MUCOSAL IGA ANTIBODY ON DETECTION OF “CULTURABLE” RSV VIRUS IN EXPERIMENTAL RESPIRATORY SYNCYTIAL VIRUS (RSV) INFECTIONS OF ADULTS

Bagga B1,2,3, Vaishnav A1, Wilkinson T1, Meyers R1, Harrison L1, Roddam P1,2,3, Lanthin-Williams R1, DeVincenzo IP1,2,3, U of TN, Memphis, TN; 1LeBonheur Children’s Hospital, Memphis, TN; 2CFRC, Memphis, TN; 3Alnylam Pharm, Cambridge, MA and 3Retroscreen Virology, London, United Kingdom.

Purpose of Study: RSV in children produces prolonged wheezing and measureable lung disease long after virus is no longer detectable by culture. Current concepts of RSV pathogenesis explain this by RSV inducing a pathological immune response. We alternatively hypothesized that prolonged unrecognized RSV replication may be responsible and that the cultures defining duration of viral replication are rendered falsely negative due to factors within respiratory secretions, which neutralize culture detection. We therefore studied the presence of RSV specific IgA in respiratory secretions and correlated its presence with clearance of “culturable” RSV in a human experimental RSV infection model.

Methods Used: 35 healthy adults were inoculated on D0 with wild type RSV-A (Memphis 37, manufactured from a hospitalized bronchiolitis infant) and evaluated over 11 days while measuring viral load by culture, PCR of genomic and anti-genomic (message) RSV and potentially culture-neutralizing RSV IgA, all in twice daily collected nasal washes. Subjects were defined as being infected if RSV was detected ≥2 successive times between D2-D8.

Summary of Results: After inoculation, 77% (27/35) of volunteers became RSV infected. Many infected volunteers demonstrated prolonged RSV presence by genomic PCR despite culturable RSV ceasing abruptly by the 5-6th infection day. Prolonged active viral replication was confirmed by anti-genomic RSV (message) being detectable long after virus was no longer culturable. RSV-specific IgA rose within respiratory secretions of infected patients from D3 through D11 while RSV specific IgA in the uninfected volunteers remained stable or declined within this same time frame.

Conclusions: RSV appears to replicate in humans far longer than previously thought. RSV-specific IgA rises in respiratory secretions shortly after infection, thus likely neutralizing and limiting the duration of detection of culturable RSV. Persistent RSV replication and false-negative RSV cultures may explain prolonged disease manifestations in children, and increases the potential utility of antiviral therapies to affect a clinical benefit in this disease.

488 VARIABLE PREVALENCE BUT LIMITED CLINICAL FEATURES OF FILARIAISIS BY MANSONELLA OZZARDI IN THE PERUVIAN AMAZON BASIN

Jones E1, Durand S1, Bentley G2, Nattel N2, Tapia L1, Rimarachin D2, Braga G3, Chuquicach A3, Baldeviano G1, Edgel K1, Lescano AG1,3 1U.S. Naval Medical Research Unit Six (NAMRU-6), Lima, Peru; 2University of Arizona, Tuscon, AZ; 3University of Texas Southwestern Medical School, Dallas, TX; 3Stony Brook University, Stony Brook, NY; 4Iquitos Regional Hospital, Iquitos, Peru.

Purpose of Study: Mansonella ozzardi is a filarial parasite endemic in Amazonic and riverine communities of various countries in Latin America. Despite M. ozzardi filariasis being considered a benign disease, there are reports of associated clinical outcomes. Although the parasite is known to affect tropical and rural areas in neighboring regions with high prevalence in some communities, there are few case reports and little evidence documenting prevalence of M. ozzardi in Peru.

Methods Used: We conducted a cross-sectional study to determine the prevalence of M. ozzardi in communities near Iquitos (Loreto, Peru). In addition, an exploratory case-control study was carried out to assess its clinical presentation. Participants over the age of 5 were selected randomly from communities near Iquitos: Santa Maria de Nanay and two neighboring communities (n=206), Mazan and five nearby communities (n=139), and Llancharma (n=38). Giemsa-stained thick smears from venous blood samples and the Knot's concentration method were employed to analyze samples.

Summary of Results: Forty-nine percent (100) were positive for M. ozzardi microfilaraemia in Santa Maria, 6% (8) in Mazan, and 5% (2) in Llancharma. Prevalence increased with age (Mann-Whitney U test), corroborating patterns seen in other regions. When comparing Knot's results with those of thick smears, the sensitivity of thick smears was determined to be only 62%, while Knot's sensitivity correctly identified 99% of all positive cases. Preliminary results of the case-control study revealed no apparent association between infection and clinical symptoms such as presence of nodules, joint pain, headache and pruritus (chi-square test).

Conclusions: Our findings confirm early indications of variable, high prevalence of M. ozzardi filariasis, but suggest that clinical burden may not be significant.

489 RISK FACTORS FOR DELAYS IN DIAGNOSIS OF TUBERCULOSIS IN THE COUNTRY OF GEORGIA

Rabin A1, Kemper R1, Blumberg H1, Kuchukhidze G2, Kalandadze I2, Sanidzde E2,3 Emory University School of Medicine, Atlanta, GA and 2National Center for Tuberculosis and Lung Diseases, Tbilisi, Georgia.

Purpose of Study: Georgia has a high incidence of TB and has been designated by WHO as one of 27 high-burdened MDR-TB countries. Improving early diagnosis of TB has been identified as a priority to improve TB treatment and prevent further transmission. We undertook a study to quantify delays in TB diagnosis and identify risk factors for delay.

Methods Used: Persons diagnosed with culture-confirmed pulmonary TB were interviewed between April-October 2011 throughout Georgia. The interview took place within 2 months of diagnosis. Information collected included: socio-demographics; knowledge, attitudes and stigma; past medical history; and healthcare encounters pre-diagnosis.

Summary of Results: 182 TB patients were enrolled. The mean diagnostic delay in TB diagnosis was 87 days (median 54) including a patient component delay of 30.5 days and healthcare delay of 36.5 days. In univariate analysis, female gender (OR=2.2, 95%CI 1.1-4.0), a chronic cough (OR=7.9, 95%CI 2.8-22.7), multiple initial symptoms (OR=9.4, 95%CI 0.2-29.8) and the use of antibiotics (OR=2.1, 95%CI 1.1-3.8) were associated with an increased delay in diagnosis. In multivariate analysis, chronic cough (OR=8.1, 95%CI 1.1-61.1), prior antibiotic use (OR=5.9, 95%CI 1.2-29.4) and feelings of stigmatization (OR=10.9, 95%CI 1.7-70.2) were associated with longer delays in TB diagnosis (total diagnostic delays ≥ 87 days).

Conclusions: Prolonged diagnostic delays for detecting TB are common in Georgia. Chronic cough, use of antibiotics to treat symptoms, and stigmatization were independent risk factors for longer diagnostic delays. Interventions may help decrease these delays.
targeting these risk groups and increasing awareness of TB among primary health care providers may decrease time to TB diagnosis in Georgia.

490
NEUTROPENIA DURING OUTPATIENT PARENTERAL ANTIBIOTIC THERAPY IN CHILDREN
Ali W, Custudio H, Estrada B University of South Alabama College of Medicine, Mobile, AL.

Purpose of Study: Neutropenia is a known adverse reaction during antibiotic therapy. This study aims to determine the occurrence and associations of neutropenia during outpatient parenteral antibiotic therapy (OPAT) in children.

Methods Used: A retrospective medical record review was performed on patients who underwent OPAT between January 1, 2007 and August 31, 2010.

Summary of Results: Out of the 124 patients who received OPAT, 37 (29.8%) developed neutropenia. In this group, 23 (67.6%) were male, mean age was 6 years (r, 1.25-15) and mean duration of OPAT was 25.6 days (r, 7-42, unknown =7). Neutrophil count (ANC) averaged 1020/μL (r, 130-1500). Among patients with neutropenia, more than half (51%) were on a regimen of cilmazym or cilmazym plus ceftriaxone. Severe neutropenia was seen in 4 regimens (Table 1). Varying timing and severity of neutropenia was noted (Table 2).

Conclusions: Neutropenia is a relatively common adverse effect of antibiotic therapy during OPAT in children. The severity and timing of neutropenia observed among our patients was variable. We recommend to closely monitor the ANC among patients who receive prolonged OPAT.

Table 1. Antibiotics and severity of neutropenia

<table>
<thead>
<tr>
<th>Antibiotics</th>
<th>Total # of patients</th>
<th>Moderate (500-1000)</th>
<th>Severe (100-500)</th>
<th>Mild (&lt;100)</th>
<th># of patients with neutropenia (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceftriaxone</td>
<td>11</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2(37.3)</td>
</tr>
<tr>
<td>Cefepime</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1(25)</td>
</tr>
<tr>
<td>Cefepime/ Gentamicin</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1(33.3)</td>
</tr>
<tr>
<td>Cefazolin</td>
<td>8</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1(37.5)</td>
</tr>
<tr>
<td>Cilimazym/Ceftraxone</td>
<td>24</td>
<td>3</td>
<td>5</td>
<td>10(41.7)</td>
<td></td>
</tr>
<tr>
<td>Cilimazym</td>
<td>36</td>
<td>3</td>
<td>6</td>
<td>3</td>
<td>3(100)</td>
</tr>
<tr>
<td>Meropenem</td>
<td>11</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1(33.3)</td>
</tr>
<tr>
<td>Cilimazym</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1(100)</td>
</tr>
<tr>
<td>Cilimazym/Vancimycin</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1(100)</td>
</tr>
<tr>
<td>Vancomycin</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1(100)</td>
</tr>
<tr>
<td>Total</td>
<td>124</td>
<td>4</td>
<td>11</td>
<td>22</td>
<td>37(29.8)</td>
</tr>
</tbody>
</table>

Table 2. Timing and severity of neutropenia during OPAT

<table>
<thead>
<tr>
<th>Severity of Neutropenia</th>
<th>1st week</th>
<th>2nd week</th>
<th>3rd week</th>
<th>4th week</th>
<th>&gt;4weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Moderate</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Severe</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>8</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>2</td>
</tr>
</tbody>
</table>

491
EVALUATING EXPERIMENTAL EFFECTS OF TRAUMATIC LUMBAR PUNCTURE ON MOLECULAR DETECTION OF HERPES SIMPLEX VIRUS ENCEPHALITIS (HSVE)
Ramirez K1,2, Thompson R3, Pareek I, House C1, Lenny N2,3, Patel A2,3, DeVincenzo J2,3, St Jude Children’s Research Hosp, Memphis, TN; 1Univ of Tennessee, Memphis, TN and 3Methodist LeBonheur Children’s Hosp, Memphis, TN.

Purpose of Study: The detection of HSV DNA in the cerebrospinal fluid (CSF) by PCR is the gold standard for diagnosing HSVE, which can produce very small quantities of DNA. Therefore, PCR detection must be extremely sensitive. Amplification can be inhibited by contaminants present in blood (ie hemoglobin). Traumatic lumbar punctures occur frequently and are defined as >400 RBC/mm³ (visibly pink tinged). Newer molecular diagnostic techniques (ie improved extraction capabilities) may reduce PCR inhibition by blood products. Clinically applicable reductions of sensitivity by blood products on real-time PCR have not been evaluated. We therefore studied the experimental effects of various concentrations of human blood on the semi-quantitative detection of HSV1 in human CSF.

Methods Used: Serial tenfold dilutions of whole blood (200,000-0.2 RBC/mm³) were added to CSF spiked with clinically relevant HSV1 concentrations from cell culture. These samples (Arm A) were then extracted on the Biorobot EZ-1 instrument (Qiagen). Detection of HSV-1 DNA pol conserved gene segment was carried out by the LightCycler 2.0 (Roche) via real-time PCR utilizing a home brew assay. Arm B was processed as Arm A with microcentrifugation prior to extraction. Arm C involved hemolysis of whole blood (after freeze thaw/vortex three times) then was processed as Arm B.

Summary of Results: No blood concentration significantly affected PCR when compared to control (CSF+HSV without blood) [Mean CT*: 31.85(SD 1.83)], p all >0.05.

Conclusions: Advanced DNA molecular extraction and sample processing techniques appear to overcome the previously observed PCR inhibition allowing sensitive detection of HSV encephalitis despite traumatic lumbar puncture.

Molecular Quantification [CT* mean (SD)] of HSV1 in CSF After Addtion of Various Concentrations of Blood

<table>
<thead>
<tr>
<th>Severity of Neutropenia</th>
<th>1st week</th>
<th>2nd week</th>
<th>3rd week</th>
<th>4th week</th>
<th>&gt;4weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>5</td>
<td>7</td>
<td>3</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Moderate</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Severe</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>8</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>2</td>
</tr>
</tbody>
</table>

*CT values are the cycle number at which amplification begins to rise exponentially and are inversely proportional to the log10starting concentration of HSV DNA.

492
RETROSPECTIVE ANALYSIS OF RESPIRATORY CULTURES OF INDIVIDUALS WITH NEURODISABILITIES WHO ARE TRACHEOSTOMY DEPENDENT
McCauley RV4, Maple H5, Warren R, Willis D, O’Brien CE1,2, University of Arkansas for Medical Sciences, Little Rock, AR and 3Arkansas Children’s Hospital, Little Rock, AR.

Purpose of Study: Pediatric patients with neurodisabilities (ND) requiring tracheostomy become chronically infected with bacteria that increase their likelihood of developing respiratory infections. Little is known about the pathogens that infect these patients compared with other respiratory compromised patients, such as cystic fibrosis (CF). The aim of this study was to identify potential pathogens appearing in respiratory cultures of patients followed in the Arkansas Center for Respiratory Technology Dependent Children (ACRTDC).

Methods Used: This was a retrospective analysis of the respiratory cultures of ACRTDC patients with a tracheostomy in place ≥ 1 year. Demographics, length of tracheostomy, respiratory culture results, and primary diagnosis were collected from patients followed from 1985 to June 2011. The primary objective was to describe the respiratory microbiology including 1) overall prevalence of organisms and 2) mean time to culture after tracheostomy placement. All subjects and culture results were included in the first objective. Data after 2006 was used in the second objective.

Summary of Results: 93 patients (57% male) were included with a mean age of 9.2 (5.9) yrs. Mean age at time of tracheostomy was 3.0 (4.3) yrs and time with tracheostomy was 6.2 (4.7) yrs. Primary diagnoses varied and included both congenital and acquired ND. The most common organisms were Pseudomonas aeruginosa (PA) (90%), Stenotrophomonas maltophilia (76%), Serratia marcescens (66%), methicillin resistant Staphylococcus aureus (MRSA) (45%), and methicillin sensitive Staphylococcus aureus (MSSA) (45%). Mean first appearance for PA was 14.1 (2.2) months, for S.maltophilia was 30.8 (3.0) months, for MRSA was 9.0 (2.4) months, and for MSSA was 33.9 (4.0) months.

Conclusions: Patients with ND and tracheostomy had a high prevalence of PA, S. maltophilia, and S. marcescens. PA and MSSA have been shown to contribute to lung function decline in CF, but further study is needed to assess the effects of specific organisms on clinical outcomes in our study population. However, understanding the spectrum of organisms isolated from respiratory cultures is an important first step in developing treatment protocols.
CELLULAR AGING IS ASSOCIATED WITH APOPTOTIC-LIKE DNA FRAGMENTATION IN CRYPTOCOCCUS NEOFORMANS

Washburn RR,1,2 Malik R.1,2 Shreveport Veterans Affairs Medical Center, Shreveport, LA and 1Louisiana State University Health Sciences Center, Shreveport, LA.

Purpose of Study: Apoptosis or programmed cell death has been demonstrated in several different fungal species including Candida albicans, Saccharomyces cerevisiae, Schizosaccharomyces pombe and Aspergillus species. Apoptotic stimuli include oxidative or salt stress, acid pH, irradiation, adherence to bacteria, starvation and fungal cell aging. To date, information concerning Cryptococcus neoformans (CN) is limited to oxidative stress, irradiation and bacterial adherence. We hypothesized that aging was an additional stimulus capable of triggering CN apoptosis.

Methods Used: An acapsular mutant of CN (Cap67, ATCC 52817) was grown in yeast nitrogen base broth, 30°C, 8 rpm. Yeast were harvested at timed intervals and assessed for viability by quantitative plating onto Sabouraud dextrose agar. Genomic fungal DNA was purified in parallel (MasterPureTM Yeast DNA Purification Kit, Epicentre Biotechnologies, Madison, WI) and submitted to the Yeast DNA Purification Kit, Epicentre Biotechnologies, Madison, WI) and submitted to the Southern Regional Meeting Abstracts.

Summary of Results: Twenty-four hour cultures of CN consistently yielded intact high molecular weight genomic DNA (>12,000 base pairs). In contrast, DNA from aging cultures (days 2 through 7) exhibited progressive fragmentation into lower molecular weight species (<500 base pairs). Those changes were paralleled by losses in fungal viability from 88% viable (day 1) to 23% (day 7).

Conclusions: Fungal cell aging in CN is associated with progressive DNA fragmentation. That observation supports the idea that the aging process triggers apoptosis in this opportunistic yeast.

METHICillin-RESISTANT STaphylococcus AUREus EPIDURAL ABSCESSES IN CHILDREN

McKee SG1, Linam WM2, Romero JR1,2 1University of Arkansas for Medical Sciences, Little Rock, AR and 2University of Arkansas for Medical Sciences and Arkansas Children’s Hospital, Little Rock, AR.

Purpose of Study: To review the presentation, management and outcome of children presenting with methicillin-resistant Staphylococcus aureus (MRSA) spinal epidural abscesses (SEAs).

Methods Used: We summarized cases of 3 children that presented over a 6-month period to Arkansas Children’s Hospital with a MRSA SEA. A review of the literature was performed to identify other children with MRSA SEA. Cases were summarized with specific focus on demographics, underlying health status, presenting symptoms, extent of infection, antibiotic and surgical management and outcome.

Summary of Results: Our 3 patients ranged from 10 months to 15 years in age. Patients were symptomatic for a mean of 7 days prior to diagnosis and initially treated for another etiology. Review of the literature revealed 7 additional cases ranging in age from 7 months to 18 years. Adolescents were more likely to have a medical risk factor or recent trauma to the back compared to young children who were all previously healthy. SEAs most often involved the cervical and/or thoracic spine with younger children having more extensive abscesses. In 90%, adjacent osseous and soft tissue infection was noted. Bacteremia was present in 90%. 6 were treated with a combination of antibiotics and surgery and 4 received antibiotics alone. Persistent neurologic deficits were present in 30%.

Conclusions: MRSA SEAs have rarely been reported in otherwise healthy children. The recent cluster of cases suggests that this important presentation of invasive community-acquired MRSA may be occurring more frequently.

VITAMIN D STATUS AND CALCIUM HOMEOSTASIS IN PRETERM INFANTS FROM BIRTH TO TERM AGE

Taylor SN, Wagner CL, Brivens B, Ebeling M, Washington R, Hollis B 1Medical University of South Carolina, Charleston, SC.

Purpose of Study: In adults, vitamin D (vitD) sufficiency is associated with improved calcium (Ca) absorption and lower intact parathyroid hormone (iPTH) levels, but these relationships are minimally studied in very low birth weight (VLBW) infants.

Methods Used: In this prospective observational study, VLBW appropriate-for-gestational-age (AGA) infants were recruited with measurement of serum 25-hydroxyvitamin D (25OHD), Ca, phosphorus (P), iPTH, and urine Ca and P excretion monthly from birth to TA. Results tested for normality and Spearman correlation and linear regression (log transformation of dependent variable) performed. Significance defined a priori p<0.05.

Summary of Results: Of 89 infants, median (25th, 75th) percentile birth gestational age (GA) 28 (26,29)weeks and 61.8% black and 46% male. Table shows serum/urine measurements. 25OHD was significantly positively correlated at birth with Ca(r=0.25), at 1 month with Ca(r=0.31) and P(r=0.26), at TA with Ca excretion(r=0.36) and negatively correlated with iPTH at both 1 month (r=-0.4) and TA (r=-0.41) and at TA with P excretion(r=0.38). With excluding infants who received diuretics, iPTH, Ca and P excretion correlations persisted but 1-month P correlation was not significant. At TA, when controlling for race, gender, GA at birth and serum Ca, 25OHD remained significantly associated with Ca excretion and inversely with iPTH. At TA, when controlling for race, gender, and GA at birth, PTH and P were positively and 25OHD negatively significantly associated with P excretion.

Conclusions: In VLBW infants, higher vitD status at 1 month was associated with higher Ca and P and lower iPTH. At TA, it was associated with higher Ca excretion and lower iPTH level and P excretion. Further evaluation of vitD status in urine Ca excretion may identify upper limit of normal vitD status for preterm infants. Identifying the vitD status that promotes Ca homeostasis and avoids iPTH elevation and P excretion is imperative.
incidence of sepsis. Infants <26 weeks had a significantly higher median TG level when compared to more mature infants.

**Comparison pre- and post- early lipid guidelines**

<table>
<thead>
<tr>
<th></th>
<th>Time 1</th>
<th>Time 2</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TG level drawn (%)</td>
<td>60.1</td>
<td>73.4</td>
<td>0.001</td>
</tr>
<tr>
<td>Median TG (mg/dL)(interquartile range)</td>
<td>79.6 (52.0, 139.0)</td>
<td>101.0 (71.5, 174.0)</td>
<td>0.003</td>
</tr>
<tr>
<td>TG&gt;200 mg/dL (%)</td>
<td>13.3</td>
<td>20.1</td>
<td>0.15</td>
</tr>
<tr>
<td>Positive blood culture (%)</td>
<td>10.8</td>
<td>13.8</td>
<td>0.39</td>
</tr>
<tr>
<td>Median growth velocity (g/day) (interquartile range)</td>
<td>22.1 (18.6-25.9)</td>
<td>22.4 (19.2-25.7)</td>
<td>0.67</td>
</tr>
</tbody>
</table>

**497 RACIAL DIFFERENCES IN DIET PATTERNS DURING PREGNANCY AND BREASTFEEDING IN THE MID-SOUTH**

Volgyi E, Hare ME, Sorrells M, Yoo W, Tylavsky FA University of Tennessee Health Science Center, Memphis, TN.

**Purpose of Study:** The aim of this study was to analyze the racial differences in dietary patterns during pregnancy and report of breastfeeding in the Mid-South.

**Methods Used:** A total of 1120 mothers (64% African American (AA), 54% on Medicare) enrolled in the Conditions Affecting Neurocognitive Development and Learning in Early childhood (CANDLE) Study from Memphis, TN were used for this report. Demographic data and frequency of food intake using a food frequency questionnaire were obtained during the 2nd trimester. Breastfeeding information was collected during a home visit one month after delivery. Factor analysis, Kruskal-Wallis ANOVA and Chi square test were used to analyze the data.

**Summary of Results:** Seven distinct dietary patterns of intake were identified (Processed, US Southern, Healthy, Processed-Southern mixed, Processed-Healthy mixed, Southern-Healthy mixed and overall Mixed). Those who consumed healthier patterns were more likely to be older (p=0.0001), completed a higher education level (p=0.01), less likely to be on Medicare (p=0.0001) and less likely to be single (p=0.001) in both races. In the AA group, those who consumed healthy patterns were heavier (p=0.005) and had higher pre-pregnancy BMI (p=0.019), while in the Caucasian group women with healthy patterns had lower BMI (p=0.021). There was no difference in income across the dietary patterns. Racial differences were observed in the distribution of the study participants across the dietary patterns (p=0.001). The majority of the Caucasian population belonged to the Mixed (35%), Healthy (30%) and Healthy-Processed (24%), while most of the AA women were assigned to Mixed (41%), Southern-Processed (18%) and Southern (15%) patterns. Overall, more Caucasian women breastfed their child (74%) than AA (28%) (p=0.0001). While there was a different distribution of breastfeeding across the dietary patterns between the races (p=0.0001), both AA and C women with healthier diet patterns during pregnancy were more likely to breastfeed their child.

**Conclusions:** Racial differences across dietary patterns during pregnancy aligned with reported breastfeeding. Those choosing healthier eating habits had higher rates of breastfeeding regardless of race.

**498 VITAMIN D STATUS FROM BIRTH TO TERM AGE IN A RACIALLY-DIVERSE VERY LOW BIRTH WEIGHT INFANT COHORT**

Taylor SN, Wagner CL, Bivens B, Ebeling M, Washington R, Hollis BW Medical University of South Carolina, Charleston, SC.

**Purpose of Study:** Vitamin D (vitD) deficiency is defined as 25-hydroxyvitamin D (25(OH)D) <20 ng/ml. The vitD intake to promote adequate vitD status for very low birth weight (VLBW) infants is not well-defined. This study identified the vitD status and associated factors, such as race and vitD intake, for VLBW infants from birth to term age (TA).

**Methods Used:** In this prospective observational study of VLBW appropriate-for-gestational age (AGA) infants, serum 25(OH)D was measured at birth and followed until TA. Infant demographics were recorded and vitD intake was calculated and provided per routine care. Results tested for normality and then Chi-square/Fisher's Exact, Kruskal-Wallis, and linear regression (log transformation of dependent variable) performed. Significance defined a priori as p<0.05.

**Summary of Results:** Of 89 infants, median (25th, 75th) percentile birth gestational age (GA) 28 (26,29) weeks and weight 1105 (900,1280) g and 61.8% black and 46% and male. Table 1 provides vitD status for all infants and by race. Table 2 shows prevalence of vitD deficiency by age and race. No infants were vitD deficient at TA. Total vitD intake from all sources was 349 (234,517) IU/day for postnatal month 1 and 609 (519,678) IU/day from birth to TA. In regression analysis, 25(OH)D level was significantly associated with vitD intake when controlling for race, gender, and birth GA at TA but not at month 1.

**Conclusions:** VLBW infants exhibited high prevalence of vitD deficiency at birth. With median vitD intake of 600 IU/day, at TA, all had 25(OH)D>20 ng/ml and vitD intake was significantly associated with vitD status. Compared to white infants, black infants had significantly greater vitD deficiency at birth and had significantly lower vitD status at birth and TA.

**Table 1. Median (25th,75th) percentile 25OHD, ng/ml**

<table>
<thead>
<tr>
<th>Infant Race</th>
<th>Birth (n=88)</th>
<th>2 Week (n=86)</th>
<th>1 Month (n=81)</th>
<th>Term Age (n=76)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Infants</td>
<td>14.5 (10.6, 20.9)</td>
<td>22.9 (18.5, 28.6)</td>
<td>33.3 (23.5, 40.4)</td>
<td>45.8 (35.5, 65.3)</td>
</tr>
<tr>
<td>Black Infants</td>
<td>13.3 (9.3, 17.3)</td>
<td>23.3 (16.0, 28.2)</td>
<td>36.5 (23.3, 39.7)</td>
<td>50.4 (30.0, 55.8)</td>
</tr>
<tr>
<td>White Infants</td>
<td>21.5 (15.5, 27.7)</td>
<td>27.6 (21.3, 31.2)</td>
<td>35.4 (28.6, 41.2)</td>
<td>55.1 (40.8, 68.6)</td>
</tr>
</tbody>
</table>

1.2. Significantly different n=number

**Table 2. Prevalence of VitD Deficiency (percent)**

<table>
<thead>
<tr>
<th>Infant Race</th>
<th>Birth (n=88)</th>
<th>1 Month (n=83)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Infants</td>
<td>72.7</td>
<td>9.4</td>
</tr>
<tr>
<td>Black Infants</td>
<td>87.3</td>
<td>11.5</td>
</tr>
<tr>
<td>White Infants</td>
<td>48.5</td>
<td>6.5</td>
</tr>
</tbody>
</table>

1. Significantly different

**499 THE USE OF ENTERAL FISH OIL, (LOVAZA®), IN INFANTS WITH PARENTERAL NUTRITION-ASSOCIATED CHOLESTASIS (PNALD)**

Pryor J, Gibson J, Bharti D East Tennessee State University, Johnson City, TN.

**Purpose of Study:** To alert clinicians to the use of enteral fish oil as a treatment of parenteral nutrition (PN) associated cholestasis.

**Methods Used:** The clinical and laboratory evidence of two infants with cholestasis due to PN was investigated before and after institution of 1g/day of enteral fish oil supplementation.

**Summary of Results:** Two preterm neonates born via cesarean section were shown to have developed cholestasis from long term PN use. A 32 week male diagnosed with gastroschisis and microcolon. A prolonged course of PN began on day of life one. The infant developed cholestasis after several weeks of PN, and despite standard therapy with phenobarbital and ursodiol, cholestasis persisted. Liver biopsy confirmed the diagnosis of parenteral nutrition-associated liver damage (PNALD). Enteral fish oil therapy began, and cholestasis was shown to stabilize and eventually reverse a total of 7 weeks.

A 28 week female developed necrotizing enterocolitis and required colonic resection leading to short bowel syndrome. PN was initiated and cholestasis was evident within the first two weeks. Enteral fish oil supplementation began, and reversal of cholestasis was achieved in 19 days.

**Conclusions:** PNALD is not an uncommon problem in the NICU setting. Standard treatment involves instituting enteral feeds as early as clinically safe along with medical treatment consisting of phenobarbital and ursodiol. In cases where standard treatment does not lead to stabilization or improvement of cholestasis, enteral fish oil has been shown to be a promising additional therapy. However, adding fish oil has been shown to decrease duration of cholestasis reversal in a small set of patients when compared to standard therapy.1 Reversal in the patients treated with enteral fish oil was noted at an average of 5 weeks. This is compared to the average of 13 weeks in previous studies of patients on standard therapy. Due to the small sample size of infants that have been studied on enteral fish oil for PN cholestasis reversal, it is recommended that a larger sample size be evaluated for safety and efficacy.
500

IMPACT OF A LARGE, ORAL DOSE OF VITAMIN D3 ON MARKERS OF INFLAMMATION IN ADULTS WITH CYSTIC FIBROSIS HOSPITALIZED FOR A PULMONARY EXACERBATION

Grossmann RE1, Zughai S2,3, Kumari M4, Seydafiian S4, Lyles R4, Liu S4, Suelbinvong A1,2, Schechter M1,2,5, Stecenko A1,2,5, Ziegler T1,3, Targheria V1,1,1, Emory University, Atlanta, GA; 2Emory University, School of Medicine, Atlanta, GA; 3Emory University, School of Medicine, Atlanta, GA; 4Emory University, School of Medicine, Atlanta, GA; 5Children's Healthcare of Atlanta, Atlanta, GA.

Purpose of Study: Cystic fibrosis (CF) is a hereditary disease that causes chronic pulmonary infection and respiratory failure. Excess inflammation has been linked to lung parenchyma damage and poor outcomes in CF. Vitamin D supplementation has been associated with a reduction in inflammatory markers which may decrease pulmonary damage produced by inflammation in CF. The objective of this study was to evaluate the impact of vitamin D supplementation on markers of inflammation in CF adults hospitalized for a pulmonary exacerbation.

Methods Used: We randomized 30 CF adults admitted for a pulmonary exacerbation to a single 250,000 IU dose of vitamin D3 or placebo and measured serum 25-hydroxyvitamin D (25(OH)D), IL-6, IL-8 and TNF-α concentrations at baseline, 1 week and 12 weeks post-intervention.

Summary of Results: Table 1 summarizes the changes in serum concentrations of the inflammatory markers and 25(OH)D.

Conclusions: A high percentage (>90%) of CF patients with replacement of Vitamin D levels was superior to the current minimum recommended levels. Additionally an association with decreased CPK levels/vitamin D supplementation was noted. As expected our cohort of patients on statin therapy had reductions in serum LDL and triglyceride. These findings implicate a role of hypovitaminosis D in statin intolerance due to myalgia and that repletion of vitamin D levels may increase the probability of successful rechallenge.

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THE IMPACT OF BODY COMPOSITION ON LIPID LEVELS

De Schutter A1,2, Lavié C3, Reyna Y1, Dabage N1, Cleveland Clinic Florida, Weston, FL and John Ochsner Heart and Vascular Institute, New Orleans, LA.

Purpose of Study: Obesity is traditionally defined in terms of body mass index (BMI). However, it is unclear how some pathologies interact with body composition, including a combination of both lean mass index (LMI) and body fat (BF) rather than BMI, which is solely defined according to weight.

Methods Used: We studied 570 patients with stable coronary heart disease (CHD) who were divided into 4 BF and 3 LMI categories (according to an age- and gender- adjusted classification). BF was determined by the sum of the skin-fold method and LMI was calculated as the proportion of BMI not defined by BF (1-%BF) * BMI. Lipid levels were measured and compared across different categories (Table).

Summary of Results: In multivariate analysis, after adjusting for age, gender, and impaired fasting glucose, both higher LMI (OR 1.425 CI 1.10 - 1.84) and BF (OR 1.26 CI 1.01 - 1.58) categories were associated with a low HDL. For LDL, after adjusting for age, gender and lipid medication use, higher BF (OR 1.31 CI 1.02 - 1.68) was associated with increased likelihood of having high LDL. LMI was not significantly associated with higher LDL.

Conclusions: BF seems to be a stronger determinant of LDL than is LMI. High BF is associated with low HDL levels. High LMI is also associated with low HDL levels, an effect that does not disappear after adjustment for impaired fasting glucose. This provides more evidence that the current definition of obesity in terms of BMI rather than body composition might be inadequate to fully assess subtle associations with important CHD risk factors.

Lipid Levels According to Different Levels of Body Fat (BF) and Lean Mass (LMI)

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HYPOVITAMINOSIS D AND STATIN INTOLERANCE- UTILITY OF VITAMIN D REPLETION

Mizeracki AM1, Elam M2 1University of Tennessee, Memphis, TN and 2University of Tennessee, Memphis, TX.

Purpose of Study: Statin treatment is the cornerstone of current treatment of hyperlipidemia therapy. Statin induced myalgia has been linked to hypovitaminosis D and we wish to examine Vitamin D levels in patients being rechallenged with statin.

Methods Used: Study was performed by retrospective chart review of patients referred to a lipid clinic who were referred to statin intolerance and a total of 58 patients were reviewed with equal numbers of control. Control patients via retrospective review of patients with Vitamin D levels drawn. Patients were reviewed with equal numbers of control. Control patients were reviewed with equal numbers of control. Control patients via retrospective review of patients with Vitamin D levels drawn. Patients were reviewed with equal numbers of control...

Summary of Results: High BF is associated with low HDL levels. High LMI is also associated with low HDL levels, an effect that does not disappear after adjustment for impaired fasting glucose. This provides more evidence that the current definition of obesity in terms of BMI rather than body composition might be inadequate to fully assess subtle associations with important CHD risk factors.

Lipid Levels According to Different Levels of Body Fat (BF) and Lean Mass (LMI)

503

SLEEP PATTERNS IN PATIENTS REFERRED TO A DIETITIAN

Limas N, Kembra A, Buscemi D, Raj R, Nugent K 1Texas Tech Health Science Center, Lubbock, TX.

Purpose of Study: Short sleep periods are associated with weight gain, the development of diabetes and hypertension, and increased mortality. Improvement in sleep patterns could limit weight gain and possibly increase the efficacy of weight loss programs. However, the usual sleep patterns in patients referred for dietary counseling are unknown.

Methods Used: Patients referred to a dietitian working in an internal medicine clinic completed surveys about sleep patterns and behavior factors which influence sleep. Some also kept sleep logs for two weeks. Medical records were reviewed to record diagnoses and selected medications.

Summary of Results: Thirty-six patients completed the intake survey. The mean age of the patients was 54 (± 14), 56% were women, and the mean BMI was 37 (± 10.9). The top four diagnoses were diabetes (78%), hypertension (69%), GERD (19%), and depression (17%). The top four medication groups were narcotics (42%), antihistamines (28%), beta-blockers (28%), and hormones (22%). The modal bedtime was 10 PM on weekdays and weekends.

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A DIETITIAN
The modal wake-up times were 5 AM on weekdays and 6 AM and 7 AM on weekends. The median sleep duration was 8.0 hours (IQR: 7.0 to 8.8 hours) on weekdays and 9.0 (IQR: 8.0 to 9.0 hours) on weekends. Forty-four percent of the subjects took a nap during the weekdays. Sixty-one percent rated their sleep as either poor or fair in quality. Thirty-one percent used sleeping medications, 30% drank alcohol after 6 PM, and 47% used caffeine after 6 PM. Ninety-one percent slept for less than six hours on some nights. They attributed this to insomnia (53%), pain (31%), and urinary symptoms (25%). Ten subjects also filled out a two-week sleep log. Seven had a bedtime range that exceeded 2 hours; 5 had an end of bed time range which exceeded 2 hours.

**Conclusions:** Most adult patients referred to a dietitian have adequate sleep periods (8 hours). However, 70% of the subjects had significant variability in either bed time, wake time, or both. In addition, 61% rated their sleep as only poor to fair. Exogenous factors and erratic sleep patterns may contribute to non-restorative sleep. Counseling and management of external factors could improve sleep quality and possibly the medical management of obesity. Insomnia and pain need more attention in these patients.

**Perinatal Medicine II**

1:00 PM Saturday, February 11, 2012

**504**

**A CARDIOTONIC STEROID CAUSES CEREBRAL VASCULAR LEAK SYNDROME IN HYPERTENSION DURING PREGNANCY: A TRANSLATIONAL APPROACH**

Uddin MN1, Horvat D2, Allen SR1, Jones RO1, Zawieja DC2, Kuehl TJ1

1 Scott & White / Texas A&M HSC, Temple, TX and 2 Texas A&M HSC, Temple, TX.

**Purpose of Study:** Preeclampsia (PreE) is a hypertensive disease of pregnancy with multiple pathophysiologic triggers. We have shown that the urinary excretion of a cardiacotonic steroid, marinobufagenin (MBG), is elevated prior to the development of symptoms. Vasogenic cerebral edema represents a breach of the blood-brain barrier (BBB) and is a potential preE complication. We investigated alterations in the endothelial cells of the BBB in rats rendered “PreE”, the effects of MBG on these alterations, and the underlying molecular mechanisms.

**Methods Used:** (1) BBB permeability in PreE rats was assessed by Evan’s blue (EB) dye extravasation into brain parenchyma by a fluorescent assay. (2) Human brain endothelial cells (HBEC) were used to test for effects of MBG in vitro on monolayer permeability. In HBEC, phosphorylation of ERK1/2, Jnk, p38, and Src was evaluated after MBG treatment. Apoptosis was evaluated by caspase 3/7 and annexin-V staining. Effects of MBG on endothelial tight junction proteins were assessed by immunofluorescence. (3) MBG levels and angiogenic factors were assayed in urine samples from 17 PreE and 23 normally pregnant patients.

**Summary of Results:** (1) In the striatum, the extent of dye extravasation was greater (p < 0.05) in PreE rats than in controls (9.1 vs 6.2 μg EB / mg dry tissue). (2) Concentrations of MBG ≥ 1 nM inhibited proliferation of HBMEC by 75%. MBG significantly increased monolayer permeability within 6 hours by 1.5 fold, caused a significant decrease in the phosphorylation of ERK1/2 (80%), and activated the phosphorylation of Jnk (56%), p38 (71%), and Src (75%) increased caspase 3/7 activity and positive annexin staining indicating activation of apoptosis, which was prevented by p38 inhibition. Additionally, MBG caused the disruption of endothelial adherens tight junction proteins. (3) The urinary MBG levels were higher in PreE patients compared to normals.

**Conclusions:** These data provide evidence for the view that the MBG increase observed in PreE patients compared to normals. Angiogenic imbalance was observed in PreE patients compared to normals.

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**CARDIOTONIC STEROIDS TRIGGER CYTOTROPHOBLAST DYSFUNCTION VIA CELL CYCLE ARREST AND APOPTOTIC SIGNALING**

Horvat D1, Allen SR2, Jones RO2, Zawieja DC1, Kuehl TJ2, Uddin MN1, 1 Texas A&M HSC, Temple, TX and 2 Texas A&M HSC/Scott & White, Temple, TX.

**Purpose of Study:** Cardiotoxic steroids (CS) such as marinobufagenin (MBG), ouabain (OUB), and cinobufotalin (CINO) are endogenous inhibitors of Na+K+ ATPase. Preeclampsia is a hypertensive disorder unique to pregnancy with multiple pathophysiologic triggers. We have shown that MBG is elevated prior to the development of the syndrome of preeclampsia. We have also demonstrated that MBG impairs cytrophoblast (CTB) function, which is critical for placental development. However, the effects of OUB and CINO on CTB function and their mechanisms of action are still unknown.

**Methods Used:** Effects of CS on CTB function (proliferation, migration, and invasion) were investigated in first trimester extravillous CTB cells. To elucidate the mechanism by which CS impair CTB functions, the phosphorylation of ERK1/2, p38, and Jnk was evaluated by ELISA from CTB cells stimulated with MBG, OUB, and CINO (0.1, 1, 10, and 100 nM) separately at different time points. Cell cycle progression and apoptotic signaling were evaluated by Fluorescence Activated Cell Sorting (FACS) analysis of CTB cells stimulated with the three CS. Apoptosis was evaluated by caspase 3/7 and annexin-V staining.

**Summary of Results:** All three CS (MBG, OUB, and CINO) equal or greater than 1 nM significantly inhibited CTB cell proliferation (~80%), migration (~70%), and invasion (~60%), whereas 0.1 nM CS had no effect. All three CS stimulated a significant decrease in the phosphorylation of ERK1/2 (~70%) and an increase in Jnk (~50%) and p38 (~60%) phosphorylation. There was a significantly higher percentage (80%) of cells in the G0/G1 phase for cells treated with equal or greater than 1 nM CS compared to basal and to 0.1 nM treated cells (55%). All three CS stimulated a significant increase in caspase 3/7 and a positive annexin-V stain indicating the activation of apoptosis.

**Conclusions:** We demonstrate that CS-induced impairment of CTB cell function occurs via the modulation of MAPK signaling, cell cycle arrest, and the activation of apoptosis. As these responses are similar, it is tempting to speculate that all three CS (MBG, OUB, and CINO) operate through the same pathway.
premature neonates with hyperparathyroidism (HPTH). Eneral calcium carbonate (CaCO3) corrected both their hypophosphatemia and HPTH. As PTH is the hormone responsible for bone demineralization, we began identifying neonates with secondary HPTH based on radiographic evidence of bone demineralization, and treating neonates with HPTH with enteral CaCO3.

**Methods Used:** We did a retrospective chart review to investigate HPTH and its treatment. Between 7/1/04 - 6/30/10, 231 extremely low birth weight (ELBW, <1000 gm) neonates survived hospitalization and received all their care in our hospital.

**Summary of Results:** Of this 231, PTH levels were assessed in 66 patients (29%) and were elevated in 56 patients (85% of those tested). The timing of this testing was sporadic and was often performed in the neonates with lower birth weight and gestational age. Of patients with HPTH, 44 (79%) were the treatments CaCO3 and PTH calcium. Cerebrovascular reactivity was evaluated by comparing the 30 HPTH neonates with initial PTH levels drawn between 21-60 days of age shows PTH rising until CaCO3 is initiated and then a steady decline while on therapy.

**Conclusions:** Secondary hyperparathyroidism in neonates less than 1500g is a diagnosis which has not been recognized in the literature. This is the first study identifying this disease and a potential intervention for attenuating bone demineralization in this population. PTH may be a marker for the development and progression of osteopenia of prematurity however a much better understanding of the incidence and timing of HPTH along with investigation of the utility of treatment is needed.

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**PROLONGED HYPERCAPNIA AND CEREBROVASCULAR REACTIVITY IN NEWBORN PIGS**

Chilakala SK1, Pourcyrous M1, Parfenova H2, Leffler CW1 UTHSC, Memphis, TN and 2UTHSC, Memphis, TN.

**Purpose of Study:** Higher PaCO2 while maintaining normal PaO2 is commonly accepted in neonates in order to prevent lung injury. The purpose of this study is to investigate the effects of prolonged hypercapnia on cerebral arteriolar diameters and on cerebrovascular reactivity.

**Methods Used:** Newborn piglets (0-3 days old of either sex) were anesthetized with ketamine and xylazine. Femoral venous and arterial lines were placed. Anesthesia was continued using α-chloralose. Piglets were intubated and ventilated. Then, a closed cranial window was implanted over the left parietal cortex. Pial arteriolar diameter was measured with a stereo-microscope with a video micrometer coupled to a television camera mounted on the microscope. Cerebrovascular reactivity was evaluated during normocapnia (PaCO2 35-45 mm Hg) and prolonged hypercapnia (PaCO2 65-75 mm Hg). Three topical vasodilators [Sodium nitroprusside (SNP) 10-6 M, Glutamate 10-4 M and Isoproterenol 10-6 M] were used that cause dilation via distinct mechanisms (cGMP, KCa channels, and cAMP, respectively). Vasodilators were administered for 10 min periods with irrigation of artificial CSF to allow return to baseline diameters between the dilations. Cerebrovascular reactivity was evaluated by comparing the 30 HPTH neonates with initial PTH levels drawn between 21-60 days of age shows PTH rising until CaCO3 is initiated and then a steady decline while on therapy.

**Summary of Results:** Of this 231, PTH levels were assessed in 66 patients (29%) and were elevated in 56 patients (85% of those tested). The timing of this testing was sporadic and was often performed in the neonates with lower birth weight and gestational age. Of patients with HPTH, 44 (79%) were the treatments CaCO3 and PTH calcium. Cerebrovascular reactivity was evaluated by comparing the 30 HPTH neonates with initial PTH levels drawn between 21-60 days of age shows PTH rising until CaCO3 is initiated and then a steady decline while on therapy.

**Conclusions:** Secondary hyperparathyroidism in neonates less than 1500g is a diagnosis which has not been recognized in the literature. This is the first study identifying this disease and a potential intervention for attenuating bone demineralization in this population. PTH may be a marker for the development and progression of osteopenia of prematurity however a much better understanding of the incidence and timing of HPTH along with investigation of the utility of treatment is needed.

### 509

**THE DEMOGRAPHICS AND CLINICAL CHARACTERISTICS OF STAPHYLOCOCCUS AUREUS SEPSIS IN A NEONATAL INTENSIVE CARE UNIT - A 10 YEAR REVIEW**

Dolapo O, Dhamtereddy R, Talati A University of Tennessee Health Science Center, Memphis, TN.

**Purpose of Study:** To compare the demographics, clinical characteristics and mortality of infants with Staphylococcus aureus sepsis between the initial five years and the latter five years of the last decade.

**Methods Used:** A retrospective perinatal database review for all neonates admitted to the NICU with Staphylococcus aureus positive blood cultures from (Jan 1st 2000 to December 31st 2009). Data were collected regarding their demographics, clinical characteristics, co-morbidities, concurrent skin abscesses, occurrence of septic shock during the course of illness, mortality and the timing of death as it relates to the infection. Group A represents the pool of patients managed in the initial five years January 2000 - December 2004. Group B represents patients seen in the latter five years of the decade January 2005 - December 2009. Statistical analysis comparing the two groups was done using frequencies and Chi-square tests.

**Summary of Results:** During the study period, 203/11111 infants were identified with Staphylococcus aureus infection, of which 77/5584 infants in Group A and 126/5527 in Group B (p<0.05). Characteristics of the two groups are as shown in the following table:

<table>
<thead>
<tr>
<th>Variables</th>
<th>Group A (n=77)</th>
<th>Group B (n=126)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender Distribution</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male + Female</td>
<td>41 (40.5%)</td>
<td>69 (54.8%)</td>
<td>NS</td>
</tr>
<tr>
<td>Mean Gestation (weeks)</td>
<td>28.2</td>
<td>28.7</td>
<td>NS</td>
</tr>
<tr>
<td>Complicated skin abscess</td>
<td>14 (18.2%)</td>
<td>17 (13.5%)</td>
<td>NS</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>22 (28.6%)</td>
<td>35 (27.8%)</td>
<td>NS</td>
</tr>
<tr>
<td>Coexisting NEC2</td>
<td>7 (9.1%)</td>
<td>6 (4.8%)</td>
<td>NS</td>
</tr>
<tr>
<td>Thrombocytopenia</td>
<td>39 (50.6%)</td>
<td>72 (57.1%)</td>
<td>NS</td>
</tr>
<tr>
<td>Mortality</td>
<td>9 (11.7%)</td>
<td>29 (23.0%)</td>
<td>.03</td>
</tr>
</tbody>
</table>

**Conclusions:** There is increase in the incidence of Staphylococcus aureus infection among neonates over the last decade. There is also a worsening prognostic outlook with increasing mortality and severity of disease.

### 510

**MATERNAL ANTIBIOTICS INCREASE RISK OF KLEBSIELLA LATE-ONSET SEPSIS IN NEONATAL MICE**

Blosser EG1, Randolph DA2 1University of Alabama at Birmingham, Birmingham, AL and 2University of Alabama at Birmingham, Birmingham, AL.

**Purpose of Study:** Late-onset bacterial sepsis (LOS) is a leading cause of morbidity and mortality among preterm infants. Infections with Gram-negative bacteria, such as Klebsiella pneumoniae, occurring when bacteria translocate across premature gut epithelium into the bloodstream, can be particularly severe. Bacterial translocation rates across mature gut epithelium are determined by complex interactions between the host’s commensal microbiota and immune system, and pathogens, which may be altered in preterm infants. Prolonged empiric antibiotic use early in the hospital stay is associated with increased risk of intestinal infection and death but the mechanism of this is unknown. The purpose of this study was to determine 1) if antibiotics increase the risk of sepsis and death in a mouse model of LOS by altering natural gut microbial colonization, and 2) if polymicrobial recolonization is sufficient to reverse the effects of antibiotics.

**Methods Used:** We developed a physiologic mouse model of neonatal LOS in which 5-day-old C57Bl/6 pups, colonized with K. pneumoniae via intra-gastric inoculation, become septic as the pathogen translocates across the gut mucosa. To test the effects of antibiotics in this model, pregnant dams were given a loading dose of vancomycin and gentamicin, and then placed on oral vancomycin and gentamicin until 4 days after the pups were born. On day 5, pups were challenged with 107 CFU K. pneumoniae. Germ-free and untreated pups served as controls. Real time PCR and direct visualization of bioluminescent K. pneumoniae were used to assess colonization. After antibiotic treatment, some litters were recolonized with lactobacillus alone or by fecal transplant.

**Summary of Results:** Maternal antibiotic use or germ-free status conferred increased risk of LOS in pups (p<0.01 vs. untreated controls). Visualization of bioluminescent K. pneumoniae and PCR detection of K. pneumoniae in stool indicated delayed clearance in pups of antibiotic-treated dams (p<0.01). Recolonization with lactobacillus alone did not confer protection, but polymicrobial recolonization (fecal transplant) significantly improved survival (p<0.04).
511 GENE EXPRESSION OF DEFENSIN IS GREATLY UPReregulated in Neonatal Neutrophils Following Labor
Lawrence SM1, Pereira A2, Jiang K1, Frank MB1, Jarvis JN1 1University of Oklahoma, OKC, OK; 2University of Oklahoma, OKC, OK; and 1OMBE, OKC, OK.

Purpose of Study: Neonatal neutrophils are the “first responders” of the innate immune system. However, their function in the neonate remains largely unexplored. This investigation determines the variability of gene expression between neonatal and adult neutrophils at rest and following stimulation with lipopolysaccharide.

Methods Used: Cord (9) and adult (12) blood samples were collected per routine procedures. The neutrophil/erythrocyte layer was isolated following centrifugation of the cell preparation tubes and neutrophils further purified by lysis the erythrocytes with Sterile Red Blood Cell Lysis Buffer. Neutrophils were then divided into 3 groups and seeded at 1 x 10^6/ml into multiwalled plates and incubated with or without LPS 10 ng/mL (Invivogen) for 0, 45, and 90 minutes. RNA was isolated and gene expression differences determined via the Illumina platform at the Oklahoma Medical Research Foundation. Signal intensities from each probe were quantitated, adjusted for local background, and quantile normalized (Matlabs; Natwick, MA) to adjust the marginal distribution of each sample.

Summary of Results: Neonatal cord neutrophils were up-regulated in > 75% of differentially expressed genes at each time point as compared to adults. This difference remained relatively unchanged prior to and following LPS stimulation. Furthermore, neonatal neutrophils demonstrated a 13-16 fold increase in the expression of defensins prior to LPS stimulation.

Conclusions: Hierarchical clustering of gene expression results showed distinct differences between adult and cord neutrophils in unstimulated and stimulated states. Our data suggests that labor may “prime” neonatal neutrophils to function in a manner similar to that observed with LPS stimulation. This speculation will, of course, need to be verified by examining samples collected in infants born via C-Section without labor, for which sample collection is currently ongoing. If confirmed then, evolutionarily speaking, this may offer the neonate an advantage as the neonate transitions from a sterile to non-sterile environment.

512 Neonatal Abstinence Syndrome in Infants Exposed to Buprenorphine
Huff LL1, Reynolds EW2,1 1University of Kentucky, Lexington, KY and 2Norton Healthcare, Louisville, KY.

Purpose of Study: Previous studies have reported that babies prenatally exposed to buprenorphine have negligible symptoms of neonatal abstinence syndrome (NAS). We have seen an increase in buprenorphine-exposed infants in our NICU. Our experience suggests that these infants have worse NAS symptoms than those exposed to other drugs.

Methods Used: We performed a retrospective cohort study of infants admitted to the Kentucky Children’s Hospital NICU from April 2006 to June 2010 with a diagnosis of Infant of a Substance Abusing Mother or NAS. Inclusion criteria included 1) prenatal drug/exposure/medication and 2) term gestation (37-42 weeks). Exclusion criteria were 1) preterm gestation and 2) withdrawal of iatrogenic causes. The study group consisted of infants exposed to buprenorphine (BUP). The control group (CONT) included infants with exposure to other drugs/medications with high abuse potential. Study variables were length of stay (LOS), requirement for pharmacologic treatment, length of hospitalization, outpatient and total treatment and if treatment was single- or multi-drug therapy. Statistical methods included comparing continuous variables with Mann-Whitney Rank Sum and comparing proportions with Fisher’s Exact Test.

Summary of Results: Data was available for 155 CONT infants and 24 BUP infants. BUP babies had longer LOS than CONT babies (17 vs 10 days). BUP babies had longer length of inpatient treatment (15.5 ± 4 days), longer length of outpatient treatment (8.5 ± 0 days) and longer total treatment (34 ± 4 days) (p<0.002 for all). A greater percentage of BUP babies required outpatient treatment (58% vs. 26%, p=0.003). More CONT babies required no pharmacologic treatment at all (40% vs. 17%, p=0.038); 6 infants were exposed to buprenorphine only. 2 of these required no pharmacologic treatment. The other 4 had longer lengths of treatment in all categories than CONT.

Conclusions: Buprenorphine exposed infants can withdraw more severely than infants exposed to other drugs of abuse or maternal addiction treatment. Proper counseling should be provided to mothers being treated with buprenorphine during pregnancy. Despite the limitations of this study, this work can prompt further investigation with randomized controlled trials of buprenorphine-exposed infants.
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USE OF HIGH FLOW HIGH HUMIDITY NASAL CANNULA THERAPY FOR INFANTS WITH BRONCHIOLITIS

Soood R¹, Stolfi A², Rowin M¹ ¹Univ. of Tennessee Medical College-Chattanooga, Chattanooga, TN and ²Boonshoft School of Medicine-Dayton, OH, Dayton, OH.

Purpose of Study: High flow high humidity (HFHH) nasal cannula therapy is an evolving noninvasive ventilation strategy in the pediatric intensive care unit (PICU). This study was designed to assess whether HFHH therapy would result in improved work of breathing, ventilation, fewer intubations and shorter hospitalizations among infants admitted with respiratory failure due to RSV+ bronchiolitis.

Methods Used: This is an IRB-approved prospective, multi-center study. Infants admitted to the PICU from Dec 2010 through March 2011 at two children’s hospitals with the diagnosis of RSV bronchiolitis were randomized into one of three groups: 1. Conventional nasal cannula (NC) with 100% oxygen and flow rate of < 2 litres/min (LPM); 2.HFHH therapy with 30% oxygen, flow of 4 LPM; or 3.HFHH therapy with 30% oxygen, flow of 8 LPM. All other therapies were identical between groups. Serial data was collected on pre/post therapy blood gases, respiratory rates (RR), validated work of breathing (WOB) scores, days on oxygen, length of hospital stay, and treatment failures. Two sample t-tests, two-way repeated ANOVA, Fisher’s exact test, and Bonferroni multiple comparison tests were used for analysis.

Summary of Results: Groups were equally randomized based on weight, age, sex and ethnicity. No difference was seen between groups for change in pH, pCO2 levels or days of oxygen use. WOB significantly decreased within 1 hour in the high flow HFHH group compared to NC (p=0.009). The improvement in WOB continued over 24 hours in both HFHH groups compared to NC (p=0.001 and <0.001 respectively). Similarly, RR was less in patients on high flow HFHH within 1 hr (p=0.01) and among patients in groups 2 and 3 over 24 hours (p=0.01 and 0.03 respectively). Treatment failures were significantly less in patients on high flow HFHH therapy compared to conventional therapy (p=0.05).

Conclusions: This is the first prospective study designed to define the utility of HFHH therapy in a single disease process. HFHH therapy using > 6 LPM significantly improved WOB, RR, and was associated with significantly fewer treatment failures when compared to conventional nasal cannula therapy in infants with RSV bronchiolitis. This suggests further applicability for this form of noninvasive ventilation in the PICU.
Patients with CHF have increased VREF, consistent with the hypothesis that a portion of the patient's cardiogenic pulmonary edema is cleared via the exhaled air. We speculate that quantitation of VREF can contribute to the diagnosis of CHF, the optimal timing of extubation and improve our understanding of the resolution of cardiogenic pulmonary edema.

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**PEDIATRIC INPATIENT ASTHMA CLINICAL PATHWAY VS. USUAL CARE**

Maguder T1, Harrington K2, Narayanan S1, Walley S1, Wall T1, 1UAB, Birmingham, AL; 2UAB, Birmingham, AL; 3UAB, Birmingham, AL

**Purpose of Study:** Asthma is a leading cause of pediatric hospitalizations. A Respiratory Therapy-driven pediatric Asthma Clinical Pathway (Pathway) was developed to standardize bronchodilator dosing and delivery; pulse oximetry monitoring; respiratory clinical assessment scoring system; staff response to patients with clinical deterioration; criteria for weaning bronchodilators and oxygen; and discharge criteria. We sought to compare length of stay (LOS), charges per day, and hospital readmission rates of children admitted to the Pathway vs. Usual Care (Mar-Aug 2011)

**Methods Used:** Following retrospective chart review, 61 children admitted to the Pathway were matched closely by clinical severity at admission, age, race, and gender (when possible) with patients that were admitted to Usual Care during the same time period. Mean LOS, charges per day, and hospital readmission rates were computed for the Pathway vs. Usual Care groups; chi square tests were performed for categorical values and two-sided independent t-tests for continuous variables. Descriptive data were examined to validate matching.

**Summary of Results:** Patients were 82% black, 71% male, and an average age of 7.5 years, with no significant differences between groups. Children assigned to Pathway vs. Usual Care had significantly shorter LOS. There was no significant difference in average charges per day. No patients from either group were readmitted within 30 days.

**Conclusions:** The use of an Inpatient Asthma Clinical Pathway improves clinical efficiency during pediatric asthma hospitalization to reduce LOS and is not associated with increased rates of hospital readmission within 30 days. While daily average discharges did not differ between groups, the shorter LOS for pathway patients is associated with a reduction in total hospitalization charges for these patients. Asthma is a high volume inpatient diagnosis. We speculate that the reduction in LOS for asthma associated with the use of this pathway, will result in a significant drop in total hospital days for this diagnosis and will increase inpatient bed availability for all patients.

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**LIFE-SPACE SCORE POSITIVELY CORRELATES WITH LUNG FUNCTION AND MOBILITY IN ADULTS WITH CYSTIC FIBROSIS**

Jackson K2, Thobani A3, Gottlieb E2, D’Laine S3, Grossmann RE2, Tangpricha V1, 1Emory University School of Medicine, Atlanta, GA; 2Emory University, Atlanta, GA; 3Emory University Adult Cystic Fibrosis Center, Atlanta, GA and 4University of Maryland, Baltimore, Baltimore, MD

**Purpose of Study:** The purpose of this study is to determine whether the Life-Space Mobility Assessment (LSA) is a suitable predictor of frequency of hospitalization, changes in lung obstruction (measured by FEV1 %) and survival. The secondary purpose is to validate the LSA score as a measure of mobility by comparison to the number of steps measured by pedometers within the adult cystic fibrosis population.

**Methods Used:** We administered the initial LSA to participants during clinic visits at the Emory University Adult Cystic Fibrosis Center. Patients wore pedometers for three consecutive days (excluding Sundays) in the first clinic visit at the Emory University Adult Cystic Fibrosis Center. Patients wore pedometers for three consecutive days (excluding Sundays) in the first clinic visit at Emory University. We collected LSA scores during monthly phone calls, pedometer readings quarterly, and FEV1 % during clinic visits. Over the course of one year, we will compare LSA scores, pedometer readings, and FEV1 % with frequency of hospitalization, changes in lung obstruction (FEV1 %), and survival.

**Summary of Results:** We began collecting data in March 2011. A total of 16 out of a goal of 50 subjects have participated in this study. The mean LSA score was 85 out of a possible 120 points, and the mean number of steps over
three days was 20,003. We found that the initial LSA score positively correlated with the participants’ FEV1% predicted (r=0.31 and p-value=0.03). The LSA score also positively correlated with the respective FEV1% (r=0.42 and p-value=0.01). The LSA score as compared to mobility demonstrated a positive relationship but did not reach statistical significance, owing to our limited sample size (r=0.21 and p-value=0.13).

Conclusions: Our preliminary findings suggest a significant positive correlation between LSA score and FEV1% predicted. This suggests that the LSA is a useful indicator for change in respiratory obstruction patterns. Our current ongoing prospective study will evaluate whether the LSA can be used as a marker for mobility and frequency of hospitalization in adult cystic fibrosis population.

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FACTORS PREDICTING LENGTH OF STAY IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE EXACERBATIONS ADMITTED TO INTENSIVE CARE

Limuswat C, Nantsupawat T, Kijricharueanchai K, Nugent K Texas Tech University Health Science Center (TTUHSC), Lubbock, TX.

Purpose of Study: Chronic obstructive pulmonary disease (COPD) is the fourth leading cause of death in the United States with at least 500,000 admissions annually for acute exacerbations of COPD (AECOPD). AECOPD have an enormous impact on disease-associated morbidity, mortality, and healthcare costs, and the cost of these hospital admissions accounts for 70% of total cost of treatment. The length of stay (LOS) for hospitalized AECOPD patients has attracted attention since it predicts medical costs.

Methods Used: Medical records of patients with AECOPD admitted between 1/1/2006 and 12/31/2010 were reviewed. The inclusion criteria were: 

- Age 45 year or older, diagnosis of AECOPD (defined by at least two of the following: increased dyspnea, increased cough frequency and severity, and increased sputum production and/or changes in color), and admission to an intensive care unit (ICU). The exclusion criteria included any history of another respiratory disease and in-hospital death.

Summary of Results: There were 294 admissions with AECOPD, and 191 met inclusion criteria. The mean age of the patients was 66.9±10.9 years (44.5% male), the mean FEV1 was 43.5±17.8% of predicted, and the mean LOS was 8.4±5.0 days. Univariate analysis demonstrated that low albumin, the presence of a pleural effusion, positive blood cultures, intubation, and high APACHE II scores were associated with increased LOS (p=0.05 for each factor). Multivariate linear regression demonstrated the presence of pleural effusion (p=0.015), intubation (p<0.001), and high APACHE II scores (p=0.009) increased LOS.

Conclusions: Previous studies have demonstrated that increased LOS occurs with older age, a lower FEV1, and mechanical ventilation. Our study demonstrates that the presence of a pleural effusion, higher APACHE II scores, and intubation increases the LOS. Pleural effusions likely reflect more complicated medical problems. Intubation for mechanical ventilation indicates severe respiratory failure. APACHE II scores not only help predict outcome in ICUs but higher scores also predict longer LOS. More intensive interventions in these patients may decrease LOS and adverse outcomes.

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A RANDOMIZED CONTROLLED TRIAL OF DIRECT NOISE REDUCTION IN THE ICU

Miles M, Hite RD Wake Forest School of Medicine, Winston Salem, NC.

Purpose of Study: Delirium in the intensive care unit (ICU) is an increasingly recognized problem that has been associated with increased length of ICU stay, sedation, length of hospitalization, and mortality. Optimal strategies to impact ICU delirium are unknown. Although noise has been shown to negatively influence sleep in the ICU, and sleep disturbance is a recognized contributor to ICU delirium, there is no well-established link between ICU noise levels and the development of ICU delirium. To evaluate the effectiveness of noise-reduction strategies in our ICU, our multidisciplinary team designed a randomized controlled trial to establish the feasibility of the interventions and their ability to impact noise, sleep, and delirium.

Methods Used: The study design includes enrollment of 45 mechanically ventilated ICU patients randomized to receive usual care, earplugs, or earplugs plus noise-canceling headphones overnight during 7 days of their ICU stay. In addition to twice daily delirium screening with the Confusion Assessment Method for the ICU (CAM-ICU), the protocol includes measurement of sound levels both in the patient’s room as well as the ear canal, and a limited sleep EEG. Additional measurements include amount of sedative, analgesic, and antipsychotic medications, and hospital and ICU length of stay.

Summary of Results: To date, 8 patients have enrolled with a mean age of 63 (5 female) and SAPS II score of 51. The intervention has been successfully applied on 41 (97.6%) of 42 study nights. Common reasons for consent failure include a belief that noise during nighttime is soothing for the patient, past negative experiences with earplugs, and unwillingness to add any optional care to an already critically ill patient situation. Although pre-study measurements of ICU noise levels exceeded 90dB(A), preliminary analysis of study noise data shows no appreciable in-ceiling or in-room sustained levels greater than 85dB(A). No adverse events have been observed.

Conclusions: Application of direct noise reduction strategies in the intensive care unit is feasible and safe. We continue to refine our study design and equipment to stimulate larger numbers of enrolled patients and additional data measurements. Noise reduction presents a potentially important non-pharmacologic intervention to improve significant clinical endpoints for ICU patients.

Renal, Electrolyte and Hypertension II
1:00 PM
Saturday, February 11, 2012

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DIETARY ACID REDUCTION WITH FRUITS AND VEGETABLES IN SUBJECTS WITH STAGE 4 CKD DUE TO HYPERTENSIVE NEPHROPATHY CAN BE DONE WITHOUT INDUCING HYPERKALEMIA

Gorgaya N1,2, Jo C3, Wesson DE1,2, Simoni J4 Texas A&M College of Medicine, Temple, TX; 2Scott & White Healthcare, Temple, TX; 3Scott & White Healthcare, Temple, TX and 4Texas Tech University Health Science Center, Lubbock, TX.

Purpose of Study: Dietary acid reduction with base-inducing fruits and vegetables(F+V) might be kidney protective but the increment in dietary K+ increases the risk for hyperkalemia. In preliminary studies, F+V did not significantly increase plasma K+ (PK+) in subjects with CKD4 due to HN after 1 year. We tested the hypothesis that increases in aldosterone (aldo) and decreases in 11 beta-hydroxysteroid dehydrogenase type 2 (11-HSD-2) activity would allow greater glucocorticoid activity to increase urine K+ excretion (UKV) sufficient to avoid significant increases in PK+.

Methods Used: Subjects with CKD4 on ACE inhibition received F+V amounts designed to reduce potential renal acid load by 50% (N=36) or oral NaHCO3 at 1.0 meq/kg lean bw/day (N=35) and compared to time controls (TC) without dietary intervention (n=35). Baseline and 1 year PK+, UKV, plasma (Paldo) and urine (Ualdo), and urine ratio of active to inactive cortisol metabolites (THF/THE) were measured.

Summary of Results: Both diets did not induce significantly in F+V (4.1 vs. 4.1 mmol/L, p=0.593) and was not different among groups at 1 year. By contrast, UKV in F+V at 1 year was higher than baseline (45.4 vs. 38.7 mmol/g cr; p<0.001) and was higher than TC (39.2 mmol/g cr, p<0.0001) and NaHCO3(39.2 mmol/g cr, p=0.001) at 1 year. Paldo in F+V at 1 year was higher than baseline (119.9 vs. 113.7 pg/ml, p<0.0001) but was not higher than TC (116.3 pg/ml, p=0.203) at 1 year. Ualdo in F+V at 1 year was higher than baseline (72.0 vs. 46.6 ug/g cr, p<0.001) and was higher than TC (67.1 ug/g cr, p=0.034) and NaHCO3 (50.9 ug/g cr, p<0.001) at 1 year. Urine THF/THE in F+V at 1 year was higher than baseline (1.4 vs. 1.4, p<0.001) and was higher than TC (1.4, p<0.001) and NaHCO3 (1.3, p<0.001) at 1 year.

Conclusions: The data show that dietary acid reduction with F+V significantly increased UKV but not PK+. The data support that increased UKV in F+V was mediated by a combination of increased plasma and kidney aldosterone along with decreased 11-HSD-2 activity that allowed greater glucocorticoid access to kidney mineralocorticoid receptors, thereby enhancing UKV.

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ROLE OF ANGIOTENSIN CONVERTING ENZYME 2 IN BLOOD PRESSURE AND OXIDATIVE STRESS

Ortiz-Melo DI, Mattocks N, Xu K, Sparks M, Coffman T, Gurley SB Durham VA and Duke University Medical Centers, Durham, NC.

Purpose of Study: Angiotensin Converting Enzyme 2 (ACE2) is a carboxypeptidase that degrades Angiotensin II (AngII) to Ang1–7. Deletion of
the Ace2 gene in mice is associated with enhanced susceptibility to hypertension and increased plasma and kidney Ang-II levels. Ang-II plays a pivotal role in generation of hypertension and renal injury and is also a potent activator of NADPH oxidase. Given the role of AngII in blood pressure regulation and reactive oxygen species (ROS) pathways, we hypothesize that mice lacking ACE2 have elevated levels of oxidative stress associated with abnormal blood pressure regulation.

Methods Used: To assess the effect of ACE2 deficiency on blood pressure and oxidative stress we studied male C57BL/6 ACE2-knockout mice. Mice were chronically infused with Ang-II (1000ng/kg/min) for two weeks. Blood pressures were measured intra-arterially with telemetry. After AngII infusion, ROS levels were assessed by measuring urinary 8-Isoprostane excretion and local H2O2 production with Amplex Red.

Summary of Results: C57BL/6 ACE2 knockout mice had a mild elevation in SBPs at baseline compared to their wild-type (WT) littermates (117.13±3 vs. 112.69±1 mmHg; p=0.186). After two weeks of angiotensin-II infusion, ACE2 knockout mice had a striking elevation in SBP compared to WT littermates (144.85±4 vs. 124.82±3 mmHg; p=0.023). Furthermore, ACE2 KO mice had increased levels of 8-isoprostane excretion at baseline. Also, kidney and heart tissues from ACE2-KO mice had higher H2O2/protein concentration compared to WT littermates (kidney: 18.57±3.6 vs. 9.0±7.7 µM/mL; p=0.047).

Conclusions: ACE2 regulates cardiovascular responses by metabolizing Ang II, thereby acting as a brake on the RAS. We have shown that ACE2 KO mice have higher blood pressures and higher levels of ROS. These data suggest that loss of this brake leads to dysregulation of the RAS and an enhanced susceptibility to AngII-dependent hypertension and to an exacerbation of AngII-mediated H2O2 production in key cardiovascular tissues. Both effects are likely the result of a decreased metabolism of angiotensin II in mice deficient of ACE2. Our studies demonstrate the critical role of ACE2 in the regulation of blood pressure and oxidative stress.

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REVISED IMPACT OF HUMAN LEUKOCYTE ANTIGEN-DR MATCH IN KIDNEY TRANSPLANT RECIPIENTS

Ahmed V, Egidi MF, Wolf BJ Medical University of South Carolina, Charleston, SC.

Purpose of Study: HLA-DR has been associated with poor long-term graft function. However, the impact of HLA-DR remains unclear under new immunosuppressive agents. We analyze graft outcomes in kidney transplant recipients with 1 and/or 2 HLA-DR mismatches compared to 0 HLA-DR mismatches.

Methods Used: We reviewed 555 patients who received kidney transplants between January 2005 and June 2008. All patients received induction with either Anti-Lymphocyte Antibody [ALG]- Thymoglobulin or Interleukin-2 [IL-2]- Antibody- Basiliximab. Prograf [FK] or Cyclosporine [CYA]. Prednisone and Mycophenolate Mofetil were used for maintenance immunosuppression.

Summary of Results: Graft survival was lower in HLA-DR 2MM relative to HLA-DR 0MM (p=0.025). Subjects who received IL-2 antibody induction had significantly increased hazard of graft failure with 2 HLA-DR mismatches relative to those with 0 HLA-DR mismatches (95% CI for the hazard ratio (HR) 1.38-24.6, p=0.016). However, number of HLA-DR mismatches was not associated with increased graft survival in patients who received induction with ALA (p=0.646). There was no significant effect of either CYA or FK as a graft. As a group, however, there was significantly increased hazard of graft failure for 2 HLA-DR mismatches relative to 0 mismatches (p=0.041) in both groups.

Conclusions: Despite strong immunosuppression, HLA-DR mismatch has an adverse impact on long-term graft survival particularly in subjects who receive IL-2 induction. We conclude from this data that patients with HLA-DR mismatch may benefit from ALA induction.

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RESISTANCE TO CORRECTION OF VITAMIN D DEFICIENCY IN CHRONIC KIDNEY DISEASE

Wail B1,2, Alshayeh H1, Showkat A1,2, Gyansani GG1, Quares LD1, VAMC, Memphis, TN and UTHSC, Memphis, TN.

Purpose of Study: Vitamin D deficiency is prevalent in chronic kidney (CKD) patients. Prior studies have suggested that CKD patients may be more resistant to correction of vitamin D deficiency with ergocalciferol. This study was designed to determine if there is resistance to correction of vitamin D deficiency with cholecalciferol therapy in CKD patients, as compared to subjects with normal kidney function.

Methods Used: Prospective cohort study of 28 patients with serum 25-hydroxyvitamin-D [25(OH)D] levels < 20 ng/ml. All patients received 10,000 IU/week of cholecalciferol for 8 weeks. Patients with CKD, stage III and IV (n=14), were matched with patients with normal renal function (n=14) based on diabetes mellitus (DM) status, gender, season of year, and age. Response to cholecalciferol therapy was assessed by measuring the change in serum 25(OH)D levels.

Summary of Results: There were no significant differences between CKD and non-CKD patients for the following baseline characteristics: DM, African American race, age, body mass index, and concentrations of serum 25(OH)D, and 1,25 dihydroxyvitamin-D, calcium, phosphorous, and albumin (Table 1). The change in serum 25(OH)D [delta 25(OH)D] levels correlated with the presence of CKD (r=−0.44, P<0.02). Delta 25(OH)D levels were significantly lower in CKD patients, which resulted in lower post-treatment serum 25(OH)D levels. Baseline intact PTH (PTH), FGF-23 levels, and FEP04 were higher in CKD patients. PTH levels decreased after treatment in CKD patients (42±68, P<0.05) but not in non-CKD patients (10±25, P=0.16).

Conclusions: In this prospective matched cohort of vitamin D deficient patients, the presence of CKD was associated with resistance to correction of vitamin D deficiency with cholecalciferol. The mechanism for the resistance is unclear.

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Data are means ± SD. * = p<0.05, compared to CKD. β = p<0.05, Post-treatment compared to Pre-treatment values.

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ANGIOTENSIN II STIMULATES RENIN SYNTHESIS AND SECRETION VIA PROTEIN KINASE C ACTIVATION AND CAMPAccUMULATION IN COLLECTING DUCT M-I CELLS

Liu L1, Lara LS1,2, Gonzalez AA1,2, Bourgeois CR1, Seth DM1, Prieto MC1,2 Tulane University School of Medicine, New Orleans, LA; Tulane University School of Medicine, New Orleans, LA and Universidad Federal do Rio de Janeiro, Rio de Janeiro, Brazil.

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**Purpose of Study:** In rats and mice, collecting duct (CD) renin is oppositely regulated from juxtaglomerular (JG) renin. In contrast to the inhibitory effect that Ang II type 1 receptor (AT1R) activation exerts on JG renin, in the rat inner medulla CD (IMCD) cells, renin synthesis is stimulated by Ang II via PKC activation. Because cAMP is an important second messenger of the signal transduction pathway of Ang II, we aimed to determine using a mouse cortical CD cell line (M-1 cells), that Ang II stimulates CD renin synthesis and release via activation of cAMP and accumulation of cAMP levels.

**Methods Used:** Renin mRNA levels were determined by KFPCR. Intra-cellular renin and prorenin protein levels were assessed by Western Blot. Intracellular cAMP levels were measured by ELISA. Renin content in the culture media were determined by radioimmunoassay.

**Summary of Results:** The long-term treatment (8 hrs) with Ang II increased renin mRNA in a dose-dependent manner. PKC inhibition with G-1 (0.7 M) on a tentative increase of renin mRNA by Ang II (10-7 M for 8 hrs). Ang II (10-7 M) significantly increased renin protein (38 kDa) and prorenin protein (41 kDa). To examine the renin secretion, we measured the renin content in cell culture media, which was augmented in Ang II-treated cells by 6 hrs (Ang II: 1.3±4 vs. control: 19±4 ng Ang I generated/hr/ml). Importantly, Ang II (10-7M) increased cAMP levels at 1 min (148±32 pmol/cell/min/ml) (p<0.05) and reached a peak at 20 min (290±17 pmol/cell/min/ml) compared with control (44±0 pmol/cell/min/ml, p<0.05). For skolin, an adenylate cyclase activator, increased renin mRNA levels in a dose-dependent manner.

**Conclusions:** In M-1 cells, Ang II increases renin protein levels and its secretion by a mechanism that involves PKC activation and cAMP stimulation.

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**ONCOGENIC OSTEOMALACIA: FIBROBLAST GROWTH FACTOR-7 (FGF7), NOT FIBROBLAST GROWTH FACTOR-23 (FGF23), BEING THE PLAYER THIS TIME**

Gear C1,2, Khazim K1,2, Suri R1,2, Fanti P1,2, Bansal S1,2 (FGF23), BEING THE PLAYER THIS TIME ONCOGENIC OSTEOMALACIA: FIBROBLAST GROWTH

**Summary of Results:**

- Levels of pro- (IL-6) and anti-inflammatory interleukins (IL-4, IL-6, IL-10) in the plasma were determined by using appropriate ELISA kits.

**Conclusions:** These data indicate that the systemic inhibition of NO synthase reduces the production rate of anti-inflammatory interleukins without generally affecting the generation of pro-inflammatory interleukins.

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**SYSTEMIC INHIBITION OF NITRIC OXIDE SYNTHASE REDUCES PLASMA LEVELS OF ANTI-INFLAMMATORY INTERLEUKINS IN ANESTHETIZED MICE**

Singh P, Castillo A, Islam MT, Majid DS Tulane University School of Medicine, New Orleans, LA.

**Purpose of Study:** Previous studies from our laboratory demonstrated that acute inhibition of nitric oxide (NO) synthase systemically increases plasma levels of tumor necrosis factor-alpha (TNF-α) in mice. In the present study, we further examined the hypothesis that inhibition of NO production generally induces the formation of pro-inflammatory interleukins and suppresses the formation of anti-inflammatory interleukins.

**Methods Used:** Levels of pro- (IL-6) and anti-inflammatory interleukins (IL-4, IL-10) were assessed in plasma collected from anesthetized mice (C57BL/6 10-12 weeks old) treated with vehicle (n=5) as well as with a NO synthase inhibitor, nitro-L-arginine methyl ester (L-NAME; 200 μg/min/kg bw; n=5) for 85 min. Systemic blood pressure (SBP) in these mice were recorded from a cannula placed in the right carotid artery and the urine was collected from a cannula placed in the bladder. Renal blood flow (RBF) and glomerular filtration rate (GFR) were assessed by PAH andulin clearances respectively. The concentrations of interleukins (IL-4, IL-6, IL-10) in the plasma were determined by using appropriate ELISA kits.

**Summary of Results:** As reported earlier, L-NAME infusion caused a usual increase in mean SBP (102±7 to 127±6 mmHg; p<0.05), decreases in RBF (5.8±1.6 to 2.39±0.75 mmHg/g; p<0.05) and GFR (0.9±0.10 to 0.42±0.13 mmHg/min/g; p<0.05) with increases in urine flow (5.8±1.1 to 10.1±2.0 μm/min/g; p<0.05) and in sodium excretion (0.8±0.3 to 1.4±0.3 μm/min/g; p<0.05). Interestingly, compared to the values in vehicle treated mice, there were significant reductions (p<0.05) in the plasma level of IL-4 (858±53 vs 530±13 pg/ml) and IL-10 (2.5±0.7 vs 1.3±0.4 ng/ml) in L-NAME treated mice. There was no significant difference in the plasma levels of IL-6 (1.2±0.1 vs 1.3±0.1 ng/ml) between vehicle and L-NAME treated mice.

**Conclusions:** These data indicate that the systemic inhibition of NO synthase reduces the production rate of anti-inflammatory interleukins without generally affecting the generation of pro-inflammatory interleukins.
530 BLOOD PRESSURE AND RENAL HEMODYNAMICS IN HYPERTENSIVE CYP1A1-REN2 TRANSGENIC RATS FED A SODIUM-DEFICIENT DIET

Collins A, Howard CG, Mitchell KD Tulane University, New Orleans, LA.

Purpose of Study: Dietary sodium restriction results in activation of the renin-angiotensin system and augmentation of circulating and intrarenal angiotensin (ANG) II levels. However, despite the pronounced elevation in ANG-II levels, rats maintained on a low salt diet do not develop hypertension or impaired renal hemodynamics. In contrast, induction of the mouse Ren2 renin gene in Cyp1a1-Ren2 transgenic rats [TGR(Cyp1a1Ren2)] results in similar increases in ANG II levels, but with elevated arterial blood pressure and impaired renal hemodynamics. The present study was performed to determine whether dietary sodium restriction attenuates the development of hypertension and the impairment in renal hemodynamics that occur during the induction of the Ren2 gene in Cyp1a1-Ren2 rats.

Methods Used: Male Cyp1a1-Ren2 rats (n=5-6/group) were fed either a normal salt (0.6%) or salt-deficient diet (0.01%) containing indole-3-carbinol (13C; 0.15%, wt/wt) to induce slowly progressive ANG II-dependent hypertension. At the conclusion of the treatment period, all animals were anesthetized and surgically prepared for measurement of mean arterial pressure (MAP), renal hemodynamics and renal excretory function.

Summary of Results: There were no significant differences between the induced normal salt group and the induced salt-deficient group regarding MAP (183±4 vs. 181±5mmHg), RVR (33.7±2.4 vs. 31.1±3.3mmHg/mL/min.g), RPF (2.78±0.20 vs. 2.91±0.35mmHg/mL/min.g), or GFR (0.90±0.06 vs. 0.91±0.08mmL/min/mg). Both groups had similar urine flows (41.1±1.3 vs. 39.0±6.9µL/min), urinary sodium excretions (2.9±0.5 vs. 2.4±0.9µEq/min) and fractional sodium excretions (0.94±0.15 vs. 0.76±0.22%).

Conclusions: The present data demonstrate that a sodium-deficient diet does not attenuate the increase in arterial blood pressure or the associated renal functional derangements in Cyp1a1-Ren2 transgenic rats with slowly progressive ANG II-dependent hypertension.

531 PDGF RECEPTOR ANTAGONISM WITH IMATINIB MESYLATE IMPROVES RENAL HEMODYNAMICS INDEPENDENT OF CHANGES IN BLOOD PRESSURE IN CYP1A1-REN2 TRANSGENIC RATS WITH ANGIOTENSIN II-DEPENDENT MALIGNANT HYPERTENSION

Kwak M, Howard CG, Mitchell KD Tulane University, New Orleans, LA.

Purpose of Study: Previous studies demonstrated that chronic administration of the PDGF receptor kinase inhibitor, imatinib mesylate, ameliorates the renal injury that occurs in transgenic rats [TGR(Cyp1a1Ren2)] with angiotensin (ANG) II-dependent malignant hypertension. The present study was performed to determine if chronic administration of imatinib mesylate similarly improves renal hemodynamic function in Cyp1a1-Ren2 transgenic rats with ANG II-dependent malignant hypertension.

Methods Used: Male Cyp1a1-Ren2 rats (n=5/group) were induced to develop malignant hypertension by dietary administration of indole-3-carbinol (13C; 0.3% wt/wt) for 10 days. One group was chronically treated with imatinib mesylate by oral gavage (60 mg/kg/d) starting 3 days before initiating IC induction and maintained on imatinib for the duration of the study. Systolic blood pressures (SBP) were measured daily by tail-cuff plethysmography.

Summary of Results: Dietary IC resulted in a significant increase in SBP (135±5 to 181±7 mmHg, P<0.001), and chronic imatinib administration did not prevent the development of hypertension (133±5 vs 197±7 mmHg, P>0.05). PACAP38 (10-10 M) also significantly suppressed the secretion of KIM-1 caused by both IRCM (P<0.01). Urografin significantly increased serum creatin level (17±4 vs. 45±2.7umol/L, P>0.05), and eNOS-deficient mice. PACAP38 (10-10 M) also significantly suppressed the secretion of KIM-1 caused by both IRCM (P<0.01). Urografin significantly increased serum creatin level (17±4 vs. 45±2.7umol/L, P>0.05).

Conclusions: The present data demonstrate that PDGF receptor antagonism with imatinib mesylate improves renal hemodynamics independent of changes in blood pressure in Cyp1a1-Ren2 rats with ANG II-dependent malignant hypertension.

532 PITUITARY ADENYLATE CYCLASE-ACTIVATING POLYPEPTIDE (PACAP) PREVENTS CONTRAST-INDUCED NEPHROTOXICITY IN HUMAN KIDNEY CELLS AND ENOS-DEFICIENT MICE

Khan A', Li M', Töliver H', Gullo KE', Cai W', Maderdrut JL, Simon EE', Batuman V', Tulane University, School of Medicine, New Orleans, LA; 'Tulane University, School of Medicine, New Orleans, LA and 'Southeast Louisiana Veterans Health Care System, New Orleans, LA.

Purpose of Study: Iodinated contrast media (IORM) can cause contrast-induced nephropathy (CIN) in patients with pre-existing kidney disease. Wild-type mice, like healthy humans, are resistant to CIN. Therefore, we used homozygous endothelial nitric oxide synthase (eNOS)-deficient mice to produce a simple and reproducible model of CIN. We determined whether PACAP reduces CIN in human renal proximal tubule epithelial (HK-2) cells and eNOS-deficient mice.

Methods Used: Cultured HK-2 cells were exposed to ionic IORM (Urografin) or non-ionic IORM (iohexol) at 50 mg iodine/ml for 24 hr and were treated with 10-10-10-6 M PACAP or vasoactive intestinal peptide (VIP). Male eNOS-deficient mice (22-26 g, n=5-8) were water deprived for 24 hr and then given Urografin iv (1.85 g iodine/kg bw). PACAP38 (10 µg) was administered ip 2 hr before and 12 hr after Urografin injection; control mice received saline. All mice were euthanized at 72 hr; blood and kidney samples were collected for analyses.

Summary of Results: Urografin and iohexol significantly increased the release of LDH and the secretion of KIM-1 into the culture medium (p<0.01). PACAP38 and VIP significantly reduced IORM-induced HK-2 cell injury; PACAP38 was more potent than VIP. PACAP38 (10-8 M) also significantly suppressed the secretion of KIM-1 caused by both IORM (p<0.01). Urografin significantly increased serum creatin C levels and kidney mRNA levels of KIM-1, netrin-1, TNF-α, and iNOS in eNOS-deficient mice (p<0.01). PACAP38 significantly reversed the increases in the levels of serum creatin C and kidney mRNA caused by Urografin.

Conclusions: (1) Both ionic and non-ionic IORM injured HK-2 cells. (2) PACAP38 protected HK-2 cells against IORM-induced cell injury. (3) eNOS-deficient mice are more sensitive to the toxic effects of IORM than wild-type mice. (4) PACAP38 has protective effects against CIN in vivo.

SSGIM Research Abstract Session A
8:30 AM
Friday, February 10, 2012

533 THE IMPACT OF ROTATION CHARACTERISTICS ON RESIDENT EVALUATIONS

O’Rourke J, Kohn J, Johnson M, Simon B, Leykum L. University of Texas Health Science Center at San Antonio, San Antonio, TX.

Purpose of Study: End-of-rotation resident evaluations have well-documented limitations, including inflated scores and inter-rater inconsistency. Further, residents’ opportunities and experiences may vary across rotations, impacting evaluations. Finally, the evaluation process itself may influence ratings. Little is known about how rotation characteristics or faculty evaluation strategies impact the evaluation process. We analyzed resident evaluation data for systematic differences in assessments of residents on different clinical rotations.

Methods Used: Evaluation scores for housestaff on ward, clinic, and critical care rotations from July 2008 and January 2011 (n=1935) were extracted. A 9-point Likert scale was used to assess rotation performance for each of the six ACGME competencies.

Summary of Results: A 7 (competency) x 4 (rotation) mixed ANOVA showed a significant interaction between competency and rotation (p<0.001) and main effects for competency (p<0.001) and rotation (p<0.001). For all rotations, scores were highest for professionalism and interpersonal communication, and lowest for medical knowledge. Across competencies, residents received higher scores during ward rotations and lower scores during critical care and clinic rotations.
Conclusions: There was a statistically significant difference in evaluations by rotation. Residents received lower scores during critical care and clinic rotations compared to ward rotations. Lower scores reflect that a more complex clinical workload leads to greater ability to distinguish levels of performance. For general medicine wards (a less acute setting than the ICU), sustained contact with residents may facilitate learning and result in better resident performance. The close interaction between faculty and residents may also lead to the formation of personal connections that hinder critical feedback. In contrast, clinic evaluations are completed as a group, which may create a safe environment for critical feedback. Future research should examine how rotations differ in learning opportunities, workload and complexity, and the quality and quantity of resident-faculty interactions.

534 “ETERNAL MEDICINE”: 16-WEEK INTERNAL MEDICINE-EMERGENCY MEDICINE CLERKSHIP

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Purpose of Study: At the University of Kentucky, the Internal Medicine (IM) clerkships were separated into distinct 8-week inpatient and 4-week outpatient courses. This structure did not permit students to witness intensive care (ICU) or IM subspecialties, see the “undifferentiated patient” in emergency medicine (EM), appreciate the continuum of disease, form a mentor relationship with attending, or have patient continuity.

Methods Used: In 2007, a 16-week, IM-EM, 3rd-year, clerkship was implemented. The ambulatory experience was enveloped into a weekly “continuity clinic”. Students spend 8 weeks on inpatient wards, 2 weeks in EM, 1 week in ICU, and 1 week in subspecialty clinics/procedures. They also have two 1-week “intraclerkships”, Friday afternoon seminars, small group meetings, and an evaluation week. Evaluative measures include performance on the NBME IM exam, student evaluations, patient continuity, and student comments.

Summary of Results: 275 students have completed the new clerkship. To date, no change on NBME subject examination scores are noted (75.78 ± 8.31 vs. 2005-2007 = 185) 75.82 ± 7.39, p = 0.05). Students routinely rate continuity clinic and Firm the highest (5.05 and 5.03/6, respectively). ICU and EM were initially rated poorly but have improved recently (3.52 and 3.71/6, respectively). 98% of survey completers (67%) have seen a patient more than once. Typical student comments include: “Continuity clinic was very beneficial with a lot of individual attention from an attending.” “I liked FIRM because it was a safe environment to share and reflect on individual experiences in the hospital.” “It was nice to be introduced to EM and ICU during 3rd year.” “The subspecialty week needs improvement, it may be more useful to spend a whole day at one place or be able to choose.” “Friday seminars are too long!”

Conclusions: The new clerkship has accomplished several of its goals, especially opportunities for continuity, establishment of a mentor relationship, appreciation for EM and the continuum of adult medicine, and witness the patient experience in the ICU and procedures. Improvement initiatives include re-exploration of patient safety curriculum, invigoration of ICU and subspecialty experiences, re-consideration of formative evaluation, and teaching and testing an increasing class size using computer simulation.

Summary of Results: 100 surveys were completed. Participants included: third year medical students (N=38), fourth year medical students (N=14), first year residents (N=10), second year residents (N=15), third or fourth year residents (N=23). They ranked Teaching Content (score= 0.28; 95% confidence interval [CI], 0.16 to 0.41) as the most important domain followed by Learning Atmosphere (0.07; [CI], -0.05 to 0.20), Teaching Process (0.05; [CI], -0.07 to 0.19), Guidance (-0.13; [CI], -0.27 to -0.04), Efficiency (-0.27; [CI], -0.42 to -0.18). Forty-two surveys showed circular triads indicating that the participants did not rank the domains in a distinct order; however, excluding these individuals did not change the domain ranking. Although we did not power this study to compare preferences amongst different training levels, there was a trend towards guidance being viewed as more important to medical students and efficiency being more important to residents.

Conclusions: Our participants ranked Teaching Content as the most important domain. However, Guidance seems more important to students while Efficiency is a priority to residents. Ward attendings should consider the relative importance trainees place on these 5 domains when conducting rounds.

536 PURSUING EXCELLENCE: AN EDUCATIONAL SUMMIT FOR CLINICIAN-EDUCATORS


Purpose of Study: In spite of radical changes in medical education, academic medical centers remain focused in biomedical research and patient care delivery with less emphasis on medical education. To foster excellence, we designed and implemented an Education Summit.

Methods Used: The expertise was developed over 16 years. The one-day event was composed of workshops (milestones, teaching portfolio, curriculum development, scholarship, micro-skills, feedback, learning climate, and teaching in the wards) and two plenary presentations (Competency-Based Education, The Tinsley Harrison’s Legacy). Enrollment was limited to 50 participants. Participants rated workshop quality (6 items), their own expertise, and readiness to change.

Summary of Results: Of the 49 participants, 14% were fellows, 43% assistant professors, 29% associate professors, and 6% professors. Participants were from five campuses, three departments, and seven specialties. Of the 117 workshop evaluations, 37 (32%) rated their expertise as inadequate, 39 (34%) as average, 35 (30%) as above average, and 4 (3%) as expert. All workshops received the two highest overall ratings 78-100% of the time (Figure); highest rated workshops were learning climate, micro-skills, and teaching portfolio. The quality of material, amount of information, faculty, audios, and audience interaction received the two highest ratings 82-90% of the time. At the end, 21% were extremely likely to make a change in their teaching approach, 61% very likely, and 17% somewhat likely.

Conclusions: The participation and evaluations of the Education Summit suggest that this venue appears to fulfill an unmet need. Clinician-educators require a set of skills that can be acquired by deliberate practice; a similar event might extrapolate to other institutions.
updated guidelines identifying scholarly activity as a requirement for all medical students. Despite an increase in the number of formal research courses and the support services that institutions provide, the success that students achieve is modest, suggesting the involvement of other factors. This study seeks to determine the extent to which barriers and resources affect the ability for students to be successful in research endeavors.

Methods Used: The authors distributed a cross-sectional survey via the Internet to members of the American Medical Association-Medical Student Section and the American Medical Student Association. The authors also distributed a paper version of the survey during the AMA-MSS national conference in San Diego, CA October 2010. The primary outcome was self-identified successful research. The authors also assessed the supportive factors and barriers the respondents faced.

Summary of Results: Barriers to success in student research included being unaware what research occurs locally (OR 1.36, 95% CI 1.05-1.76), lacking faculty mentors (OR 1.45, 95% CI 1.07-1.95), and lack of a research office/coordinator (OR 1.53, 95% CI 1.18-2.00).

Conclusions: Barriers to successful student research persist despite scholarly programs and the effects of the barriers were not offset by the research curriculum. Our results suggest the inclusion of specific course components, with particular attention on overcoming common barriers. To improve the success of medical students involved in involved in research, academic medical institutions must address barriers directly in addition to offering curricula in research methods.

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ANALYSIS OF ADMISSIONS CHARACTERISTICS OF MINORITY APPLICANTS

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Purpose of Study: Minorities continue to be underrepresented in medical schools, constituting only 10% of physicians in the United States. Studies show that increasing the number of minority physicians will ultimately result in improved access to care for patients belonging to underserved communities. Through quantitative analysis of the profiles of applicants, this study aims to determine admissions characteristics of recent African American applicants to Tulane in order to identify factors these applicants need to focus on to gain admission in the future.

Methods Used: De-identified admissions data of African American applicants to Tulane from 2010-2014 was examined. Applicants were divided into two groups based on matriculation status. The undergraduate science GPA, overall GPA, and MCAT scores for applicants were identified. Student’s t-test was used to examine mean difference between groups in univariate analysis. Multivariate logistic regression was used to calculate odds ratios.

Summary of Results: Average MCAT scores of successful and unsuccessful applicants between 2010 and 2014 were 24.5 and 20.9, respectively (difference between groups: 3.6, 95% CI 6.6-0.47; p = 0.01). In multivariate analysis using MCAT score, overall GPA, and science GPA, only MCAT scores were significant. OR 1.12 [95% CI, 1.02-1.22] (p = 0.012). Subgroup analyses by year did not reveal significant differences in science or overall GPA between successful and unsuccessful applicants, however, there was a trend toward higher overall GPAs among successful applicants (p = 0.07). Odds ratio for these factors were not significant.

Conclusions: African American students who were accepted to Tulane were more likely to have higher MCAT scores, suggesting that the MCAT score is the most distinguishing quantitative parameter separating successful and unsuccessful candidates. Other common markers, such as GPA, were less predictive of acceptance. Results from this study, combined with further qualitative analyses on the academic background and research exposure of African American applicants to Tulane can serve to help pinpoint what prospective minority applicants and admissions counselors need to focus on in order to gain admission to medical school.

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A NEW TOOL TO EVALUATE INTERNAL MEDICINE RESIDENTS IN THE AMBULATORY CARE CLINIC

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Purpose of Study: The evaluation form used by the Division of General Medicine in the Ambulatory Care Clinic was the same one used for all rotations. We designed a new form to cover the ACGME core competencies in more depth. We wanted to determine if the residents’ perception of the quality of their evaluation by the faculty improved with the new form, and if it helped the faculty members become more competent evaluating residents.

Methods Used: We developed two surveys—one for the residents and one for the faculty. The resident survey asked the residents if this had been an accurate evaluation of their performance; if the evaluation used clearly defined criteria; if they understood the ACGME competencies, and if they were given recommendations for improvement. The residents are evaluated bi-annually. They completed the survey prior to the end of the year evaluation, when the new form would be used, and after the year-end evaluation. The faculty completed a survey concurrently, asking how confident they were evaluating residents using the ACGME competencies, and whether they felt they used clearly defined criteria. Both surveys used a 5-point Likert scale.

Statistical analysis was done using Mann-Whitney U tests.

Summary of Results: All five faculty preceptors completed both surveys. The question “I feel I evaluate using clearly defined criteria” had a mean score of 2 on survey 1 and 3.8 on survey 2 (p=0.01). The question “I am comfortable using the ACGME competencies” had a mean score of 3 initially and a mean score of 4.2 on the second survey (p=0.03). The mean scores increased from survey 1 to 2 on the remaining questions, but with no statistical difference. Twenty-two out of thirty-six residents completed Survey 1 and twenty-three completed Survey 2. There was no statistical difference with any question.

Conclusions: The new evaluation tool had more effect on the faculty’s perception of their ability to provide a better evaluation then it did on the residents’ perception of the quality of their evaluation. The new form should help the faculty increase their evaluation expertise, which ideally will translate to better evaluation of resident performance. We need to involve our residents in their evaluation more and develop better interaction during this process.

SSGIM Research Abstract Session B
10:30 AM
Friday, February 10, 2012

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DIABETES MEDICATION INTENSIFICATION IN RURAL PRIMARY CARE PRACTICES: A CLUSTER-RANDOMIZED EFFECTIVENESS TRIAL

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Purpose of Study: To determine the effectiveness of an educational intervention in improving diabetes management.

Methods Used: In an effectiveness cluster-randomized trial, rural primary care physicians from 11 United States Southeastern states (2006-2008) were randomized to a control Web site or a Web-based intervention that included interactive problem-based continuing medical education, performance feedback, quality improvement tools, guidelines, and counseling tools. The main outcome was medication intensification measured at baseline and at follow-up for cross-sections of their diabetic patients. Intensification was defined as a dose increase of existing medication or addition of a new class of medication for glucose, blood pressure, and lipid control on any of 3 prior recent office visits.

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Summary of Results: Of the 205 physicians randomized, 95 provided baseline and follow-up data on a total of 2,127 patients. Intervention physicians engaged with a median of 64.7 weeks (25th, 45.4; 75th, 81.8). Medication intensification increased in both groups for A1C control but was the same for blood pressure or lipid control (Figure). There was no incremental benefit solely due to the intervention for A1C control (p = 0.82). Among patients with the worst glucose control (A1C > 9%), intensification increased in both groups (intervention, a 28% increase, p = 0.002; control, a 25% increase, p = 0.008).

Conclusions: A wide-reaching, low-intensity, Web-based interactive multi-component intervention had no incremental benefit on medication intensification for glucose, blood pressure, or lipid control.

Methods Used: This 2-year retrospective chart review evaluated 70 patients with either type I or type II diabetes randomly selected from MUSC pediatric endocrine clinic and UIM clinic. Patients were included if they had a diagnosis of diabetes and at least one recorded hgb A1C in the last 2 years. Frequency of hgb A1C monitoring and hgbA1C value were assessed for each study patient. Chi square tests were performed to determine if patient goal rate was 80% or lower and to compare adult and pediatric goal rates.

Summary of Results: The age range of pediatric patients was 9-20 years with a mean age of 15.1 (SD 2.9 years). The age range of adult patients was 32-82 with a mean age of 67.4 (SD 11.3 years). The average hgb A1C in the pediatric patients was 8.7%; the average hgb A1C in adult patients was 6.9%.

Adherence to recommendations for hgb A1C monitoring in pediatric patients was 71% and in adult patients 81% (p = 0.368). Adult patients were significantly more likely to be at goal hgbA1C level compared to pediatric patients (75% vs 48%, p = 0.028).

Conclusions: Adult patients in the UIM clinic were more likely to be at goal hgb A1C than patients in the pediatric endocrinology clinic although there is room for improvement in both clinics. We created a card for patients in both clinics to document their hgb A1C at each clinic visit thereby encouraging them to be a greater participant in their care. Future assessment will determine if our intervention has improved hgb A1C monitoring frequency in both goals.

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COMPARATIVE EFFECTIVENESS BETWEEN INTRAMUSCULAR AND INTRAVENOUS ANTIBIOTICS: A META-ANALYSIS
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Purpose of Study: Despite the potential to decrease costs, complications, and days of hospitalization, the intramuscular route has been less frequently utilized compared to the intravenous route. The question of comparative efficacy warrants inspection. We hypothesize that throughout the range of infections for which available literature provides a head-to-head comparison, the efficacy of antibiotics via the intramuscular route is non-inferior to intravenous administration.

Methods Used: We systematically searched Medline using the following search terms: (anti-bacterial agents OR antibiotics) AND (intramuscular AND intravenous). MeSH terms were used when appropriate. We searched EMBASE using a similar strategy. From the list of titles, potentially appropriate articles were selected for review and abstraction if they described a study comparing clinical outcomes of an infectious process following IM or IV administration of a given antibiotic. Studies comparing pharmacodynamics, pharmacokinetics, or in vitro effects were excluded.

For the included articles, two reviewers abstracted information pertaining to definitive binary clinical endpoints, defined as cure or failure, in addition to study characteristics and patient demographics. Rates of cure in IM and IV treatment populations were identified. Inter-rater reliability was assessed using the kappa statistic. Relative risk (RR) ratios of cure for IM compared to IV treatment were pooled using a random-effects meta-analysis model.

Summary of Results: Of 1556 citations, 11 studies met all inclusion criteria. Inter-rater reliability was substantial (Kappa = 0.82). Pooled RR ratio of IM antibiotics versus IV antibiotics did not show a significant difference in cure rates (RR = 1.05, 95% CI, 0.99-1.12, p=0.10).

Conclusions: Intramuscular antibiotics are underused for infections requiring parenteral administration. The current data shows that IM antibiotics appear to have equivalent clinical efficacy across a range of infections and agents. Considering their efficacy, relative safety, cost-effectiveness, and ease of outpatient administration, we suggest greater consideration of this route, as well as further research to pioneer evidence-based IM regimens for any infection requiring parental antibiotic therapy.

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PATIENT AND PROVIDER ATTITUDES TOWARD OBESITY CARE IN THE PRIMARY CARE SETTING
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Purpose of Study: Despite published guidelines, physicians are not routinely screening and counseling for obesity. We assessed prevalence of and patient factors associated with obesity care. We hypothesized that obesity care varies widely in clinical practice and does not meet guideline standards.

Methods Used: This study was designed to determine the effect of the presence of a lab provided eGFR on the proper prescribing of metformin.

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Conclusions: Intramuscular antibiotics are underused for infections requiring parenteral administration. The current data shows that IM antibiotics appear to have equivalent clinical efficacy across a range of infections and agents. Considering their efficacy, relative safety, cost-effectiveness, and ease of outpatient administration, we suggest greater consideration of this route, as well as further research to pioneer evidence-based IM regimens for any infection requiring parental antibiotic therapy.
Methods Used: We developed a quantitative survey of primary care providers (PCPs) and adult (≥18 years of age) patients (pts) at rural and urban primary care settings in Kentucky. PCPs were mailed paper surveys and reminder cards with a web link. Pts were invited to fill out a paper survey at their appointment time. We excluded non adult-care PCPs, and pts who reported not having seen their doctor or who were pregnant in the previous year.

Summary of Results: Independent surveys were sent and 147 PCP and 132 pt surveys met criteria for analysis. PCPs were 93% primary care and 47% female. PCP practices included 25% urban, 38% rural, 31% academic, 26% community, and 22% private. Pts were 68% white, 70% female, median age of 52, and 77% insured. 24% were normal weight (NW), 27% overweight (OW), and 49% obese (OB). 80% reported an obesity-related condition (44% NW, 75% OW, 91% OB, p=0.024). 76% self-perceived the need to lose weight (32% NW, 75% OW, 98% OB, p=0.001). 100% of PCPs reported discussing weight loss with their patients, while 44% of pts reported ever having been told by their PCP that they needed to lose weight (4% NW, 25% OW, 75% OB, p=0.0001). 99% of PCPs reported measuring pt weight, while 96% of pts reported their PCP had ever measured their weight. 93% of PCPs and 41% of pts (35% NW, 40% OW, 44% OB, p=0.74) felt it was the PCP’s responsibility to help with weight loss. 16% of pts reported their PCP had ever helped them lose weight (8% NW, 19% OW, 18% OB, p=0.41). Pts who reported their PCP told them they needed to lose weight were more likely to have tried to lose weight than those whose PCPs had not (98% versus 53%, p<0.0001).

Conclusions: PCPs report more patient weight loss counseling than reported by pts. Our survey is the first report of a positive correlation between weight loss advice and weight loss attempt. PCPs appear to be missing opportunities for guideline-concordant obesity care. Future goals include focus groups to better understand ideas for improvement of obesity care.

546 SIMPLIFYING A SCORING TOOL TO SELECT THE BEST CLINICAL VIGNETTES

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Purpose of Study: Academic organizations use clinical vignette presentations to foster interest in internal medicine. The best clinical vignettes are chosen for presentation at academic meetings through standardized scoring tools. In past work, we simplified a scoring tool allowing scorers to save time without sacrificing quality. In this study, we aimed to validate the simplified scoring tool in a multi-institutional setting and to explore whether the scoring tool could be further simplified to a single item.

Methods Used: In a prospective study, 70 clinician educators reviewed 211 vignette abstracts submitted to the SSGIM meeting (2011). Reviewers independently rated abstracts on 5 items: a) clarity of presentation, b) relevance to clinical practice, c) relevance to general internal medicine, d) teaching value, and e) overall assessment (Likert scale: 1=low, 7=high). We examined internal consistency with Cronbach’s alpha and factor analysis; and also, calculated Kappa agreement for accepted oral presentations using 5-items compared to 3-items compared to 1-item. We simplified Kappa using 3 items using factor analysis and inter-item correlations. The agreement between the number accepted for oral presentation using the 5-item average score with the number that would have been accepted using the 3-item average score was almost perfect (Cronbach’s alpha = 0.93), and it remained excellent (Cronbach’s alpha = 0.91) after simplifying to three items using factor analysis and inter-item correlations.

Summary of Results: A total of 1,215 ratings were available; each reviewer rated a mean of 17.4 (SD 0.7) abstracts; each abstract was rated by a mean of 5.8 reviewers (SD 0.7); 19% (40/211) top-rated abstracts were accepted for oral presentation. The overall consistency was almost perfect (Cronbach’s alpha = 0.93); and it remained excellent (Cronbach’s alpha = 0.91) after simplifying to three items using factor analysis and inter-item correlations. The agreement between the number accepted for oral presentation using the 5-item average score with the number that would have been accepted using the 3-item average score was almost perfect with 36 of the previously accepted 40 vignettes being the same (Kappa=0.88, 95% confidence interval [CI], 0.79 to 0.96). The agreement remained high comparing the 5-item tool with a single item, overall assessment, with 34 of the previously accepted 40 vignettes being the same (Kappa=0.83, 95% CI, 0.73 to 0.93).

Conclusions: A 5-item scoring tool to select the best clinical vignettes for presentation at academic meetings could be further simplified to a single item.

547 CLINICAL EXPERIENCE OF A CARBOHYDRATE-RESTRICTED DIET IN A MEDICAL BARIATRIC PRACTICE

Srinath RL, Westman E Duke University, Durham, NC

Purpose of Study: To assess the effect of a medical bariatric practice using a carbohydrate-restricted dietary approach as the primary intervention.

Methods Used: A retrospective chart analysis was performed on a consecutive sample of patients attending the Duke Lifestyle Medicine Clinic starting January 1, 2010. The intervention involved an initial complete history and physical followed by a teaching session and then regular office visits for medical monitoring. Instructions were provided to limit carbohydrate intake to less than 20 grams daily including low carbohydrate vegetables and unlimited access to fluids. Baseline demographics including age, gender, ethnicity, weight and body mass index (BMI) were obtained on initial evaluation. Weight, waist measurement, and blood pressure were recorded over weekly or monthly follow up. Fasting lab values including lipid profile and electrolytes were monitored. Descriptive statistics were obtained and paired t testing was used to compare continuous variables in those adherent over one year.

Summary of Results: Of the first ninety three consecutively enrolled patients, the mean age was 51.6 years (SD=12.1), mean BMI was 38.9 kg/m2 (SD=8.4), and mean initial weight 107 kilograms (SD=26.9). Approximately 84%(n=78) were female and 16% male (n=15), with 72% white, 26% black and 2% other. 53.8%(n=50) adhered to the program for less than 6 months, 36.0%(n=34) for more than nine months, and 26.9%(n=25) were adherent over one year. Of those adherent over 12 months, there was a significant improvement in BMI (-5.3 kg/m2, SD=5.2, p<0.001), loss of weight (-14.2 kg, SD=8.9, p<0.001), and change in waist diameter (-8.0 inches, p<0.0001).
What is the Average Resident Day on Inpatient Ward Services?

Caudill T, Arbune A, Patton M, Feddock C University of Kentucky, Lexington, KY.

Purpose of Study: Although resident time is devoted primarily to patient care and education, residents are responsible for a number of duties. A meta-analysis published in 2003 found that residents spent on average 36% of their day in direct patient care activities, 15% in formal educational activities, 36% in activities of little or no educational value and 16% which could not be classified. We designed a time motion analysis to describe the general work duties of residents at our institution.

Methods Used: Between July and September 2011, trained research assistants were assigned to follow residents on our university inpatient ward services during the day shift from 7am to 5pm. Research assistants followed an individual resident or intern for the duration of the shift except for the noon conference time period of 12-1pm. Residents duties were classified as direct patient contact (history, physical, case discussions, procedures), indirect patient contact (documentation, record review, etc.), communication (case discussions with nursing, other physicians, answering pages, etc.), education and miscellaneous (personal time, time spent traveling, etc).

Summary of Results: 40 morning and 30 afternoon observations were completed. All years of training were reflected: 40% PGY-1, 25% PGY-2 and 34% PGY-3. Residents were followed for a mean of 8 hours and 52 minutes daily with no observations during noon conference. On average, 17% of the workday was spent in direct patient care activities, 32% in indirect patient care activities, 22% in case discussions with health care professionals, 14% in distinct educational activities, and 15% in miscellaneous. The majority of miscellaneous time (1 hour and 6 minutes) was spent traveling, searching for charts and waiting for other team members, whereas personal activities accounted for the minority (16 minutes).

Conclusions: In our hospital, the majority of resident time is spent in patient care and educational activities; however, much of this time the greatest amount of time has questionable educational benefit. The single most time-consuming activity is documentation and record review (notes, labs, radiology, etc.). Further, residents spend a significant percentage of their day in activities of no value - searching for charts and walking from patient to patient. The pace of care provides very little time for personal time.

A Profile of Poorly Controlled Diabetics in South Florida: The Miami Healthy Heart Initiative

Purberg E, Kenya S, Alonzo Y, Carrasquillo O University of Miami, Miami, FL.

Purpose of Study: There is increasing consensus that Community Health Workers (CHWs) can have an essential role in narrowing health disparities. However, evidence of their effectiveness from rigorous randomized controlled clinical trials is limited.

Methods Used: MMHH is randomized controlled trial of poorly controlled Latino diabetic patients. Patients are identified from our local public hospital clinic using automated EMR queries followed by opt-out letters and recruitment phone calls. Our primary outcomes, obtained using research protocols during a baseline and 12 month follow-up visit are systolic blood pressure, LDL and HgA1C. Additional measures are also being obtained using validated instruments during a 90 minute interview.

Summary of Results: To date we have sent recruitment letters to 470 potential patients. Of the 252 subjects that we have been able to contact and whom on screening were study eligible, 75% have agreed to participate. So far we have randomized 161 of our planned 360 patients. Our first two CHWs are each handling a caseload of 30 patients. CHWs have made 8.1 home visits and 14.2 phone calls per patient and patients have participated in mean 2.1 group educational sessions. Enrolled participants have a mean SBP of 133 ± 19, LDL 96 ± 41, and HgA1c of 9.0 ± 1.7. Most subjects are obese (mean BMI 32.4 ± 7.7), 44% have low acculturation, but only 12% had low health literacy (bilingual instrument). Nearly all (70%) had in inadequate medication adherence and 48% reported low diabetes related self-efficacy. Although, we are still not adequately powered to make planned statistical comparisons some emerging trends are already evident. Lower medication adherence and self-efficacy are related to poorer glycemic control (8.5 ± 1.7 vs 9.4 ± 1.9, and 8.5 ± 1.5 vs 9.4 ± 1.7). Trends also seem to suggest that acculturated Latinos have poorer diabetes control than those most acculturated (8.9 ± 1.7 vs 9.4 ± 1.9).

Conclusions: We are currently half way in recruiting 360 patients for a rigorous clinical trial of CHWs. MMHH is already generating important cross-sectional data of Latino diabetics in Miami. Preliminary findings suggest that existing measures of self-efficacy and self-reported adherence are valid in this South Florida Latino population. We are also finding evidence of the Latino paradox in our cohort.

Demographic, Geographic and Language Predictors of Health Literacy: Analysis of the 2003 National Assessment of Adult Literacy Survey

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Purpose of Study: Studies suggest that inadequate health literacy is associated with disease self-management and poorer clinical outcomes. The aim of this study was to determine which demographic, geographic and language factors relate to lower health literacy scores in a national sample.

Methods Used: We performed a secondary analysis of the 2003 National Assessment of Adult Literacy (NAAL) background questionnaire. Data was analyzed on approximately 18,000 national participants. Background questions pertaining to demographics, geographical location, and language spoken were used. Health literacy was assessed using the overall health literacy score in the dataset. We used marginal maximum likelihood estimators in AM statistical software to obtain population estimates accounting for the complex survey design of the NAAL.

Summary of Results: The response rate to the NAAL dataset was 88.3%. Predictors of lower health literacy scores included: older age (age<65: 213 vs 256, p<0.001), black race (216 vs 255, p<0.001), male gender (242 vs 248, p<0.001), lower educational status (< high school; 184 vs 283, p<0.001 compared to college), separated/divorced marital status (229 vs 249, p<0.001) or never married (246 vs 249, p<0.03), lower income ($<56000; 249 vs 278, p<0.001), being uninsured (219 vs 250, p<0.001), unemployed (240 vs 257, p<0.001), and less than excellent health status (195 vs 262, p<0.001). Also, health literacy scores were lower with non-United States (US) citizenship (190 vs 221, p<0.001), living in the US one to five years (192 vs 250, p<0.001) compared to birth in the US, and non-US country of birth (202 vs 250, p=0.001). Geographically, health literacy was lowest in the south (238 vs 251, p<0.001), and northeast (246 vs 251, p=0.036). Language factors associated with lower health literacy included currently speaking a non-US language (164 vs 249, p<0.001).

Conclusions: Older, minority populations with lower socioeconomic status and residing in the southern and northeast regions are at highest risk for lower health literacy. Lower health literacy is also associated with being born outside the US and not speaking English at home. The factors would help identify populations that should be the target for health literacy interventions.

Can Medical Team Members Predict 30-Day Readmission Risk on Admission?

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Purpose of Study: Identifying patients at risk for readmission is a strategy to direct limited resources to those who may benefit most. Much research has gone into developing prediction models and evaluating provider predictions at discharge. We sought to determine if providers could predict a patient’s risk of 30-day readmission upon initial hospital assessment.
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EXTERNAL VALIDATION OF A CLINICAL VIGNETTE SCORING TOOL
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Purpose of Study: Clinical vignettes are an important educational tool and are presented frequently at academic meetings. We recently demonstrated that the test characteristics of a 3-item scoring tool to select vignettes at academic meetings performed as well as a 5-item version. In this study, we aimed to validate the 3-item scoring tool and determine the level of agreement amongst raters in order to select clinical vignettes for academic meetings.

Methods Used: In a prospective study of an internal competition at a single institution, 6 experienced clinician educators reviewed 28 clinical vignette abstracts and independently rated each vignette on: a) relevance to general internal medicine (impact on clinical practice, teaching/education, future research), b) teaching value (diagnosis, physical examination, or management pearl), and c) overall assessment (overall scholarship, potential for publication) (Likert scale; 1=low, 7=high). We examined internal consistency (Cronbach’s alpha, factor analysis) and calculated inter-rater agreement (intraclass correlation coefficients [ICC]). ICC’s values are interpreted similarly to Kappa (0 to 0.20, poor agreement; 0.20 to 0.39, fair; 0.40 to 0.59, moderate; 0.60 to 0.79, substantial; 0.80 to 1, almost perfect).

Summary of Results: A total of 160 evaluations were available (a conflict of interest was present for eight vignettes). The internal consistency was excellent as demonstrated by Cronbach’s alpha of 0.91 and by the identification of a single factor in factor analysis. The scores among the six raters were different for relevance (range: 3.8 [SD 1.4] to 5.3 [SD 1.0], p < 0.001), teaching value (range: 3.6 [SD 1.6] to 5.7 [SD 1.1], p = 0.001), and overall assessment (range: 3.8 [SD 1.8] to 5.5 [SD 1.3], p < 0.001). The inter-rater reliability were fair for relevance (ICC = 0.31), teaching value (ICC = 0.26), and overall assessment (ICC = 0.22).

Conclusions: A 3-item scoring tool to select clinical vignettes was validated in this study. The inter-rater reliability was fair, but the internal consistency was excellent. This indicates that the 3-item scoring tool performed very well; and although the reviewers valued the vignettes differently, the scoring tool was still able to be used to select the best vignettes.

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THIRD-YEAR MEDICAL STUDENTS’ PERSPECTIVES ON REWARDS AND DIFFICULTIES IN CARING FOR THE ELDERLY
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Purpose of Study: As the elderly population in the US continues to grow out of proportion to the number of physicians specializing in geriatrics it is apparent that the majority of healthcare of this age group will be performed by non-geriatricians. Thus all physicians caring for adults should be well versed in the principles of geriatrics. Training in geriatrics should occur across the continuum of medical education including medical students.

One barrier in promoting an interest in geriatrics in medical students may be preconceived negative stereotypes of the elderly. Understanding student attitudes can inform new educational interventions that illuminate the rewards and minimize the difficulties of care for elderly patients.

Methods Used: Prior to a geriatric medicine workshop at the beginning of their third-year Medicine clerkship, students were asked to provide written replies to: “What do you find rewarding about working with the elderly?” and “What do you find difficult about working with the elderly?” The responses from 50 students were analyzed using qualitative methods. The results were examined for thematic categories by two reviewers in an iterative process.

Summary of Results: Students identified interpersonal aspects of working with the elderly such as shared stories, wisdom and life experiences, appreciation nature, their kindness and honesty, and ease of communication as the most rewarding. Students also saw the complexity of elderly patients’ medical conditions as an opportunity to learn. Negative aspects included complex medical problems, difficult management, and inability to “cure” communication was also viewed as challenging in that elderly patients may be hard of hearing and “talk too much”.

Conclusions: It is interesting to observe that students may view certain aspects of care of the elderly such as complexity of medical conditions and communication as rewarding or difficult, depending on the point of view. Rewarding aspects of elder include more personal connections with patients, while challenges include obtaining accurate medical history and treatment compliance. The inability to “cure” elderly patients was countered by the reward of maintaining or improving quality of life. Helping students refrain some of their negative aspects of caring for the elderly may be an important interview in fostering a favorable attitude towards care of the elderly.

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NONTRADITIONAL AMBULATORY CARE TOPICS INTEGRATED INTO INTERNAL MEDICINE RESIDENT CONTINUITY CLINIC
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Purpose of Study: The purpose of the study was to determine the current comfort and experience of internal medicine residents regarding nontraditional topics in primary care and record the impact of additional structured curriculum in these areas.

Methods Used: In calendar year 2010-2011, the internal medicine ambulatory resident curriculum was redesigned to include common tasks done in an office setting, not traditionally taught in residency education. An electronic survey was administered at the beginning and end of the educational year. The electronic survey was voluntary, confidential, anonymous and free of repercussion for non participation. The survey recorded comfort level and frequency of these tasks. Data was collected electronically from the web-based survey and analyzed.

Summary of Results: Of the residents’ self-reported comfort level of the different tasks, 15 different tasks were found to have at least a 10% increase in average rating change. These were under the topics of electronic medical record, coding & billing, motivational interviewing, quality improvement, disabled persons issues, domestic abuse and disease reporting. Nodecreases of greater than 10% were recorded. Regarding frequency, three tasks including selecting preventative service codes, selecting PQRI code, and entering medically necessary code for testing limited by Medicare recorded a greater than 10% increase; while asking open ended questions and using shared decision making recorded a greater than 10% decrease.
Conclusions: We did see a measurable increase in the self-reported comfort level of a majority of topics surveyed which could be related to the integration of the didactic sessions, with little change in the frequency that the residents performed the tasks.

SSGM Research Abstract Oral Plenary Session - Joint with Vignette Plenary
9:45 AM
Saturday, February 11, 2012

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COMPARISON OF CUSTOMIZED VERSUS MAINSTREAM PRIMARY CARE FOR HOMELESS INDIVIDUALS: THE PRIMARY CARE QUALITY-HOMELESS SURVEY
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Purpose of Study: To evaluate the over 600,000 persons homeless each night, primary care offers a chance to address health issues without hospitalization, and to initiate recovery. Most such primary care occurs in “mainstream” standard clinics. An alternate model, embodied by some Health Care for the Homeless (HCH) programs, “customizes” services with co-located medical, mental, and social services, a homeless-trained workforce, and specialized data systems. To date there has been no effort to test if this model offers a superior patient experience. We report results from an author-developed homeless primary care assessment survey, testing if a federal HCH program scored more highly than a mainstream primary care clinic along dimensions—previously identified by the Institute of Medicine (IoM)—as important to primary care quality.

Methods Used: Based on interviews with 36 patients and 24 homeless expert clinicians, the Primary Care Quality-Homeless survey was developed (78 items) reflecting 11 constructs. Eight came from IoM reports (access, expert clinicians, the Primary Care Quality-Homeless survey was developed previously by the IoM) and 3 were from interviews (respect, trust, substance abuse/mental illness, homeless-specific needs). The survey was administered to a random sample of homeless primary care patients from a “mainstream” site (n=154) and a “customized” HCH program (n=195). The 11 scales were compared across sites and underwent confirmatory factor analysis.

Summary of Results: The 11 survey scales had good internal reliability (alphas >0.79). As hypothesized, the customized HCH program out-performed the mainstream VA site on 9 of 11 scales (all p<0.01). This difference was greatest for trust/respect, accountability, patient control, continuity, shared knowledge) and 3 emerged from interviews (respect, trust, substance abuse/mental illness, homeless-specific needs). The survey was administered to a random sample of homeless primary care patients from a “mainstream” site (n=154) and a “customized” HCH program (n=195). The 11 scales were compared across sites and underwent confirmatory factor analysis.

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MODELING THE POTENTIAL IMPACT OF HEALTH CARE REFORM ON AN ACADEMIC MEDICAL CENTER
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Purpose of Study: The 2010 Patient Protection and Affordable Care Act (PPACA) has critical implications for academic medical centers. We sought to evaluate PPACA’s potential financial impact by modeling payer-mix changes on three representative medical services at a large urban academic medical center.

Methods Used: We used 2009-10 hospital financial data to model payer-mix changes on three services: internal medicine teaching, non-teaching hospitalist, and a procedure-based service. We calculated the Contribution Margin (CM)(revenue earned or lost per patient) for Diagnosis Related Groups (DRG) and payer source. To simulate PPACA reform, we adjusted payer-mixes by moving previously uninsured patients into Medicaid based on new eligibility criteria and calculated the resulting increase in CM. To calculate the change in private insurance CM, patients were re-allocated to healthcare exchanges (which are expected to reimburse at rates comparable to Medicare) at participation rates of 33%, 50%, and 67% to simulate the unknown degree of migration to these new structures, and calculated the loss in CM from these patients moving from private to Medicare rates. We performed sensitivity analyses on eligibility, exchange participation, and reimbursement rates.

Summary of Results: Expanded Medicaid eligibility to uninsured patients resulted in modest increases in revenue in all three medicine services ranging from 1.4 to 4.6%. However, when accounting for private insurance modifications, each service had an overall reduction in revenue despite the increased Medicaid eligibility of the previously uninsured. Services with a higher percentage of private insurance patients at baseline were most adversely affected by PPACA in our modeling. Services with higher percentages of Medicare, Medicaid, and uninsured at baseline, were less negatively impacted, though all would have reduced revenue compared to baseline pre-PPACA.

Conclusions: Despite increased revenue due to expansion of Medicaid eligibility, private insurance changes resulted in an overall negative impact on revenue for medicine services in our modeling. Though the effects of PPACA health care reform remain uncertain, modeling its potential impact is critical for ensuring continued success of academic medical centers.
Methods Used: Cross-sectional analyses of 21,257 individual patient-visits for 12,385 adults diagnosed with chest pain without active cardiac conditions presenting to any Memphis Metropolitan Area (MMSA) ED 2 or more times between 8/1/2007 and 7/31/2009. Outcome measures included hospital admission and cardiac catheterization.

Summary of Results: The majority of the repeat patient-visits for chest pain were for males (58.3%), Medicare patients (32.5%) with median age of 54 (IQR 42 - 69) and median of 1 previous ED visit for chest pain (IQR 1 - 2; range 1 - 48). HIE data was accessed for 6.5% of visits for chest pain. For 80.2% of visits troponin was obtained, 7,964 (37.5%) resulted in hospital admission, and 1,134 (5.3%) resulted in cardiac catheterization. After controlling for demographic factors, comorbidity, hospital system, and previous visits, HIE use was associated with decreased odds of hospital admission (OR 0.77, CI 0.65 - 0.91) but was not associated with reduced odds of cardiac catheterization (OR 1.08, CI 0.81 - 1.46).

Conclusions: HIE is associated with decreased hospital admission for patients seen in the ED for chest pain. Rates of cardiac catheterization were appropriately low overall for this population and HIE did not impact use of cardiac catheterization. Low HIE use rates by providers in the ED limited the effectiveness of HIE in reducing potentially avoidable hospitalizations. We estimate that over 1,150 hospitalizations could be potentially prevented annually in the MMSA if providers used HIE for all ED chest pain visits. Assuming a similar reduction in admissions as seen in Memphis, we estimate that 100% provider HIE adherence nationwide could avoid over 297,000 chest pain hospitalizations yielding potential cost savings between $1.3B and $3.2B annually. Further studies are needed to assess best methods to increase HIE use.