

Eastern Regional Meeting

Saturday, March 30, 2019

Embassy Suites by Hilton Philadelphia
Airport

Philadelphia, Pennsylvania, USA

ORAL ABSTRACT SESSION

8:30 AM – 10:30 AM

1 MICRORNA EXPRESSION PROFILE IN EXHALED BREATH CONDENSATE: INVESTIGATING THE PATHOPHYSIOLOGY OF IDIOPATHIC PULMONARY FIBROSIS

Priya Agarwala, Nadia Pletukhina, Lora J Kasselmann, Heather A Renna, Daniel S Glass, Steve H Salzman, Allison B Reiss. *Medicine, NYU Winthrop Hospital, Mineola, New York, USA*

10.1136/jim-2019-001036.1

Purpose of study Idiopathic pulmonary fibrosis (IPF) is an irreversible fibrotic lung disease which ultimately results in respiratory failure. It is incurable, the etiology is unknown and therapeutic options are limited. Exhaled breath condensate (EBC) composed of droplets of airway epithelial lining fluid and condensed water vapor contains variety of biomolecules, including micro(mi)RNAs, with potential for non-invasive monitoring of pathological processes in the lungs. EBC miRNA may be useful in advancing IPF disease diagnosis, staging, understanding of pathophysiology and even as possible therapeutic targets. This study investigates the microRNA composition of EBC from patients with IPF compared to healthy controls in order to detect abnormal miRNA expression in IPF that may be leveraged to develop new treatments.

Methods used EBC was collected using a portable non-invasive handheld device for the study of deep-lung volatile organic compounds. miRNA extraction from EBC was performed with the Qiagen miRNA isolation kit. The extracted miRNA was digested with DNase I to remove genomic DNA contamination and quantified by spectrophotometry. Isolated miRNA was converted to cDNA with reverse transcriptase and the resulting cDNA was plated in a miScript miRNA PCR Human Fibrosis array.

Summary of results Data from the miScript miRNA PCR array show that there is a clear difference in microRNA expression between patients with and without IPF and these specific microRNAs have been identified. In particular, several fibrosis-related microRNAs are overexpressed in IPF patients including: miR-10a, miR-142, miR-204, and miR-20a.

Conclusions The miRNA profile of EBC from IPF patients differs from that of controls matched by age and sex. This information will be applied in culture models of alveolar epithelial cells to study effects on fibrosis of overexpression and silencing of these outlier miRNAs. Downstream effects of these miRNAs on cellular function will then be evaluated in order to reveal new therapeutic targets.

2 VITAMIN D AND AIRWAY INFLAMMATION IN ADOLESCENT ASTHMATICS

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10.1136/jim-2019-001036.2

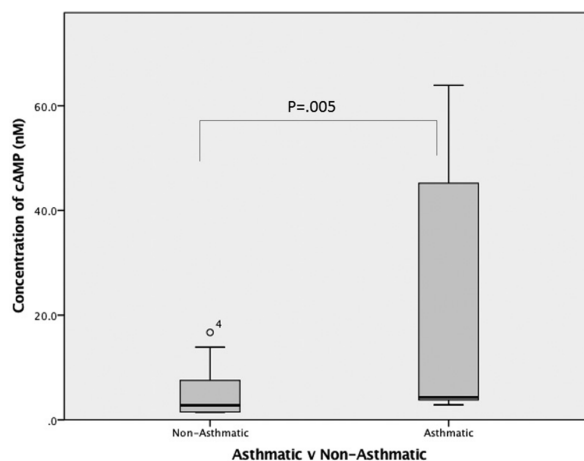
Purpose of study The high prevalence of vitamin D insufficiency has been shown to correlate with the high prevalence of asthma in urban youth. Although underlying mechanisms are not clear, vitamin D may regulate inflammation by increased production of anti-inflammatory compounds (IL-10, cAMP, MKP1). Therefore, the objective of this study is to determine which anti-inflammatory mediators are differentially expressed in asthmatic epithelium when exposed to 25(OH)D in conjunction with dexamethasone. The hypothesis is that low levels of vitamin D will be associated with a more pronounced inflammatory milieu and reduced anti-inflammatory response.

Methods used Nasal Epithelial cells were cultured for 90 min *ex vivo* with varying levels of Dexamethasone with or without 25(OH)D (6 conditions). mRNA was profiled using Illumina and validated using NanoString. Network and functional analyses were performed using Ingenuity Pathway Analysis. Confirmatory experiments were performed on human asthmatic and non-asthmatic bronchial epithelial cells exposed to 25(OH)D with or without Dex. Intracellular cAMP was measured with ELISA.

Summary of results Of 214 AsthMaP2 participants, 53% were male and (97%) had persistent asthma.

The mean (SE) age=10.9 (0.4) years, BMI percentile for age=72.1 (3)%, and serum 25(OH)D=19.5 (0.9) ng/mL. Whole transcriptome analyses of nasal epithelial cells (n=7) showed 34 transcripts differentially expressed in all exposure conditions ($p \leq 0.01$). Pathways analysis identified cAMP signaling as a top activated pathway impacted by 25(OH)D. Intracellular cAMP levels were 10-fold higher in asthmatic (n=3) vs. non-asthmatic (n=3) tracheal bronchial epithelial cells at baseline ($p=0.009$). While this difference persisted through 15 min of exposure to 25(OH)D with or without DEX, there were no significant changes in intracellular cAMP from baseline in response to exposure conditions.

Conclusions Data show that cAMP is constitutively expressed higher in asthmatics in comparison to non-asthmatics,



Abstract 2 Figure 1 Concentration of cyclic AMP in asthmatic v non-asthmatic human tracheobronchial epithelial cells at time 0

manipulations of vitamin D level did not alter cAMP levels. Additional experiments using a larger sample size are required to further test the proposed effects of vitamin D, with a special focus on cAMP as a transient mediator of inflammation regulation in asthmatic airways.

3 OPTIMAL DURATION FOR CLOPIDOGREL SUSPENSION PRIOR TO CARDIAC SURGERY

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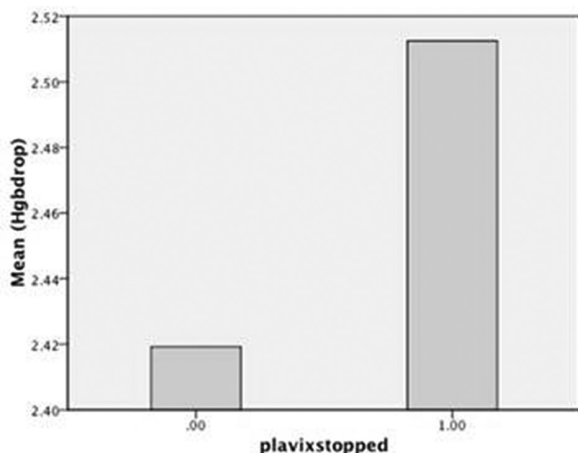
10.1136/jim-2019-001036.3

Purpose of study Recent American College of Cardiology (ACC) guideline suggests clopidogrel suspension five days before non-emergent cardiac surgery (Class IIa, Level B).¹ This puts patients with recent angioplasty and ongoing ischemia at a high risk of stent thrombosis.¹ We sought to determine the bleeding risk in patients who stopped clopidogrel at three or less than three days before cardiac surgery.

Methods used A retrospective single center study was performed, and a total of 90 patients were included. Forty patients were not on clopidogrel and hence were used as a control group. Fifty of the remaining patients were randomized into two groups. Group A included patients who had clopidogrel stopped three or less than three days prior to the cardiac surgery and group B included patients who followed the standard ACC guidelines and clopidogrel was suspended five days before the coronary artery bypass graft (CABG). The frequency of the included patients in each group is shown in table 1.

Abstract 3 Table 1 Frequency and percentages of included population in each group

Plavix stopped days				
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 3 day or less	27	54.0	54.0	54.0
5 days	23	46.0	46.0	100.0
Total	50	100.0	100.0	



Abstract 3 Figure 1 Plavix stopped 3 or less than 3 days prior to surgery (0.00) had a Hgb drop of 2.42 mg/dl vs Plavix stopped 5 days prior to the surgery (1.00) which had a Hgb drop of 2.51 mg/dl post surgery.

Postoperative hemoglobin drop was analyzed between subgroups using IBM SPSS version 22.

Summary of results The mean age of the included population was 69.9 years (46–88) with 65% comprising of male and 35% female patients. The mean hemoglobin (Hb) drop for patients in group A was 2.42 in comparison with Hb drop of 2.51 for patients in group B prior to the surgery. This is shown in figure 1.

Conclusions Our study concludes that there was no significant difference in the hemoglobin drop of the patients who had clopidogrel stopped three days prior to the major procedure like CABG in comparison to the patients who stopped clopidogrel five days before surgery. We advocate, that early cessation of clopidogrel is posing a threat of thrombosis in high risk patients with no additional benefit of decreased bleeding risks. However, large population studies are needed to validate the results.

4 LESSONS FROM ADAPTABLE: ASPIRIN STUDY AT THE MONTEFIORE SITE

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10.1136/jim-2019-001036.4

Purpose of study ADAPTABLE is an ongoing multicenter, pragmatic trial comparing the effectiveness of aspirin 81 mg vs. 325 mg daily for secondary prevention in patients with atherosclerotic cardiovascular disease. Novel features of this clinical trial include leveraging of electronic health records, participation by patients via internet connectivity, and low cost. Our objective is to analyze interim recruitment and patient follow-through data at Montefiore Medical Center (MMC), located in the Bronx, NY, focusing on methods used and lessons learned.

Methods used Patient eligibility lists using the computable phenotype were linked with clinic schedules, and voice, text, and email invitations sent ahead of patient visits after checking opt-out by providing cardiologist. Patients were then approached by a research assistant immediately before or after their visit. With the cardiologist's approval, patients were enrolled online with the assistance of research staff, and follow-up information obtained electronically or by study personnel. Data are presented as percentages and analyzed with the chi-squared test.

Summary of results After two years, 450 participants were enrolled at our institution (74.7% non-white, 15.8% white). Overall, non-internet enrollment was 57.3%, compared to the national non-internet enrollment rate of 17.4% (p<0.01). The follow-up visit retention declined more at MMC than at all sites nationally as follows: 70% vs. 88.5% (p=0.58) completed the initial Early Visit Form, 46% vs. 74.7% (p<0.01) completed follow-up at six months, 32% vs. 71.1% (p<0.01) at 12 months, and 17% vs. 71.2% (p<0.01) at 18 months.

Conclusions In this socioeconomically disadvantaged community composed predominantly of race/ethnic minorities, recruitment had the highest yield with in-clinic efforts, suggesting the importance of direct patient interaction and physician involvement. These findings reflect barriers to the conduct of pragmatic clinical trials among populations lacking access and knowledge about the internet and clinical research. Patient-centered research in areas with underrepresented populations is highly dependent on direct physician engagement, and may benefit from outreach methods to help educate patients about the benefits of clinical research.

5 LATE REACTIVE HYPOGLYCEMIA AS A SIGN OF EARLY GLYCEMIC DYSFUNCTION IN OBESE ADOLESCENT GIRLS

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10.1136/jim-2019-001036.5

Purpose of study The combination of obesity and adolescence increases risk of insulin resistance and dysglycemia. Idiopathic reactive hypoglycemia (RHG) has been observed to be common in adult populations with obesity, but its mechanisms and prevalence are not well understood in adolescent populations, particularly in females at higher risk for dysglycemia. Thus our goals were to document rates of RHG in a group of adolescent girls with obesity and to identify markers associated with RHG.

Methods used 98 sedentary adolescents with obesity (12–21 years; BMI > 90 th%ile for age and gender) were enrolled. Participants taking medications altering glucose metabolism or regulated hormones were excluded. After a 12 hour monitored fast and baseline metabolic and hormonal labs, girls were administered a 6 hour oral sugar tolerance test (OSTT) of 75 g glucose and 25 g fructose and indices of glucose metabolism were measured. MRI for visceral and hepatic fat was performed. Glycemia was categorized as follows: blood glucose (BG) ≥ 70 mg/dL normoglycemic; 69 mg/dL ≤ BG < 62 mg/dL indeterminate and were excluded from analysis; BG ≤ 61 mg/dL RHG. Normoglycemic and RHG group demographics, metabolic labs and OSTT area under the curves were compared with t-test or Mann-Whitney. OSTT curves were also compared with two-way ANOVA with repeated measures.

Summary of results Of the total cohort, 16% of girls had RHG and 35% had normoglycemia. The mean time for RHG was 240 min post OSTT drink. The AUC of insulin and glucose in the first 3 hours was higher in RHG group ($p=0.04$ for both). 42% of participants with RHG had impaired glucose tolerance. RHG had higher amounts of visceral fat and a higher waist-to-hip ratio ($p=0.04$ for both) compared to normoglycemia and a high rate of familial history of type 2 diabetes (81%).

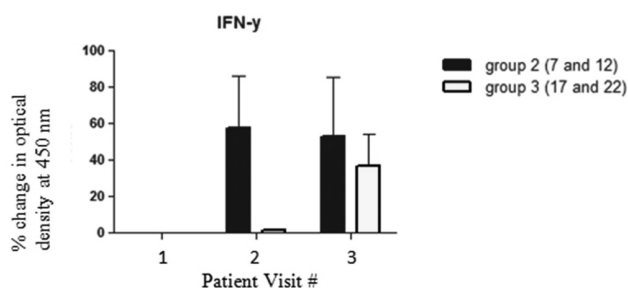
Conclusions RHG was relatively common in this population. RHG is associated with classic metabolic risk factors of central obesity and hyperglycemia as well as high family history of type 2 diabetes. Further studies should be conducted to understand the long-term effects and outcomes of RHG and its prediction for the development of type 2 diabetes.

6 INVESTIGATING AND CHARACTERIZING THE IMMUNE RESPONSE IN PROSTATE CANCER TREATMENT

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Purpose of study Multiple modalities are available to treat prostate cancer. In humans, cryoablation has shown both immunosuppressive and immunostimulatory results. Combined cryoablation +immunotherapy increased survival and enhanced cytokine, lymphocyte and tumor-specific antibody responses compared to just one of these treatments. Further, radiation



Abstract 6 Figure 1

therapy can increase output of immunostimulatory cytokines. A more recent prostate cancer treatment, stereotactic body radiation therapy (SBRT), directs high levels of radiation to specific tumor areas using image assistance. In this study, we assess immune response in men after either total prostate cryoablation, focal prostate cryoablation, SBRT via CyberKnife, and radical prostatectomy.

Methods used In this IRB-approved study, change in cytokine profile, including tumor necrosis factor (TNF)- α , interleukin (IL)-1 β , -2, -4, -5, -6, -8, -10, -12, -13, IL-2 receptor, CD25 +soluble, interferon (IFN)- γ , are assessed in urine and blood at 3 timepoints: before prostate cancer treatment, immediately after treatment (2 ± 1 week) and 3 months post-treatment. Subjects undergo an Immune Assessment consisting of complete blood count, serum cytokine panel, peripheral blood mononuclear cell isolation, and urine collection at all 3 timepoints. The primary objective is to evaluate post-treatment change in cytokine profile.

Summary of results For IFN- γ , we found a statistical trend with levels in urine stable between visits 2 and 3 for patients 7 and 12, while levels increased for patients 17 and 22 between visits 2 and 3 (p value = 0.10). Similar patterns were observed with other cytokines such as IL-1 β , IL-2, and TNF- α . Although we remain blinded to the treatment modality, patients 7 and 12 were in a group receiving the same treatment while patients 17 and 22 were in a different group receiving the same treatment. Thus, one treatment caused a pattern of changing levels of cytokines in urine between the 2 week and 3 month follow-up immune response assays, while the other treatment did not evoke a change.

Conclusions Physicians have a number of choices in managing prostate cancer and guidance in decision-making is needed to optimize outcomes. Pre- and post-treatment changes in cytokine profile may be a useful indicator of therapeutic response.

7 DIABETES STATUS DOES NOT AFFECT BLOOD LACTIC ACID IN ELDERLY VETERANS WITH STAGE 3 CHRONIC KIDNEY DISEASE

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10.1136/jim-2019-001036.7

Purpose of study Metformin use in type 2 diabetes (T2D) is associated with an increased risk of lactic acidosis. Recent FDA guidance broadened metformin use in T2D to the

patients with chronic kidney disease stage 3 (CKD3). It is unknown if diabetic patients with CKD3 not treated with metformin have increased baseline level of lactic acid (LA) compared with non-diabetic CKD3 patients. The aim of our study was to characterize LA level in CKD3 patients treated with and without T2D.

Methods used We retrospectively identified elderly male US Veterans (age >60 years) with T2D and stable CKD3 (eGFR 30–59 ml/min/1.73m²). The blood LA levels were analyzed in ambulatory patients with non-diabetic CKD3 (Group 1) and diabetic CKD3 (Group 2). Hyperlactatemia was defined as LA 2–4 mmol/L. Patients treated with metformin or with history of HIV, advanced CHF, alcohol abuse, and liver cirrhosis were excluded. Clinical and biochemical characteristics and LA level among groups were analyzed using Student's *t*-tests and Fisher's exact tests.

Summary of results Mean LA levels (normal range 0.4–2.0 mmol/L) were similar between Group 1 (n=29, age 71.4 ±10.2 years, BMI 29.8±4.5 kg/m², HbA1c 5.6%±0.3%) and Group 2 (n=31, age 73.0±7.4 years, BMI 32.3±5.7 kg/m², HbA1c 7.5%±1.3%) at 1.24±0.34 vs 1.29±0.42 mmol/L (p=0.65), respectively. Only 1 patient in each Group had hyperlactatemia detected during routine clinic visit. There was no significant difference in the mean LA level within the Group 1 patients with CKD stage 3A (eGFR 45–59 ml/min/1.73m², n=12, LA 1.23±0.26 mmol/L) and CKD stage 3B patients (eGFR 30–44 ml/min/1.73m², n=17, LA 1.21 ±0.43 mmol/L). Similarly, we found no differences in LA level between Group 2 patients with CKD stage 3A (n=15, mean LA 1.31±0.39 mmol/L) and CKD stage 3B (n=16, mean LA 1.28±0.45 mmol/L).

Conclusions Elderly T2D patients with CKD stage 3 not treated with metformin have baseline lactic acid level that is similar to non-diabetic patients with CKD stage 3. The risk of spontaneous hyperlactatemia in these patients is very low.

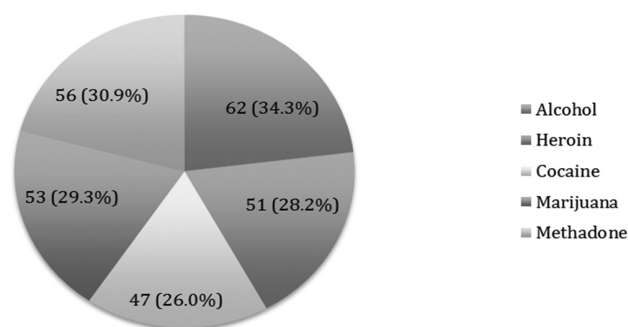
8 REAL-WORLD STUDY OF HEPATITIS C TREATMENT WITH DIRECT-ACTING ANTIVIRALS IN PATIENTS WITH DRUG ABUSE AND OPIOID AGONIST THERAPY

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Purpose of study Hepatitis C (HCV) infected patients with substance abuse face significant barriers to antiviral treatment. Limited data exist evaluating the treatment outcomes with direct-acting antivirals (DAAs) in patients with substance abuse in the community-care setting. We aim to assess the treatment

Drugs of Abuse



Abstract 8 Figure 1 Absolute count of the drugs screened from patients (n=181) after the toxicology screen. Note: Among patients who screened positive: n=118 shown 1 drug; n=42 shown 2 drugs; n=17 shown 3 drugs; and n=4 patients tested positive for 4 drugs. n=110 patients screened negative for any drugs of abuse.

Abstract 8 Table 1 Demographic and clinical characteristics of patients

Characteristics	All Patients (n=291)	Abuser (n=181)	Non-Abuser (n=110)	p-value
Age (years)	60.4 ± 10.4	60.9 ± 9.8	59.5 ± 11.3	0.295
Sex				
Male (%)	179 (61.5%)	114 (63.0%)	65 (59.1%)	0.610
Female (%)	112 (38.5%)	68 (37.6%)	44 (40%)	
BMI (Kg/m ²)	28.2 ± 5.6	28.2 ± 5.7	28.3 ± 5.6	0.857
HCV Genotype				
GT 1a	172 (59.1%)	119 (65.7%)	53 (48.2%)	<0.001*
GT 1b	74 (25.4%)	49 (27.1%)	25 (22.7%)	
2	13 (4.5%)	8 (4.4%)	5 (4.5%)	
3	11 (3.8%)	5 (2.8%)	6 (5.5%)	
4	21 (7.2%)	1 (0.6%)	20 (18.9%)	
HCV RNA (IU/mL)				0.191
< 300,000	88 (30.2%)	60 (33.1%)	28 (25.5%)	
≥ 300,000	203 (69.8%)	122 (67.4%)	81 (73.6%)	
Prior treatment				0.887
Naive	231 (79.4%)	144 (79.6%)	87 (79.1%)	
Experienced	60 (20.6%)	38 (20.1%)	22 (20.0%)	
Psychiatric Co-morbidities				
Depression	81 (27.8%)	63 (34.8%)	18 (16.4%)	<0.001*
Schizophrenia	41 (14.1%)	32 (17.7%)	9 (8.2%)	0.027*
Bipolar disorder	52 (17.9%)	37 (20.4%)	15 (13.6%)	0.157
Anxiety Disorder	47 (16.2%)	35 (19.3%)	12 (10.9%)	0.065
Schizoaffective disorder	51 (17.3%)	35 (19.3%)	16 (14.5%)	0.323
HIV status				<0.001*
Positive	63 (21.6%)	52 (28.7%)	11 (10%)	
Negative	228 (78.4%)	130 (71.8%)	98 (89.1%)	

response of DAAs in this subset of patients with or without the Opioid agonist therapy (OAT).

Methods used All the HCV patients treated with DAAs between January 2016 and December 2017 in two centers were retrospectively analyzed. Patients were stratified into two groups by the presence or absence of abusing Alcohol, Cocaine, Heroin, Cannabis, and enrolled in OAT. All the patients who were assigned to the abuser group had positive urine toxicology with one of the aforementioned drugs during the DAA treatment. The primary assessment was the sustained virologic response at 12 weeks post-treatment (SVR12).

Summary of results Among the 291 patients enrolled, 181 and 110 were patients with and without substance abuse. In the abuser group, 56 were receiving OAT. SVR12 was achieved in 95%, 94.5%, and 98% of the drug abusers, non-abusers and OAT group respectively. In multivariable logistic regression among the patients who achieved SVR12, race (OR 0.46, CI 0.23–0.89, $p < 0.001$), depression (OR 0.47, CI 0.25–0.90, $p = 0.02$), and the HIV status (OR 0.32, CI 0.15–0.68, $p = 0.010$) were significant in the abuser group. The most common adverse effect was fatigue. None of the patients discontinued the treatment due to adverse events.

Conclusions In this community-based study, DAAs are safe, effective with high overall SVR12 in patients with active substance abuse and also in OAT enrolled patients. These results support the removal of drug abuse as a barrier to DAA therapy in these patients.

9 ATYPICAL IMMUNOPHENOTYPE PREDICTS WORSE PROGNOSIS IN ADULT T-CELL LYMPHOMA/LEUKEMIA: A RETROSPECTIVE STUDY OF 63 CARIBBEAN PATIENTS AT A NEW YORK CITY TERTIARY CENTER

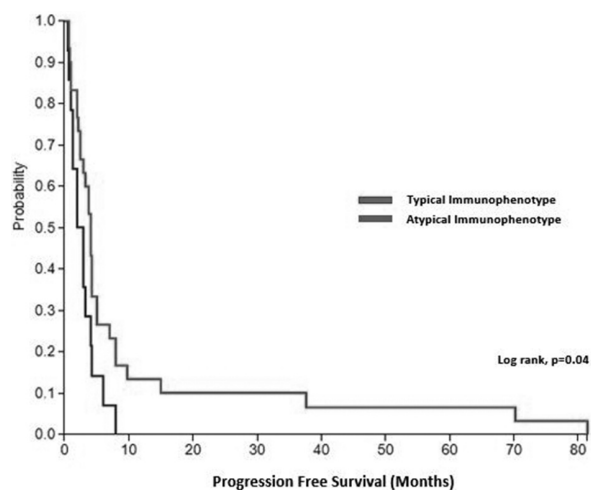
¹Bachar Samra, ¹Edwin Chiu, ²Bo Lin, ¹Eric Tam, ¹Babak Baseri, ¹Iuliana Shapira, ³Jason Gonsky, ³Robert Lewis, ¹Gurinder Sidhu, ⁴Ahmed Sawas, ³Evelyn Taiwo. ¹Hematology/Oncology, SUNY Downstate, Brooklyn, New York, USA; ²Pathology, SUNY Downstate, Brooklyn, New York, USA; ³Hematology/Oncology, Kings County Hospital, Brooklyn, New York, USA; ⁴Center for Lymphoid Malignancies, Columbia University Medical Center, New York, New York, USA

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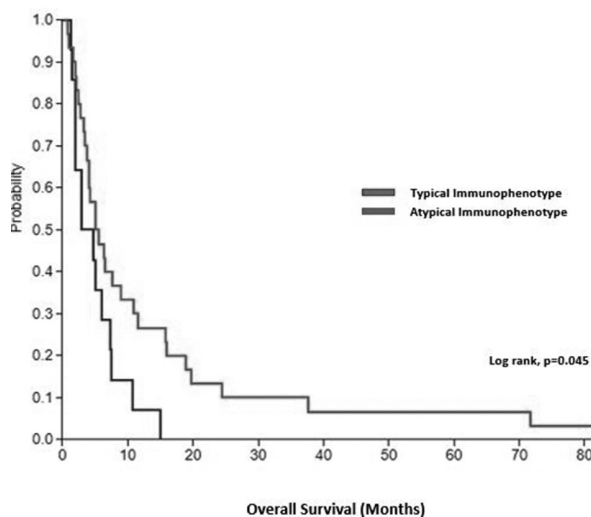
Purpose of study Adult T-Cell Lymphoma/Leukemia (ATLL) is a rare and aggressive HTLV-1 related peripheral T-cell lymphoma that occurs predominantly in Japan and the Caribbean basin. Acute (A) and lymphomatous (L) subtypes are the most aggressive forms with a median overall survival (OS) of 6–12 months despite chemotherapy. Our primary objective is to describe the clinicopathologic characteristics and treatment outcomes of our patients.

Methods used Retrospective analysis conducted on patients diagnosed with HLTV1+ ATLL at KCH and UHB between 2005 and 2017. Diagnosis of ATLL was established based on clinical history, pathological findings and HTLV1 serum positivity. IP was based on flow cytometry from peripheral blood and/or immunostaining from lymph node biopsy. Outcomes calculated by log-rank test and survival curves estimated by Kaplan-Meier method.

Summary of results We identified 63 patients with A and L subtypes with median age 54, female predominance (65%), and 95% Ann Arbor stage III/IV. Organ involvement at presentation as follows: lymphadenopathy (80%), bone marrow (63%), hepatomegaly (25%), skin lesions (24%), bone lesions



Abstract 9 Figure 1 Progression free survival according to immunophenotype



Abstract 9 Figure 2 Overall survival according to immunophenotype

(23%), splenomegaly (21%), pleural effusions (14%), lung (11%), and CNS (8%). Most patients received upfront EPOCH (78%) or CHOP chemotherapy (14%). The objective response rate (ORR) was 47%, median duration of response 2.1 months, and median OS 5.8 months. Median progression-free survival (PFS) was 4 months. Of patients with relapsed/refractory (R/R) disease (85%), 35 patients (66%) received 2nd line treatment (mostly ICE chemotherapy: 27%) with ORR 21%, median OS 2.2 months, and median PFS 2 months. Atypical IP was associated with shorter OS and PFS.

Conclusions Our large cohort of Caribbean patients with acute and lymphomatous subtypes of ATLL suggests a chemo-refractory and aggressive disease, highlighting the need for novel therapies. Incidence of atypical immunophenotype was associated with worse PFS and OS.

10 CONSUMPTION OF FERMENTED FOODS AND COGNITIVE FUNCTION IN CHILDREN

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10.1136/jim-2019-001036.10

Purpose of study Fermented foods such as yogurt, Kombucha, and kimchi contain multiple species of probiotic organisms such as lactobacilli and bifidobacteria. To date, little research has been done to look at the association between the consumption of fermented foods and cognitive function. We used publicly available data from the National Health and Nutrition Examination Survey (NHANES) to determine if there is a relationship between the consumption of fermented foods and performance on cognitive subtests in children.

Methods used Data from NHANES III was imported into SAS. Files containing consumption behavior were merged with files containing cognitive function data and demographics for participants <18 years old. Participants were grouped based on whether they reported eating probiotic-containing fermented foods such as: yogurt, sauerkraut, miso, and buttermilk. Outcome variables were subtests from the Wechsler Intelligence Scale for Children-Revised (WISC-R) and Wide Range Achievement Test-Revised (WRAT-R). Data were analyzed using SAS PROC SURVEYREG to account for sampling strata and weights in SAS version 9.4.

Summary of results Overall, the consumption of fermented foods was marginally associated with higher scores on the block design subtest ($p=0.05$) but after adjustment for potential confounders, this increase was no longer statistically significant ($p=0.15$). Stratification by race/ethnicity revealed that non-Hispanic black children who reported eating fermented foods had statistically significant gains in the block design subtest score ($p=0.01$) and Mexican-American children who consumed probiotics had higher average math raw scores ($p<0.001$).

Conclusions Our study demonstrates that consumption of fermented foods may be associated with better performance on cognitive subtests in children. This possible benefit of probiotic consumption may be particularly important in certain populations, but a major limitation of these data is that very few people in NHANES III reported consuming fermented foods. Future research is necessary to identify areas for beneficial nutritional intervention, including policy implementation, as well as understanding the underlying mechanism driving fermented food-derived increased cognitive function.

11 EXTRACTION OF EXTRACELLULAR VESICLES FROM A FERMENTED BEVERAGE: A POTENTIAL GUT-BRAIN LINK

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10.1136/jim-2019-001036.11

Purpose of study Extracellular Vesicles (EVs), like microvesicles and exosomes, have the ability to transfer cargo such as RNA to target cells such as neurons and microglia because they can cross the blood brain barrier (BBB). Thus, EVs provide a potential therapeutic approach to neurological disorders. mRNA, microRNA, lipids and proteins can be transported between cells via exosome-mediated mechanisms. EVs are shed from both prokaryotic and eukaryotic cells, including probiotic organisms. Probiotics have been linked to improvement in mental health, but the mechanisms are unclear. The purpose of this study is to determine whether EVs can be extracted from a fermented beverage containing probiotic organisms.

Methods used Water kefir, a non-dairy fermented beverage, was cultured using kefir grains, sugar, molasses and diH₂O. Culture supernatant was collected and super-centrifuged at 11 000 x g for 13 min. Supernatant was then collected and spun at 13 000 x g for 15 min. The supernatant was then vacuum-filtered through a 0.1 um membrane. The filtrate was filtered through 0.45 um membrane using syringe filters. The filtrate was super-centrifuged at 38 400 x g for 2 hours. The pellet was resuspended in sterile PBS and then ultra-centrifuged at 1 00 000 x g for 1 hour. The pellet was resuspended in 100 µl of sterile PBS to obtain the EV preparation. The EVs were then stained with Alexa Fluor 488 membrane-dye and visualized using a fluorescent Nikon microscope.

Summary of results We successfully extracted EVs from the non-dairy fermented beverage water kefir and were able to visualize them using fluorescent microscopy. This is the first report of successful isolation of EVs from kefir, a food containing a complex microbial community that is commonly consumed in the human diet.

Conclusions Isolation of EVs from a fermented beverage will allow the study of the interaction between microbiota in the digestive system and the brain. The delivery of probiotic EV-derived cargo from the gut to the central nervous system across the BBB may be one mechanisms explaining the positive impact of probiotics on mental health. Analysis of EV content and cell culture studies of kefir-derived EVs and human neurons and microglia are ongoing and can elucidate the gene expression and signaling pathways in these cells that are impacted by EVs.

12 ADHERENCE TO GUIDELINE-DIRECTED HIGH-INTENSITY STATIN THERAPY IN PATIENTS WITH TYPE 2 DIABETES

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10.1136/jim-2019-001036.12

Purpose of study The 2013 ACC/AHA guideline on blood cholesterol treatment recommended high-intensity statin for individuals 40–75 years with estimated 10-year ASCVD $\geq 7.5\%$. This consideration was based on a recognition that individuals with diabetes are at significantly elevated risk of

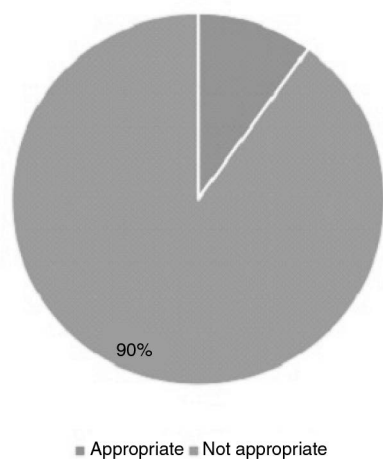
cardiovascular death. Cardiovascular disease was responsible for >40% mortality in New York State in 2014, with Brooklyn neighborhoods bearing the most disease burden. Little data is available about primary prevention in diabetic patients who meet the guidelines for high-intensity statin therapy. The aim of this study is to determine statin use among high-risk patients with Type 2 diabetes.

Methods used 95 Central Brooklyn patients with Type 2 diabetes were enrolled over a 6 month period. We obtained demographic information, including age, gender and smoking history. A chart review provided latest lab data and medications with doses. We also measured the blood pressure of all enrollees. All study participants were African-American. We calculated the cardiovascular risk profile per participant with help of the ACC/AHA heart risk calculator. Using a logistic regression model, we stratified our study participants with estimated risk $\geq 7.5\%$ into those receiving appropriate statin therapy and those that are not. Appropriate therapy was defined as those getting high-intensity statin as recommended which is either Rosuvastatin 20 or 40 mg or Atorvastatin 40 or 80 mg dose.

Summary of results 57 (60%) were females. Significantly more males smoked in comparison to females ($p < 0.001$). All 95 enrollees had a calculated heart risk score $\geq 7.5\%$ thus required high-intensity statin therapy as per ACC/AHA guidelines. The median ASCVD risk score was significantly higher in males than in females ($p < 0.001$). Our study showed that a significant number of enrollees were not on appropriate statin therapy ($p < 0.05$). Gender did not contribute to inappropriate statin therapy ($p > 0.05$).

Conclusions The study showed that there was poor appropriate statin therapy for primary prevention of cardiovascular death among Central Brooklyn patients with Type 2 diabetes

High-intensity statin therapy for Central Brooklyn resident with estimated ASCVD risk score $\geq 7.5\%$



Abstract 12 Figure 1 Pie chart depicts the utilization of high-intensity statins for study subjects with ASCVD 10-year risk $\geq 7.5\%$

suggesting a need to encourage Providers to recognize risks and initiate recommended statin therapy.

AFMR SCHOLAR ABSTRACT SESSION: CARDIOVASCULAR, ENDOCRINOLOGY, NEUROSCIENCE AND RHEUMATOLOGY

1:15 PM – 3:15 PM

AFMR Henry Christian Awardee

Amit K. Dey, MBBS

13 SOLUBLE LECTIN-LIKE OXIDIZED LOW-DENSITY LIPOPROTEIN RECEPTOR-1 IS ASSOCIATED WITH SUBCLINICAL CORONARY ARTERY DISEASES IN PSORIASIS

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10.1136/jim-2019-001036.13

Purpose of study Psoriasis (PSO), a chronic inflammatory skin disease is associated with increased non-calcified coronary plaque burden (NCB) as well as heightened MI. Lectin-like oxidized low-density lipoprotein receptor-1 (LOX-1), a scavenger receptor for oxidized LDL, is critical in the development of NCB. We sought to understand the relationship of circulating soluble LOX-1 (sLOX-1) with NCB in psoriasis.

Methods used Consecutive psoriasis patients (n=175) and healthy controls (n=30) underwent coronary CT angiography (CCTA) scans to quantify NCB (QAngio, Medis). Circulating sLOX-1 was measured by ELISA (Medimmune, USA).

Summary of results Psoriasis patients were middle-aged, predominantly male, with low CV risk by Framingham risk and had moderate-severe psoriasis severity (table 1). sLOX-1 was elevated in psoriasis and associated with psoriasis severity ($\beta = 0.24$, $p = 0.002$) as well as NCB ($\beta = 0.08$, $p = 0.037$). Patients with improvement in psoriasis severity at one-year had a concomitant reduction in sLOX-1, which was associated with a reduction in NCB ($\beta = 0.12$, $p = 0.04$). Finally, early reduction in sLOX-1 following biologic psoriasis therapy associated with a late reduction in NCB at 1 year beyond traditional risk factors ($\beta = 0.41$, $p = 0.048$).

Conclusions sLOX-1 was associated with NCB in psoriasis. Furthermore, improvement in circulating sLOX-1 following biologic psoriasis treatment was associated with reduction in NCB. Randomized controlled trials are needed to test the effect of biologic therapy on sLOX-1.

Abstract 13 Table 1 Characteristics of study groups

Variable	Psoriasis (N=175)	Healthy controls (N=30)	P-value
Demographic and Clinical Characteristics			
Age, years	49.7 ± 12.6	40.0 ± 14.2	<0.001
Males	96 (55)	22 (73)	0.06
Hypertension	49 (28)	4 (13)	0.09
Hyperlipidemia	78 (45)	10 (33)	0.24
Type 2 diabetes mellitus	18 (10)	0 (0)	0.07
Body mass index	29.6 ± 6.0	27.6 ± 4.9	0.04
Current smoker	14 (8)	3 (10)	0.72
Statin use	55 (32)	3 (10)	0.02
HOMA-IR	4.1 ± 4.2	2.5 ± 1.7	0.02
Clinical and Lab Values			
Total cholesterol, mg/dl	182.7 ± 36.6	181.9 ± 40.9	0.46
HDL cholesterol, mg/dl	55.9 ± 17.2	54.4 ± 18.7	0.33
LDL cholesterol, mg/dl	101.8 ± 30.0	100.5 ± 35.9	0.42
Triglycerides, mg/dl	121.3 ± 74.8	136.3 ± 111.2	0.10
Framingham risk score	2.0 (1.0-6.0)	1.3 (1.0-5.7)	0.18
High sensitivity c-reactive protein, mg/L	2.0 (0.8-4.8)	1.0 (0.5-1.9)	0.01
Soluble LOX1, pg/mL	302.5 ± 343.9	243.7 ± 180.5	0.04
Psoriasis Characterization			
Psoriasis area severity index score	5.6 (3.0-9.2)	-	-
Systemic or Biologic treatment	62 (36)	-	-
Coronary Characterization			
Total plaque burden, mm ² (x100)	1.17 ± 0.40	1.06 ± 0.31	0.01
Non-calcified plaque burden, mm ² (x100)	1.08 ± 0.42	1.00 ± 0.30	0.04
Dense-calcified plaque burden, mm ² (x100)	0.039 ± 0.009	0.010 ± 0.010	0.007

Values reported in the table as Mean ± SD or Median (IQR) for continuous data and N (%) for categorical data.

P-value less than 0.05 was deemed significant. HOMA-IR: homeostatic model assessment insulin resistance.

LOX1: Lectin like oxidized low-density lipoprotein receptor-1

14

ATHEROPROTECTIVE ACTIONS OF OXYTOCIN IN HUMAN MACROPHAGES: REDUCED LIPID ACCUMULATION UNDER INFLAMMATORY CONDITIONS

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10.1136/jim-2019-001036.14

Purpose of study Oxytocin (OT) is a neuropeptide hormone secreted by the posterior pituitary gland physiologically associated with parturition, lactation, and other reproductive functions, and psychologically associated with affiliative behavior

and anxiolytic effects. Deficits in OT action have been observed in patients with a variety of behavioral and mood disorders, and OT plasma levels correlate with increased cardiovascular disease (CVD) risk in such patients. Recent research reveals a wider systemic role for OT in modulation of inflammatory processes and development of atherosclerotic plaque. This study investigated the effects of OT on cholesterol transport and lipid uptake in THP-1 human macrophages, a pertinent model of atherosclerosis.

Methods used THP-1 differentiated macrophages were untreated or treated with the pro-inflammatory activator lipopolysaccharide (LPS), 100 pM OT, or 1,10,100, 1000 pM OT +100 ng LPS for 18–24 hours. Intracellular RNA was

isolated using Trizol reagent and changes in cholesterol transporter gene expression levels were analyzed by real time quantitative PCR (RT-qPCR). Changes in protein expression were evaluated on extracts from whole cell lysates by Western blot. Oxidized LDL uptake and cellular cholesterol efflux capacity were measured with a quantitative fluorimetric assay.

Summary of results In THP-1 macrophages, RT-qPCR revealed a significant increase in mRNA for the atheroprotective cholesterol export protein ATP binding cassette transporter (ABC) G1 upon OT treatment compared to LPS alone ($p=0.0081$), with Western blot confirming increased ABCG1 protein. Oxidized LDL uptake showed a significantly lower fluorescent value in OT-treated cells versus LPS alone ($p<0.0001$). While not statistically significant, ($p=0.06$), cholesterol efflux capacity increased with OT.

Conclusions OT is an endogenous peptide that can mitigate pro-atherogenic effects of the inflammatory environment incited by LPS exposure in THP-1 human macrophages. These findings support the hypothesis that OT has the potential to reduce pro-atherogenic arterial lipid accumulation in patients with heightened CVD risk, an effect that may be amplified in persons with low plasma OT.

15 APPLICATION OF MACHINE LEARNING TO DETERMINE TOP PREDICTORS OF NON-CALCIFIED CORONARY PLAQUE BURDEN IN PSORIASIS

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10.1136/jim-2019-001036.15

Purpose of study Psoriasis, a chronic systemic inflammatory disease, is associated with elevated non-calcified coronary plaque burden (NCB) and increased cardiovascular (CV) events. In this study, we used machine learning (ML) as a tool to determine the top predictors of NCB, which is prone to rupture and cause subsequent MI.

Methods used The analysis included 82 original biomarkers in 226 consecutive psoriasis patients that were pruned and ranked to 14 variables through the random forest algorithm. These top predictors were then evaluated by linear and logistic regressions to confirm our results.

Summary of results At baseline, patients with psoriasis were middle-aged, predominantly male, low cardiovascular risk by Framingham risk score and mild-to-moderate skin disease (table 1). Using the random forest algorithm, the top ten predictors of NCB, in order of importance, were: body mass index, visceral adiposity, psoriasis severity, apolipoprotein A1, small LDL particle, high sensitivity CRP, LDL, white blood cell count, large-medium VLDL, and subcutaneous adiposity. Pearson's and point-biserial correlations of these top variables with NCB yielded similar results in line with our ML outputs.

Conclusions In this study, we applied ML to identify the top predictors of NCB in patients with psoriasis, with top

Abstract 15 Table 1 Description of psoriasis participants

Variable	Baseline visit (N=226)
Demographics and clinical history	
Age, years	50.5 ± 12.8
Males	133 (60)
Hypertension	65 (29)
Hyperlipidemia	103 (46)
Type 2 diabetes mellitus	20 (9)
Family history of coronary artery disease	94 (42)
Body mass index	29.4 ± 5.8
Current smoker	16 (7)
Statin use	68 (31)
Homeostasis model assessment of insulin resistance	4.1 ± 4.2
Lipid and cell characterization	
Total cholesterol, mg/dL	184.1 ± 40.4
HDL cholesterol, mg/dL	56.4 ± 18.6
LDL cholesterol, mg/dL	103.0 ± 32.9
Triglycerides, mg/dL	122.7 ± 72.9
Apolipoprotein A1	155.9 ± 31.8
Framingham risk score	3 (1-6)
White blood cells count	6.4 ± 1.67
Absolute neutrophils count	3.77 ± 1.34
Absolute monocytes count	0.57 ± 0.69
High sensitivity c-reactive protein, mg/L	2 (1-4)
Cholesterol efflux capacity	0.98 ± 0.18
Psoriasis characterization	
Psoriasis area severity index score	6 (3-10)
Ultraviolet-A treatment	34 (16)
Systemic/biologic treatment	67 (30)
Coronary characterization	
Total plaque burden, mm ² (x100)	1.16 ± 0.47
Non-calcified plaque burden, mm ² (x100)	1.13 ± 0.47
Dense-calcified plaque burden, mm ² (x100)	0.038 ± 0.095
Adipose characterization	
Visceral adiposity	15735.1 ± 9143.4
Subcutaneous adiposity	19240.2 ± 10495.4
NMR characterization	
LDL particle	1185.7 ± 407.0
Small LDL particle number	512.3 ± 325.5
Larger LDL particle number	377.2 ± 242.0
HDL particle	35.2 ± 6.8
Small HDL particle number	24.1 ± 72.4
Larger HDL particle number	6.21 ± 3.74
Large-medium very LDL particle number	29.1 ± 66.7

Values reported in the table as Mean ± SD or Median (IQR) for continuous data and N (%) for categorical data.

predictors being markers of obesity, dyslipidemia, and inflammation. However, larger studies are needed to validate our findings.

AFMR Henry Christian Awardee

Eric Lontchi Yimagou, PhD, MD

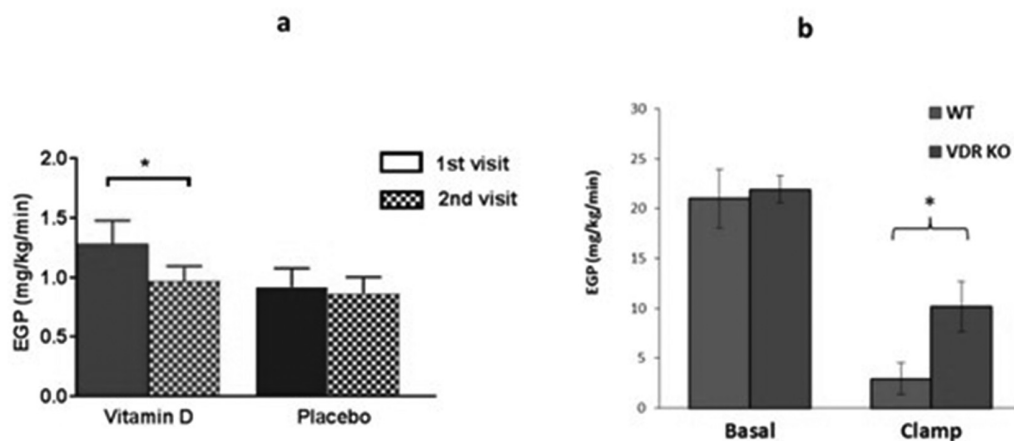
16 LIVER INSULIN SENSITIZING EFFECTS OF VITAMIN D MEDIATED THROUGH REDUCED ADIPOSE TISSUE INFLAMMATION AND FIBROSIS

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10.1136/jim-2019-001036.16

Purpose of study Since vitamin D (25(OH)D) has anti-inflammatory and anti-fibrotic effects, expression of its receptor in adipocytes and macrophages suggests that 25(OH)D signaling could mediate paracrine effects within adipose tissue and improve insulin resistance. We assessed the effects of vitamin D on adipose tissue inflammation and fibrosis, and on systemic insulin resistance.

Methods used We performed a randomized, double-blinded placebo-controlled trial to examine the effects of repleting



Abstract 16 Figure 1 Endogenous glucose production (EGP) in humans (a) and rodents (b) studies

vitamin D levels to >30 ng/ml in 25(OH)D-deficient (<20 ng/ml), insulin resistant, obese humans (n=19). Insulin sensitivity was assessed with stepped euglycemic hyperinsulinemic clamps before (1st visit) and after administration of vitamin D or placebo (2nd visit). Adipose tissue fibrosis and inflammation were quantified in subcutaneous abdominal adipose tissue. To determine whether vitamin D's effects are mediated through adipocytes, we performed hyperinsulinemic clamps and adipose tissue analysis in an adipocyte-specific vitamin D receptor knockout (VDR KO) mouse model.

Summary of results 25(OH)D repletion was associated with reductions in adipose tissue gene expression of inflammatory (0.6–0.7-fold decreased expression of *TNF- α* , *IL-6*, *iNOS*, *PAI-1*) and pro-fibrotic (0.4–0.8-fold decreased expression of *TGF- β 1*, *HiF1 α* , *Collagen I, V, VI* and *MMP7*) factors, decreased collagen VI immunofluorescence (p=0.02) and improved hepatic insulin sensitivity in humans, with suppression of endogenous glucose production (EGP) (p=0.03) (figure 1a). Compared to wild type (WT), adipose-specific VDR KO mice exhibited increased adipose tissue expression of several pro-inflammatory (*Tnf- α* , *iNos*, *Pai-1*, *Mcp-1*, *F4/80*; 4–10 fold) and pro-fibrotic genes (*Tgf- β 1*, *Collagen VI*, *Tsp1*; 2–4 fold) in concert with hepatic insulin resistance (p=0.021) (figure 1b). There were no changes in glucose uptake in either humans or mice.

Conclusions These complementary human and rodent studies establish a beneficial role of vitamin D to improve hepatic insulin resistance, likely by restraining adipose tissue inflammation and fibrosis. Thus, normalizing 25(OH)D levels could have metabolic benefits in targeted individuals.

targeting processes disturbed by aging. However, human studies are lacking. This study investigated the effects of metformin on metabolic outcomes and on gene transcription in fat and muscle in older adults.

Methods used We studied ~70 year-old participants (n=14), in a randomized, double-blind, placebo-controlled, crossover trial in which they were treated with 6 weeks each of metformin and placebo. Following each treatment period, skeletal muscle and subcutaneous adipose biopsies were obtained, and a mixed-meal challenge test was performed. Gene transcriptional changes of subcutaneous adipose tissue and skeletal muscle were assessed using RNAseq.

Summary of results Metformin therapy lowered 2 hour glucose, insulin AUC, and insulin secretion compared with placebo. Using FDR<0.05, 647 genes were differentially expressed in muscle and 146 genes were differentially expressed in adipose tissue. Both metabolic and non-metabolic pathways were significantly influenced, including pyruvate metabolism and DNA repair in muscle and PPAR and SREBP signaling, mitochondrial fatty acid oxidation and collagen trimerization in adipose.

Conclusions This study provides the first evidence that, in older adults, metformin has metabolic and non-metabolic effects that may be linked to aging.

18 VALIDATION OF SURROGATE MODELS TO ASSESS TISSUE AND WHOLE-BODY INSULIN RESISTANCE IN HIGH-RISK ADOLESCENT GIRLS

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10.1136/jim-2019-001036.18

Purpose of study Multiple-tissue insulin resistance (IR) is common in adolescents with polycystic ovarian syndrome (PCOS), and a reliable means to quantify IR in this population is critical for new therapy development. The hyper-

17 METABOLIC AND GENE EXPRESSION CHANGES WITH METFORMIN TREATMENT IN NONDIABETIC OLDER ADULTS

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10.1136/jim-2019-001036.17

Purpose of study Recent findings suggest that metformin has pleiotropic effects and may slow age-related disease by

insulinemic euglycemic clamp is the gold-standard but is too intensive for use in routine research. We aimed to validate surrogate indices (oral minimal model (OMM) whole-body index and Abdul-Ghani muscle and liver indices) against their respective clamp measurements in high-IR-risk adolescent girls.

Methods used 45 adolescent girls (14.6 ± 1.7 years; BMI%ile 23%–98%) underwent a standard 2 hour oral glucose tolerance test (OGTT) (75 g glucose) and a multi-phase hyperinsulinemic euglycemic clamp (10, 16 and 80 mU/m²/min) with a glucose isotope tracer. OMM total Si was computed using SAAM II software, using 0, 15, 30, 60, 90, 120 min time points and the assumption that glucose appearance rate (Ra) decays exponentially after 120 min. Abdul-Ghani muscle and liver IR indices (IRIs) were calculated: liver IRI = $AUC_{0-30min}Glucose \times AUC_{0-30min}Insulin$; muscle IRI = $(dG/dt)/(mean\ insulin_{0-120min})$. Correlation analyses were performed using Spearman's or Pearson's correlation, as appropriate.

Summary of results OMM total Si correlated with clamp-measured insulin sensitivity (glucose infusion rate, $r=0.65$; $p<0.0001$), whereas muscle IRI did not ($p=0.45$). Liver IRI correlated moderately with clamp-derived hepatic insulin sensitivity (insulin concentration required to suppress 50% of basal endogenous glucose production; $r=0.35$; $p=0.03$).

Conclusions In adolescent girls at high risk of IR, OMM offers an effective, OGTT-based methodology to be used in research studies for characterizing whole-body IR that is less resource-intensive compared to the clamp. Future work is needed to determine if the sensitivity of this model can be further improved with a longer-duration OGTT as obese youth can have an exaggerated and prolonged response to an OGTT.

syndrome, C-reactive protein, and albumin) and accounting for the complex survey design.

Summary of results The mean (SD) total BR level was 0.526 (0.006) mg/dl for females [Quartiles=Q1:(0,0.3), Q2:(0.3,0.4), Q3:(0.4,0.5), Q4:>0.5]. The mean (SD) BR level for males was 0.714 (0.008) mg/dl [Q1:(0,0.4), Q2:(0.4,0.5), Q3:(0.6,0.8), Q4:>0.8]. Males and females in Q4 both had decreased odds of MI, although only significant in males (Male: aOR: 0.52 [0.30, 0.89], Female: aOR: 0.88 [0.43, 1.77]). Females in Q3, but not Q4, had an increased hazard of CVD mortality (unadjusted HR: 1.57 [1.10, 2.25]). Males in Q4 had a lower hazard of CVD mortality (unadjusted HR: 0.64 [0.39, 1.04]). Neither hazard stayed significant after adjustment. When cerebrovascular disease-related (CBVD) and heart disease-related (HD) mortality were isolated, females in Q3 had a higher hazard of CBVD mortality (aHR: 2.93 [1.46, 5.84]) but no significant increase in hazard for HD mortality (aHR: 1.30 [0.87, 1.94]).

Conclusions Increasing levels of BR are associated with decreased MI and CVD mortality in males. Females, however, have a non-linearly increased hazard of CVD mortality, specifically CBVD mortality.

20 RESVERATROL POTENTIATES THE INSULIN SENSITIZING EFFECTS ON ADIPOSE TISSUE OF OVERWEIGHT HUMAN SUBJECTS

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10.1136/jim-2019-001036.20

Purpose of study Importantly, this plant based polyphenol proved beneficial metabolic effects in rodent studies, including improved insulin sensitivity, reduced inflammation, and increased muscle mitochondrial biogenesis. Our studies would test these findings in insulin resistant, overweight human subjects by examining the effects of resveratrol on insulin sensitivity, muscle mitochondria and adipose tissue inflammation.

Methods used We administered a dose of 2 gm/day Resveratrol RV or placebo PL for 28 days in a randomized, double-blinded study to $n=21$ non-diabetic subjects (17 M; Age= 52 ± 2 ; BMI= 31.9 ± 0.9 kg/m²; HOMA-IR= 3.9 ± 0.2). The subjects participated in 6 hour, stepped euglycemic hyperinsulinemic (30 and 80 mU/m² min) 'pancreatic clamp' studies to assess hepatic and peripheral insulin sensitivity. We then performed biopsy of vastus lateralis muscle and subcutaneous abdominal adipose tissue, before and after RV and PL. We analyzed muscle mitochondria wfor quantity, size, area in a field and the percent area covered, using electron microscopy with Volocity image analysis.

Summary of results Resveratrol induced an increase of 22% ($p=0.035$) in glucose uptake, even if it did not affect glucose production. There were no changes in the basal energy expenditure (Kcal/day) and respiratory quotient, as assessed by indirect calorimetry (Parvo Medics). No effect in muscle strength in these healthy overweight middle-aged subjects was seen. There were no changes in quantity ($p=0.829$) or percent area ($p=0.897$) of muscle mitochondria. Notably, resveratrol reduced inflammation in adipose tissue, with decreased expression of the pro-inflammatory cytokines TNF α and IL6

19 SEX DIFFERENCES IN THE ASSOCIATION BETWEEN TOTAL BILIRUBIN AND CARDIOVASCULAR DISEASE OUTCOMES

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10.1136/jim-2019-001036.19

Purpose of study Bilirubin (BR) has been noted to have anti-oxidant effects through its protection of serum lipid oxidation, but there is no consensus on whether BR improves Cardiovascular Disease (CVD) outcomes. We studied the associations between total BR and CVD mortality in men and women.

Methods used A population of 5424 males and 6341 non-pregnant females >20 years with data on serum total BR levels and mortality were included in this secondary analysis of NHANES III (1988–1994), a U.S. nationally representative survey. Those with excessive alcohol consumption (>2 drinks/day for males and >1 drink/day for females) and/or history of hepatitis (as determined by hepatitis A, B, C serology) were excluded. BR values were categorized into gender-specific quartiles. Outcomes included myocardial infarction (MI) and CVD mortality. Multivariate logistic regression and Cox proportional hazard models were run adjusting for potential confounders (age, race/ethnicity, smoking status, metabolic

in whole fat (by 68% and 52%, $p < 0.05$), and of IL6 and PAI-1 in adipose macrophages (by 50% and 40%, $p < 0.05$). Adiponectin expression in whole fat increased more than 50% in resveratrol treated subjects. Further, we observed increased expression of genes associated with 'browning' of adipose tissue: UCP1 showed 46.6% increase and PGC-1 α 34.9%.

Conclusions Resveratrol improves insulin sensitivity, even if not accompanied by changes in the size or number of muscle mitochondria; perhaps this anti-inflammatory and 'browning' effects in adipose tissue could contribute to favorable metabolic effects in insulin resistant humans.

21 RESVERATROL PRESERVES HIPPOCAMAL AREA IN ATHEROSCLEROSIS-PRONE LUPUS MICE: A POTENTIAL NEUROLUPUS TREATMENT

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10.1136/jim-2019-001036.21

Purpose of study Neuropsychiatric lupus (NP-SLE) is a sequelae of systemic lupus erythematosus (SLE) characterized by neurologic and psychiatric manifestations including cognitive dysfunction, seizures, and anxiety. Additionally, in SLE patients, the risk of cardiovascular complications such as atherosclerosis is much greater than in the general population. The cognitive changes involved in NP-SLE may be the result of the interaction between chronic inflammation and vascular disease.

Previously, the polyphenolic compound resveratrol, found naturally in grapes and berries, was shown by our group to have neuroprotective effects in atherosclerosis-prone lupus mice (APOE/Fas double knockout). Results indicated that resveratrol improved working memory, and motor coordination in these mice. The goal of this study was to observe any cellular or anatomical correlations between the preceding behavioral findings and areas of the brain; specifically the hippocampus. We hypothesize that brain tissue of mice treated with resveratrol would exhibit characteristics associated with improved cognitive function.

Methods used Frozen brain sections were fixed and stained using hematoxylin and eosin to visualize cells within the regions of interest. The tissues were then examined and photographed using a light microscope and digital camera. Using ImageJ, bilateral hippocampi were outlined and the area quantified across 3 different treatment groups: 1 - APOE/Fas untreated; 2 - APOE/Fas+resveratrol; 3 - APOE/Fas+resveratrol+ adenosine A2a blocker.

Summary of results Preliminary results show that hippocampal area in the atherosclerosis-prone lupus mice treated with resveratrol is significantly larger than in control untreated and adenosine A2a blockade groups combined ($p = 0.0014$; $n = 5-7$ per group).

Conclusions These results correspond with prior behavioral data showing that resveratrol treated mice had the highest working memory performance. In conjunction with the current anatomical data, there may be preservation of hippocampal neurons as a result of resveratrol treatment, and, since A2a ligation is known to be neuroprotective, this effect may be mediated via the A2a receptor. Confirmatory analyses are planned.

22 SERUM AMYLOID A ALTERS THE PROPERTIES OF HEALTHY HUMAN PLASMA CAUSING CULTURED THP-1 HUMAN MACROPHAGES TO EXHIBIT AN ATHEROGENIC PHENOTYPE

¹Eric Lam, ²Lora J Kasselmann, ²Heather A Renna, ²Daniel S Glass, ²Joshua DeLeon, ²Steven E Carsons, ²Allison B Reiss, ¹New York Institute of technology College of Osteopathic Medicine, Flushing, New York, USA; ²Medicine, NYU Winthrop Hospital, Mineola, New York, USA

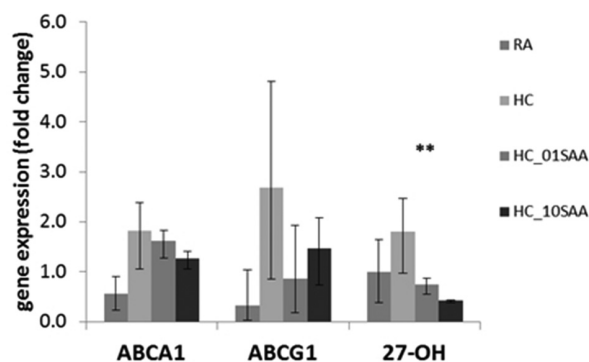
10.1136/jim-2019-001036.22

Purpose of study Rheumatoid Arthritis (RA) is associated with early and accelerated atherosclerosis leading to increased morbidity and mortality. Our group has demonstrated that exposure of THP-1 human macrophages to plasma from RA patients affects expression of proteins involved in lipid handling in an atheroma-promoting manner, leading to lipid overload and foam cell formation. Serum amyloid A (SAA) is both an acute-phase protein and an apolipoprotein released in response to inflammation. SAA is highly elevated in RA. This study evaluates the effect of adding SAA to healthy control (HC) plasma in order to determine whether exogenous SAA will re-create the atherogenic impact of RA plasma on macrophages.

Methods used THP-1 differentiated macrophages (10^6 /ml) were incubated for 18 hour in RPMI media in the presence of 5% plasma from RA or HC subjects ($n = 3$ of each). Plasma was obtained under an NYU Winthrop IRB-approved protocol. SAA (0, 1 or 10 μ g/ml) was added to HC plasma. Macrophage mRNA was extracted and reverse transcribed to cDNA. Cholesterol efflux proteins: ATP binding cassette transporter (ABC)A1, ABCG1 and 27-hydroxylase were quantified by real-time RT-PCR using specific primers for each gene and normalized to housekeeping gene GAPDH. One way ANOVAs and appropriate post-hoc tests were performed on normally distributed data. The significance level was set to 0.05.

Summary of results The level of all 3 atheroprotective proteins was suppressed in RA versus HC plasma. Addition of SAA suppressed ABCA1, ABCG1 and 27-hydroxylase. 27-hydroxylase was reduced to a level below that found in RA plasma ($p < 0.01$).

Conclusions Addition of SAA to HC plasma induces an RA-like inflammatory state. SAA in RA plasma may contribute to the atherogenic effect of this plasma by compromising



Abstract 22 Figure 1 Real-time RT-PCR quantitation of mRNA expression levels of ABCA1, ABCG1, and 27-hydroxylase in THP-1 macrophages after treatment with 5% plasma from RA subject, HC subject alone, HC subject with 1 mg/ml SAA, or HC subject with 10 mg/ml SAA

cholesterol outflow from macrophages, leading to lipid engorgement. The ability of SAA to disable the critical reverse cholesterol transport pathway suggests a mechanism by which RA raises atherosclerotic risk. Novel therapies targeted to reduce SAA levels in RA may improve cholesterol efflux and cardiovascular risk profile.

MODERATED E-POSTER COMPETITION

3:15 PM – 4:15 PM

MP1 ASSOCIATION BETWEEN OVERALL MATERNAL HEALTH STATUS AND FAMILY RESILIENCE: RESULTS FROM A NATIONAL SURVEY

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10.1136/jim-2019-001036.23

Purpose of Study The relationship between maternal health and health outcome of offspring has been studied extensively. However, there is sparse data available regarding the association between overall maternal health and the health, functionality, and productivity of the *family* unit. More specifically, family resilience in the context of maternal health is not well understood. The objective of this study was to determine if overall maternal health status is associated with family resilience.

Methods used We analyzed data from the 2016 National Survey of Children's Health, the only national survey assessing the health of children ages 0–17 in the United States. The independent variable in this study was overall physical and mental maternal health status. The main outcome of interest was presence of family resilience. We estimated the association between maternal health status and family resilience with a multivariate logistic regression model, adjusting for the following covariates: current health insurance status, family structure of child's household, child race, highest education of adult in household, income level, and primary household language.

Summary of results Compared to mothers whose physical and mental health are not excellent or very good, mothers who had excellent or very good physical and mental health statuses have families that showed significantly better adjusted rates for family resilience measures. Results suggest that mothers with excellent or very good physical and mental health statuses have higher odds of having families that exhibit resilience [adjusted odds ratio (AOR) 2.790, CI [2.409, 3.231]], compared to mothers whose physical and mental health are not excellent or very good. Controlling for protective factors did not change the significance of the results [adjusted odds ratio (AOR) 2.617, CI [2.245, 3.051]].

Conclusions The study's results indicate that improved maternal health status is associated with higher odds of family resilience. These findings suggest that overall maternal health may have a unique role in shaping the way families respond to adversity. Interventions addressing the health of our nation's mothers may have potential in improving the manner in which US families withstand and rebound from adversity.

MP2 INTERVENTIONS TO IMPROVE MEDICATION ADHERENCE IN ADOLESCENTS WITH HIV: A SYSTEMATIC REVIEW AND META-ANALYSIS

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10.1136/jim-2019-001036.24

Purpose of Study As of 2017, 1.8 million people living with HIV (PLWH) were adolescents between ages 10–19, accounting for 5% of all PLWH and 5 90 000 people between the ages 15 and 24 were newly infected with HIV. Between 2004 and 2011, AIDS related deaths have increased approximately 50% among adolescents, and adolescent adherence to antiretroviral treatment (ART) is estimated at only 62% worldwide. While there have been great strides towards achieving the UN 90-90-90 goals, adolescents remain a group lacking appropriate resources and research to achieve these. This review synthesizes and analyzes current interventions aimed toward increasing adolescent ART adherence.

Methods used Systematic searches of EMBASE, PubMed and PsycINFO were performed using the keywords 'adolescent HIV medication adherence interventions.' In the meta-analysis, Cohen's *d* was calculated and used to estimate an overall study effect size, aggregating data across all measures. Finally, a random effects model was used to analyze intervention significance. Authors were contacted via e-mail to obtain additional data values and study clarification.

Summary of results Twelve studies met the inclusion criteria for meta-analysis from our systematic review of the literature out of the sixty-three that were fully assessed for eligibility. Overall, there was no significant differences seen between control and intervention groups in medication adherence ($p=0.4861$, $SE=0.1174$).

Conclusions Results indicate that interventions did not improve medication adherence in adolescents with HIV. However, the paucity of quantitative research available speaks to a need for more quantitative intervention studies and standardization of measures of intervention efficacy.

MP3 MINORITY INNER CITY PATIENTS' NEEDS DURING THEIR CANCER CARE

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10.1136/jim-2019-001036.25

Purpose of study Racial and ethnic minority patients have greater illness burden, disparities in all aspects of care, and higher mortality. We assessed patient needs during their cancer treatment utilizing hospital approved navigation questionnaires: To understand what patients want from their healthcare providers and to identify the attributes that matter most to them. To understand what physicians want for their patients, regardless of cost, and how those priorities compare to what consumers think they need.

Methods used This prospective cohort study was conducted as part of a quality improvement of navigation process. We used validated questionnaires. The Institutional Review Board approved the study and provided a waiver of informed consent for participation. Patients were eligible if they were actively receiving chemotherapy at the hospital's outpatient

infusion center for a diagnosis of cancer, at least 18 years old, and English speaking. Patients were allowed to complete questionnaires at their own pace before, during, or after chemotherapy; so long as the questionnaires were returned the same day.

Summary of results 67 consecutive patients presenting for chemotherapy participated, median age of 62 years (range 19–82), 96% were Black with stage IV breast, lung, prostate and uterine cancer; The Autonomy Preference Index mean scores showed patient want informational autonomy ($p < 0.0007$). There was a statistically significant difference between decisional autonomy and informational autonomy subscales ($p < 0.0005$). Brief RCOPE used religion for coping with uncertainty ($p < 0.0003$). For Modified Medical Outcomes Social Support Survey: patient have emotional support however lack social support ($p < 0.0005$).

Conclusions Our data indicate this patient population utilizes religion to cope with their illness, experiences unmet instrumental social support needs, and favors receipt of medical information, while not necessarily seeking similar decisional autonomy. Our study sets the framework for further research into the faith-based contexts of understanding, social support need, and preferences for decision making in order to establish services capable of surmounting disparities in cancer care.

MP4

ST SEGMENT ELEVATION MYOCARDIAL INFARCTION (STEMI) ALERT DURING NIGHT SHIFT; A MISFORTUNE FOR THE PATIENT OR JUST AN OVERSTATEMENT?

¹Muhammad Arslan Cheema, ¹Ali R Ghani, ¹Waqas Ullah, ¹Usman Sanwar, ²Hafez Mohammad R Abdollah, ³Marc Cohen. ¹Internal Medicine, Abington Jefferson Health, Abington, Pennsylvania, USA; ²Internal Medicine, University of North Dak, Grand Forks, North Dakota, USA; ³Cardiology, Abington Jefferson Health, Abington, Pennsylvania, USA

10.1136/jim-2019-001036.26

Purpose of Study Conflicting data exist regarding the outcomes of primary percutaneous coronary intervention (PCI) for ST-segment elevation myocardial infarction (STEMI) when the intervention is performed during the night in comparison to daytime.

Methods used We did a retrospective study to determine the difference in the door to balloon time and their impact on patient outcomes. The study involved a total of 300 patients were randomized into two groups based on their ages, gender and baseline characteristics. Group A had 150 patients who had PCI done during the daytime (between 6 AM and 6 PM) while group B had 150 patients who had PCI performed at night time (between 6 PM and 6 AM).

Summary of results The mean door to balloon time during the day was (78.75 ± 6.28) versus (97.22 ± 8.55) at night time. The homogeneity of variances, was assessed by Levene's test for equality of variances ($p = 239$). The mean door to balloon time during the day was -18.47 ± 10.51 SEM (95% CI, -39.17 to 2.21) as compared to the mean door to balloon time during the night. However, the p -value was 0.08 (p value > 0.05) signifying no statistical significance between the 2 groups in the door to balloon time. The mean troponin rise during the day was (62.99 ± 8.00) which was higher than the mean troponin rise at night (60.89 ± 6.72). The mean troponin rise during the day was 2.10 ± 10.44 SEM (95% CI, -18.46 to 22.65) higher as compared to the mean troponin rise during the night. However, the p -value was 0.84 (p value > 0.05)

signifying no statistical significance between the 2 groups in the troponin rise. Very few patients had a decrease in LVEF, on average a mean fall in LVEF of just 0.93% in patients presenting during the day vs 0.90% during the night, with a p -value of 0.94 that was also not statistically significant. The mortality and readmission data was too insignificant to analyze.

Conclusions There was no significant difference in the mean door to balloon time, the rise in troponin, fall in LVEF, readmission rates, or mortality, and hence no negative effects on patient outcomes based on the patient's time of presentation between the two groups.

MP5

A QUANTITATIVE POLYMERASE CHAIN REACTION ANALYSIS SOLUTION IN R

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10.1136/jim-2019-001036.27

Purpose of study Quantitative polymerase chain reaction (qPCR) is a widely used technique in molecular biology. One popular application of qPCR is to analyze multiple DNA sequences and compare treatment groups against each other to quantify gene expression through fold-differences. This analysis, however, requires handling cumbersome and meticulous data. Automatic qPCR analysis can be done with currently available scripts and other programs. However, these require expertise in computational biology, statistics, and/or programming. The objective of this project is to provide novice and advanced researchers as well as health care professionals with an accurate and efficient solution to analyzing qPCR Ct datasets, whether small or large.

Methods used Openly distributed data analysis solutions are highly valuable for researchers and we present an R script, PCRAnalysis, that provides comprehensive and elementary statistical results for researchers of all backgrounds and expertise. PCRAnalysis receives inputs of the raw cycle threshold (Ct) values of sequences and can compare groups of genes or treatments to calculate and display fold-differences; intermediate as well as all final calculations are displayed throughout the computation.

Summary of results Results are presented in automatically formatted tables and graphs; These results include means, $2^{\Delta\Delta Ct}$ (fold-change) values, confidence intervals, standard deviations, standard errors of the means, t-tests and ANOVA tests. The script was tested by tasking a novice computer science biomedical researcher with converting raw Ct values from a real experimental dataset, to finalized fold changes and graphical results using PCRAnalysis. They had low proficiency in R and were successful in producing the desired results very quickly, which were then confirmed by comparing manually calculated results for the same experimental dataset.

Conclusions PCRAnalysis can be easily used by people of all levels of computer proficiency to automatically analyze Ct values in qPCR experiments. Readily comprehensible PCR results can positively impact the clinical experience by allowing application of key gene expression information into the care plan formulated by clinicians to prevent and treat disease states such as cancer and cardiovascular diseases. PCRAnalysis as well as instructions are archived at <https://doi.org/10.5281/zenodo.1487643>.

MP6 **THEME TRENDS OF THE 'HOT SEAT': AN ONLINE, ASYNCHRONOUS, CLINICAL REASONING TOOL FOCUSED ON DIAGNOSTIC AND MANAGEMENT DILEMMAS**

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10.1136/jim-2019-001036.28

Purpose of study To describe the themes of diagnostic and management dilemmas of an online asynchronous learning tool aimed at clinical reasoning skills for PEM providers over a 5 year period.

Methods used A descriptive study whereby cases were organized into organ systems through their chief complaint. Poll questions were subdivided into imaging, lab, disposition, interpretation, and treatment dilemmas. A content analysis approach was used to investigate reader commentary and was rated using the Gricean Cooperative Principle scoring rubric to assess their participation as determined by the four maxims: quantity, quality, relevance, and manner. Commentary that included reference to a prior post either by name or topic was considered a direct response.

Summary of results Greater than 100 cases have been published over a 5 year period by PEM fellows at 3 institutions. The site received over 36 000 page views by 7800 visitors in 48 US states and globally. Overall, Hot Seat cases represented 7 organ systems including gastrointestinal, nephrology, neurology, pulmonary, cardiac, skin, and musculoskeletal. The top three organ systems were brain (27%), gastrointestinal (21%) and musculoskeletal (19%). Altered mental status, headache, abdominal pain, and extremity pain were recurrent chief complaints.

Poll questions were analyzed for diagnostic and management dilemmas. Imaging and laboratory workup were identified in 66% and 54%, respectively, of cases. Management dilemmas were similarly identified with disposition and treatment recurring in 61% and 51% of cases respectively. Only 14% of poll questions focused on interpretation dilemmas.

Grice's four conversational maxims were found in much of the commentary. Quantity and quality appeared most consistently to result in direct response to the posting.

Conclusions More than half of Hot Seat cases focused on diagnostic dilemmas including imaging and laboratory workup. Management dilemmas including disposition and treatment were also present in the majority of cases. To engage readers, posts focused on Grice's maxims of quantity and quality rather than relevance or manner.

Grice's Conversational Maxims	
Quality	One tries to be as truthful as possible without misled or unsupported information.
Quantity	One is as informative as possible by giving no more or less information that is required.
Relevance	One tries to be relevant and pertinent to discussion.
Manner	One tries to be as clear and brief as possible without obscurity or ambiguity.

Abstract MP6 Figure 1 The gricean cooperative principle scoring rubric used to assess conversational participation as determined by the four maxims

MP7 **BILATERAL ADRENAL INFARCTION ASSOCIATED WITH SUBSEQUENT DEVELOPMENT OF GLUCOCORTICOID INSUFFICIENCY WITH PRESERVED MINERALOCORTICOID PRODUCTION: A CASE REPORT**

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10.1136/jim-2019-001036.29

Purpose of study Adrenal infarction is a rare cause of adrenal insufficiency. In developed countries, the etiology of primary adrenal insufficiency is most often autoimmune disease. Other less frequent etiologies include infectious diseases, infiltrative diseases, bilateral adrenalectomy, adrenal hemorrhage or infarction, genetic disorders, adrenal metastases and use of medications that inhibit corticosteroid synthesis.

Methods used We report a case of a 50 year old Hispanic male with a history of antiphospholipid syndrome (APLS) who developed sequential bilateral adrenal infarcts with ensuing glucocorticoid, but, not mineralocorticoid insufficiency.

Summary of results 50 year old Hispanic male with history of APLS presented with severe abdominal pain. Patient reported noncompliance with warfarin therapy over the month prior to presentation. Initial CT scan of the abdomen showed acute left adrenal infarction. Relevant admission laboratory results showed serum cortisol level of 19.9 µg/dl, sodium of 133 mEq/L and potassium of 3.7 mEq/l. Over the next 48 hours, he experienced a drop in blood pressure, worsening hyponatremia, and a significant drop in cortisol level to 1.9 µg/dl with an associated elevation in adrenocorticotropic hormone (ACTH) level to 310 pg/ml. Repeat CT scan of abdomen showed a hematoma in the left, initially infarcted, adrenal gland and a new right adrenal infarction. A 250 µg ACTH stimulation test confirmed glucocorticoid insufficiency. Plasma renin activity and aldosterone level were normal. Dehydroepiandrosterone level was less than 20 ng/dL and level of total metanephrines was 140 pg/ml. One month after hospital discharge, repeat plasma renin activity and aldosterone level were normal despite undetectable cortisol level.

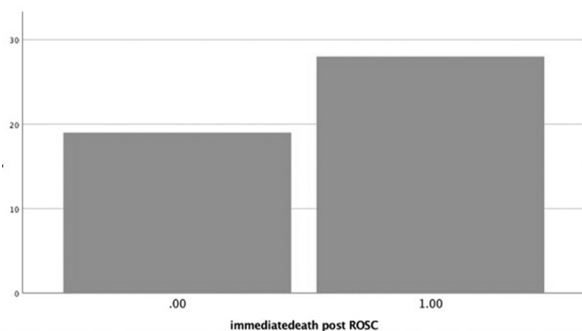
Conclusions Adrenal infarction is a rare complication of APLS, yet, the most common endocrine complication. Evidence of bilateral adrenal infarction on imaging does not predict the type of adrenal dysfunction that might ensue as demonstrated in this case. Adrenal infarction can inflict varying degrees of destruction of the cortex, likely related to its blood supply distribution. Thorough evaluation of glucocorticoid, mineralocorticoid and androgen axes should be conducted both at the time of the event and in follow-up.

MP8 **DURATION OF IN-HOSPITAL CARDIOPULMONARY RESUSCITATION AND ITS EFFECT ON SURVIVAL**

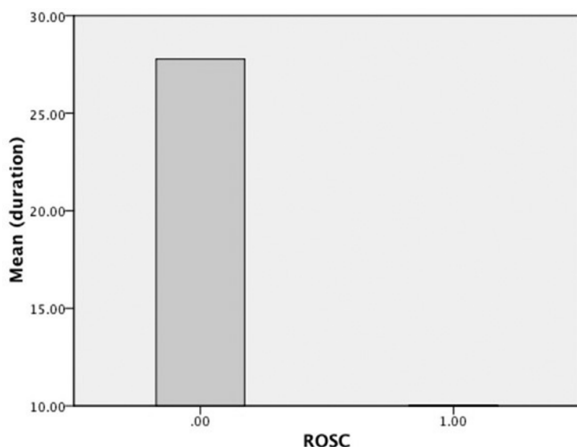
¹Muhammad Arslan Cheema, ¹Ali R Ghani, ¹Waqas Ullah, ¹Usman Sarwar, ¹Mary Nagak, ²Asoka Balaratna. ¹Internal Medicine, Abington Jefferson Health, Abington, Pennsylvania, USA; ²Cardiology, Abington Jefferson Health, Abington, Pennsylvania, USA

10.1136/jim-2019-001036.30

Purpose of study Pre-hospital cardiopulmonary resuscitation (CPR) efforts are usually beneficial if carried out effectively up to 40 min. ¹ However, its impact on in-hospital cardiac arrest and survival remains unknown. ² This study aims to determine the correlation between the duration of CPR and the return of spontaneous circulation (ROSC) in an in-hospital cohort.



Abstract MP8 Figure 1 This figure shows that in those patients in whom ROSC was achieved, 18 patients survived the immediate post ROSC period (0.00), however, 27 patients that achieved ROSC initially died in the immediate post ROSC period (1.00)



Abstract MP8 Figure 2 This figure shows that the duration of CPR was 27.5 mins in patients who did not achieve ROSC (0.00) as compared to just 10 mins in patients in whom ROSC was established (1.00)

Methods used All patients (age ≥ 17 years) receiving CPR at our institution between 2015 and 2017 were included. The primary endpoint was ROSC or death. A total of 88 patients were included in the study. The Pearson correlation of CPR duration with the establishment of ROSC was calculated using the IBM SPSS version 22.

Summary of results The mean age of included patients was 71.4 years (17–94) which included 72% males and 28% females. In all, 88 patients who received CPR, 55% (n=48) experienced ROSC and survived. The remaining 45% (n=40) of the total, and 56% (n=27) of those with ROSC, died during the same hospitalization (figure 1). Among the 48 patients with ROSC, the documented duration of their CPR was about 10 min on average in comparison with 27.5 mins CPR for patients who did not achieve ROSC. (Figure 2) Among all the patients there was a negative correlation between the duration of the CPR and the establishment of ROSC.

Conclusions Our study shows that CPR duration is inversely associated with the establishment rates of ROSC. Most of the benefits of CPR can be achieved in the first ten minutes, and a further increase in the duration of CPR provides a minimal gain. Still, the survival can be achievable till 38 mins, and the ideal duration of resuscitation should remain a bedside decision taking into consideration the whole clinical picture.

MP9 VITAMIN D DEFICIENCY IS ASSOCIATED WITH INCREASED CLINICAL AND FINANCIAL BURDEN OF ACUTE DECOMPENSATED HEART FAILURE

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10.1136/jim-2019-001036.31

Abstract MP9 Table 1 Characteristics of population aged >18 years stratified by presence of vitamin D deficiency and association of vitamin D deficiency with hospitalization rates for acute decompensated heart failure, length of stay and hospitalization charges.

Parameters	Vit D deficiency	General population	P	Association between outcome and Vitamin D	
	N=1178140 (1.3%)	N=88773750 (98.7%)		Unadjusted	Adjusted
Demographics					
Age, years	67 (54-79)	59 (40-74)	<0.001		
Males, %	35	41	<0.001		
Clinical history					
Type 2 diabetes, %	23	19	<0.001		
Essential/secondary hypertension, %	66	34	<0.001		
Dyslipidemia, %	48	29	<0.001		
Coronary artery disease, %	24	21	<0.001		
Alcohol use, %	5	6	<0.001		
Current tobacco use, %	13	15	<0.001		
Outcome measures					
Admissions with principle diagnosis of, %	2.75	2.17	<0.001	1.28 (1.24-1.31), <0.001	1.04 (1.02-1.07), 0.002*
Length of stay, days	5.99 ± 0.07	5.43 ± 0.01	<0.001		
Length of stay (≥ 5 days), %	55	44	<0.001	1.28 (1.22-1.34), <0.001	1.30 (1.24-1.37), <0.001**
Total charges for hospitalization (x1000), \$	25.7 (15.4-47.2)	25.2 (14.9-45.4)	0.002		
Increased charges for hospitalization (>\$20,000), %	64	62	<0.001	1.10 (1.04-1.16), <0.001	1.13 (1.07-1.20), <0.001**

Values reported as mean SE or median (IQR) for continuous variables and as frequencies (%) for categorical variables. Between group comparisons were performed for continuous data using Student t-test for parametric and Mann-Whitney U-test for non-parametric variables respectively. Categorical variables were compared using Pearson’s chi squared test. P <0.01 was considered for statistical significance.

* Adjusted for age, gender, race, diabetes, hypertension, dyslipidemia, coronary artery disease, current tobacco use and alcohol use.

** Adjusted for age, gender, race, diabetes, hypertension, dyslipidemia, coronary artery disease, current tobacco use, alcohol use, household income and insurance status.

Purpose of study Epidemiologic and animal studies have suggested potential link between low vitamin D levels (VDD) and cardiovascular risk. Although some studies have explored associations of VDD with CAD and stroke, the association of acute decompensated heart failure (ADHF) in VDD is unknown. We sought to determine the prevalence of ADHF in VDD and whether VDD is associated with increased clinical and financial burden of ADHF using the National Inpatient Sample (NIS) from 2012 to 2014.

Methods used Patients aged >18 years with principle diagnosis of ADHF were identified using the ICD9 codes 428* and those with VDD using codes 268* in NIS database. Demographics, traditional risk factors, and ADHF-related outcomes were identified in VDD patients and compared to the general population. Primary outcome was risk of ADHF, and secondary outcomes were increased length of stay i.e.; ≥ 5 days (ILOS) and increased hospital charges i.e.; $\geq \$20\,000$ (IHC) for ADHF related hospitalizations.

Summary of results From 2012 through 2014, a total of 90 million weighted hospitalizations were divided into VDD (1.2 million) and general population. VDD patients were older and more likely female (table 1). Prevalence of DM, hypertension (HTN), dyslipidemia (HLD), and CAD, as well as rates of ADHF hospitalizations; and proportion of ILOS and IHC were significantly higher in VDD. On regression analysis, VDD was associated with increased odds of ADHF beyond adjustment for age, gender, race, DM, HTN, HLD, CAD, tobacco and alcohol use [OR: 1.04 (1.02–1.07), $p=0.002$]. Moreover, VDD was also associated with ILOS [OR: 1.30 (1.24–1.37), <0.001] and IHC [OR: 1.13 (1.07–1.20), <0.001] even after adjustment for above factors as well as household income and insurance status.

Conclusions Our findings reveal that vitamin D deficiency may be a potential cardiovascular risk factor in heart failure. As it is easily supplemented, further elucidating this relationship could have important public health implications. Controlled interventional trials are warranted to confirm our findings.

MP10 REDUCTION OF HEART FAILURE ADMISSIONS BY 40% USING KENCOR ARTIFICIAL INTELLIGENCE SOFTWARE: A PILOT STUDY OF 30 PATIENTS

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10.1136/jim-2019-001036.32

Purpose of study Congestive heart failure (CHF) causes significant morbidity and mortality with costs exceeding \$30 billion annually in the United States. We used KenCor Artificial Intelligence Software (KAIS) on outpatients with CHF to evaluate reductions in hospital admission rates.

Methods used We enrolled 30 patients with known CHF (systolic and diastolic) from our CHF clinic in KAIS. KAIS software was downloaded onto patients' smartphones with on-site training in its use. Patients were provided with a Wifi-enabled blood pressure (BP) cuff, weigh scale, and pulse oximeter. Patients completed the daily 5 min program with transmission of data to the CHF nurse. KAIS stratified the patients into low (green), medium (yellow), or high (red) risk for admission. Patients with red alerts were contacted by the CHF nurse. Patients at high risk for more than 1 day were seen in

the clinic for medication adjustment and intravenous diuresis. We collected data up to 6 months pre and post KAIS enrollment.

Summary of results 29/30 (97%) were compliant with KAIS. The patients (16 women) were aged 44–88 years (average: 63.8 years). Patients had systolic CHF (72.4%) and diastolic CHF (37.6%). The average ejection fraction (EF) was 41.5%. The average pre and post enrollment systolic/diastolic BPs were 106.9/63.6 and 113.4/66.5 ($p=NS$). The average serum creatinine pre and post KAIS enrollment were 1.43 and 1.28 ($p=NS$). The average clinical brain natriuretic peptides (BNP) pre and post enrollment were 4399 and 2696 ($p=NS$). The pre enrollment CHF admission rate was 0.108/month (203 months total). The post enrollment CHF admission rate was 0.077/month (155 months total). Paired t-test compared pre and post enrollment CHF admission rates, demonstrating a 40% reduction in the admission rate per month per patient ($p=0.03$).

Conclusions In a small pilot study of outpatients with CHF, enrollment in KAIS reduced CHF hospital admissions by 40%. This technology may result in significant reduction in CHF-associated costs to the patient, hospital, and insurance companies. It may also allow more efficacious use of CHF nurses.

DISPLAY POSTERS

DP1 PREDICTORS OF ALL-CAUSE MORTALITY IN THE BARI 2D TRIAL IDENTIFIED BY MACHINE-LEARNING

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Purpose of study The Bari Angioplasty Revascularization in Type 2 Diabetes (BARI 2D) Trial tested the effects of different treatment strategies on the rate of death and a composite of death, myocardial infarction, or stroke (MACE) in patients with both coronary artery disease and type 2 diabetes. We sought to identify factors predictive of death, using random survival forests (RSF), a machine-learning methodology.

Methods used A total of 84 variables were analyzed in a total of 2368 patients as potential predictors of all-cause mortality using RSF, a machine learning approach. The top 10 RSF predictors were then included in both a univariate and multivariate analysis using a Cox proportional hazards model with a stepwise selection approach.

Summary of results During a 3 year median follow-up, 316/2368 patients died. The top 10 variables from RSF analysis and Cox regression for death are presented in table 1. The univariate analysis of death showed all 10 predictors as significant while the multivariate analysis showed 8 as significant (table 1). Important predictors of death include age, serum creatinine, history of congestive heart failure, diuretic use and abnormal ST depression.

Conclusions Age and renal function markers were top predictors of all-cause mortality. As previous studies have not looked into several of these top predictors, this preliminary analysis will be explored further to identify potential risk predictors and risk factors in subgroups of this population and examine relationships with other outcomes of interest.

Abstract DP1 Table 1 Predictors for death based on cox proportional hazards models that utilize covariates identified by RSF approach

Rank	Top RSF predictors	Relative importance by RSF	Univariate		Multivariate Cox model (AIC)	
			HR (95% CI)	p-value	HR (95% CI)	p-value
1	Age	1.37E-02	1.07(1.05 - 1.09)	3.41E-13	1.05 (1.03 - 1.07)	6.16E-07
2	Serum creatinine	7.65E-03	4.93 (3.06 - 7.96)	6.36E-11	2.15 (1.28 - 3.59)	3.63E-03
3	History of CHF req. tx	5.71E-03	3.17 (2.12 - 4.74)	2.05E-08	1.51 (0.97 - 2.35)	0.07
4	Diuretic	5.43E-03	2.19 (1.64 - 2.93)	9.86E-08	1.35 (0.99 - 1.84)	0.06
5	Abnormal ST Depression	4.85E-03	2.10 (1.51 - 2.90)	8.30E-06	1.54 (1.11 - 2.14)	0.01
6	tPA (ng/ml)	3.88E-03	1.07 (1.03 - 1.10)	9.58E-05	1.07 (1.03 - 1.10)	2.08E-04
7	Abnormal LVEF (<50)	3.73E-03	1.84 (1.32 - 2.56)	3.59E-04	1.50 (1.06 - 2.13)	0.02
8	Urine albumin/creatinine (log)	3.71E-03	1.21 (1.12 - 1.30)	6.99E-07	1.10 (1.02 - 1.19)	0.02
9	Duke Activity Status Index	3.43E-03	0.97 (0.95 - 0.98)	1.11E-07	0.98 (0.96 - 0.99)	9.05E-04
10	Ankle Brachial Index	3.33E-03	0.25 (0.14 - 0.45)	5.29E-06	0.48 (0.26 - 0.90)	0.02

DP2 DO ECHOCARDIOGRAMS DONE ON THE OBSERVATION FLOOR MAKE ANY DIFFERENCE IN THE FINAL MANAGEMENT OF THE PATIENTS?

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Purpose of study Transthoracic echocardiography is a noninvasive imaging modality mostly used for the diagnosis of cardiovascular diseases. There has been a rising trend in the irrational use of echocardiography for low-risk patients.

Methods used We performed a retrospective chart review in our hospital and collected data of 120 patients admitted with chest pain, shortness of breath or syncope. The baseline characteristics, demographics, and medical conditions were recorded. We analyzed these parameters against the observed positive findings on echocardiography.

Summary of results The mean age of included patients was 68.8 years (43–89) comprising 54% of females and 46% of males. More than half of the patients were having hypertension (51%). Other baseline characteristics were significant for diabetes, chronic kidney disease, coronary artery disease, and stroke in 33, 19, 18 and 3 percent of the patients respectively. The echocardiography was significant for ejection fraction less than 50% in only 5% of the patients while only 6.6% required a change of the current medications and surprisingly only 1.6% patients were subjected to left heart catheterization.

Conclusions This study concludes that echocardiography done for low risk cardiac patients yield no additional benefits and does not cause a change in the management of the patients. This approach also creates a waste of healthcare budget and resources.

DP3 SAPHENOUS VEIN STUMP: AN INDICATION FOR ANTICOAGULATION?

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Purpose of study Saphenous veins (SV) are traditionally used as a graft for coronary artery bypass surgeries, but there has been a debate that its remnant is a nidus for venous stasis and thrombosis. This study aims to determine the risk of thrombosis in the SV stump, which is left after vein harvesting for coronary artery bypass graft (CABG).

Methods used Saphenous veins (SV) are traditionally used as a graft for coronary artery bypass surgeries, but there has been a debate that its remnant is a nidus for venous stasis and thrombosis. This study aims to determine the risk of thrombosis in the SV stump, which is left after vein harvesting for coronary artery bypass graft (CABG).

Summary of results A retrospective single center study was performed, and a total of 100 patients who underwent CABG with SV harvestation were included. The patients were followed up to 7 days to assess for the development of SV thrombosis. Risk factors such as age, family history of prothrombotic states, diabetes, hypertension, smoking history, malignancy and confounding factor like early mobilization that may potentially affect the analysis were taken into account.

Conclusions The authors advocate that postoperative risk of developing SV thrombosis and subsequent embolization of the pulmonary arteries is negligible and does not warrant anticoagulation. However we recommend that larger studies, extended over a longer duration of time to be pursued to better assess the risk of venous thrombosis.

DP4 NATIVE VALVE ESCHERICHIA COLI ENDOCARDITIS FOLLOWING ACUTE CHOLECYSTITIS

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Purpose of study Infective endocarditis (IE) is often associated with known valvular heart disease. The most common organisms in IE are gram positive bacteria and IE caused by gram negative non-HACEK bacteria (species other than Haemophilus species, Actinobacillus actinomycetemcomitans, Cardiobacterium hominis, Eikenella corrodens, Kingella species) is uncommon. Escherichia coli (E.coli) does not have the tendency to stick to the native heart valves as easily as the gram positives. Therefore IE caused by E.coli is rare and usually involves the prosthetic valves. Some risk factors for E.coli IE are advanced age, diabetes, female gender, prosthetic heart valve, and urinary tract infection.

Methods used No method

Summary of results An 89 year old male with the past medical history of atrial fibrillation, coronary artery disease and hypertension presented to the emergency room with lethargy and mild abdominal discomfort. On examination, he was febrile, the cardiac rhythm was irregularly irregular without any murmurs on auscultation and there was a mild abdominal tenderness in the right upper quadrant. Blood work was unremarkable except for mild leukocytosis. Electrocardiography revealed atrial fibrillation and right bundle branch block. Abdominal ultrasound revealed acute cholecystitis and blood culture grew E.coli. Transthoracic echocardiogram revealed ejection fraction of 50%, regional wall motion abnormalities, mild mitral, tricuspid and aortic valves regurgitation and a small mobile vegetation on the mitral valve.

Patient started on Ceftriaxone and got treatment for total of four weeks. His symptoms and clinical status improved steadily without any surgical interventions.

Conclusions Our case report emphasises the considerable risk of complications with concurrent infections at different sites. Although E.coli IE is very rare and often occurs after urosepsis but as we reported in our case, gallbladder can also be the source of infection in acute cholecystitis. Therefore it would be wise for the clinicians to consider the development of IE in the setting of gram negative non-HACK bacteremia, even in the patients with native valve and with no risk factors.

DP5 HYPERKALEMIA IN HOSPITALIZED PATIENTS: CAUSES, ELECTROCARDIOGRAPHIC FINDINGS, ADEQUACY OF TREATMENT, AND AN ATTEMPT TO IMPROVE PHYSICIAN COMPLIANCE WITH PUBLISHED THERAPY GUIDELINES

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Purpose of study Hyperkalemia is a common, potentially life-threatening disorder. It can cause severe cardiac electro physiologic alterations, such as cardiac arrhythmias and sudden cardiac death. ECG are considered to be sensitive indicators of the presence of hyperkalemia. Since the treatment of hyperkalemia involve relatively few maneuvers and because its success it can be subjectively evaluated, we investigated how physicians

manage this disorder and how successful the prescribed therapy is. We also sought to determine whether time and treatment could be improved by providing the treating physician intrahospital protocol with therapeutic guidelines and real time basis.

Methods used Is a retrospective observational study where patients with hyperkalemia where identified by reviewing laboratory records with panic values reported. During the study demographic data, contributory causes, electrocardiographic findings, treatment used, complications and patient's outcomes where recorded.

Summary of results They where 230 episodes of hyperkalemia during the period of study. Only (2%) of patient's died and had alive threatening cardiac arrhythmia due to hyperkalemia Electrocardiographic abnormalities consistent with hyperkalemia where observed in (34%) of patients. Renal failure was found in (77%), drugs (63%) and hyperglycemia (46%) as contributors to most episodes. Treatment used where exchange resins (60%), insulin (42%), calcium Gluconate (33%), albuterol (3%) and hemodialysis (37%). Average time to treatment was 2.5 hours [95% CI:-2.9-7.9]. Physician's compliance with protocol after notification of panic values were 31.5%.

Conclusions Treatment of hyperkalemia at Mayagüez Medical Center was found suboptimal. An efforts to improve physician's compliance with the published therapeutic guidelines need to be implemented. We propose to establish a protocol of management to be activated at the time of panic value report, to decrease complications, cost and miss use of medications.

DP6 COST SAVINGS TO MEDICARE BY IMPLEMENTING KENCOR ARTIFICIAL INTELLIGENCE SOFTWARE: A PILOT STUDY OF 30 PATIENTS

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Purpose of study Congestive heart failure (CHF) healthcare costs exceed \$30 billion annually in the United States. We used Kencor Artificial Intelligence Software (KAIS) to evaluate reduction in CHF-associated costs to Medicare.

Methods used We enrolled 30 patients from our CHF(systolic and diastolic) clinic in KAIS. KAIS was downloaded to patients' smartphones with on-site training. Patients were provided with a Wifi-enabled blood pressure (BP) cuff, weigh scale, and oximetry. Patients completed the daily 5 min program with transmission of data to the clinic. KAIS stratified the patients into low (green), medium (yellow), or high (red) risk for admission. High risk patients were contacted by the CHF nurse or seen in the clinic. We collected data 6 months pre and post KAIS enrollment. We assigned a \$13 000 cost to Medicare for each CHF hospital admission. We assigned a \$59 cost per patient per month (pppm) to Medicare to implement KAIS using the current procedural terminology (CPT) code 99 091. This cost was added to the monthly cost to Medicare post KAIS enrollment. By calculating the cost of CHF admissions ppm we obtained the net cost to Medicare pre and post KAIS enrollment.

Summary of results 29/30 (97%) were compliant with KAIS. The patients (16 women) were aged 44-88 years (average: 63.8 years). The average ejection fraction (EF) was 41.5%.

The pre enrollment CHF admission rate was 0.128/month (203 months total). The post enrollment CHF admission rate was 0.077/month (155 months total). There was a 40% reduction in the admission rate per month per patient ($p=0.03$). The pre and post KAIS enrollment hospital costs to Medicare pppm were \$1665.02 and \$1006.45 respectively. The cost pppm to Medicare of implementing KAIS was \$59. After adding that to the post enrollment cost, the saving pppm was \$599.97. The annual reduction in total Medicare costs amounts to \$7194.88 per patient.

Conclusions In a small pilot study of outpatients with CHF, enrollment in KAIS reduced CHF hospital admissions by 40%. This led to an annual reduction in Medicare costs of \$7194.88 per patient. Implementation of KAIS may lead to significant cost savings to Medicare in CHF populations.

DP7 THE MANAGEMENT OF ACUTE FRACTURE DISLOCATIONS OF PROXIMAL INTERPHALANGEAL JOINTS: A SYSTEMATIC REVIEW

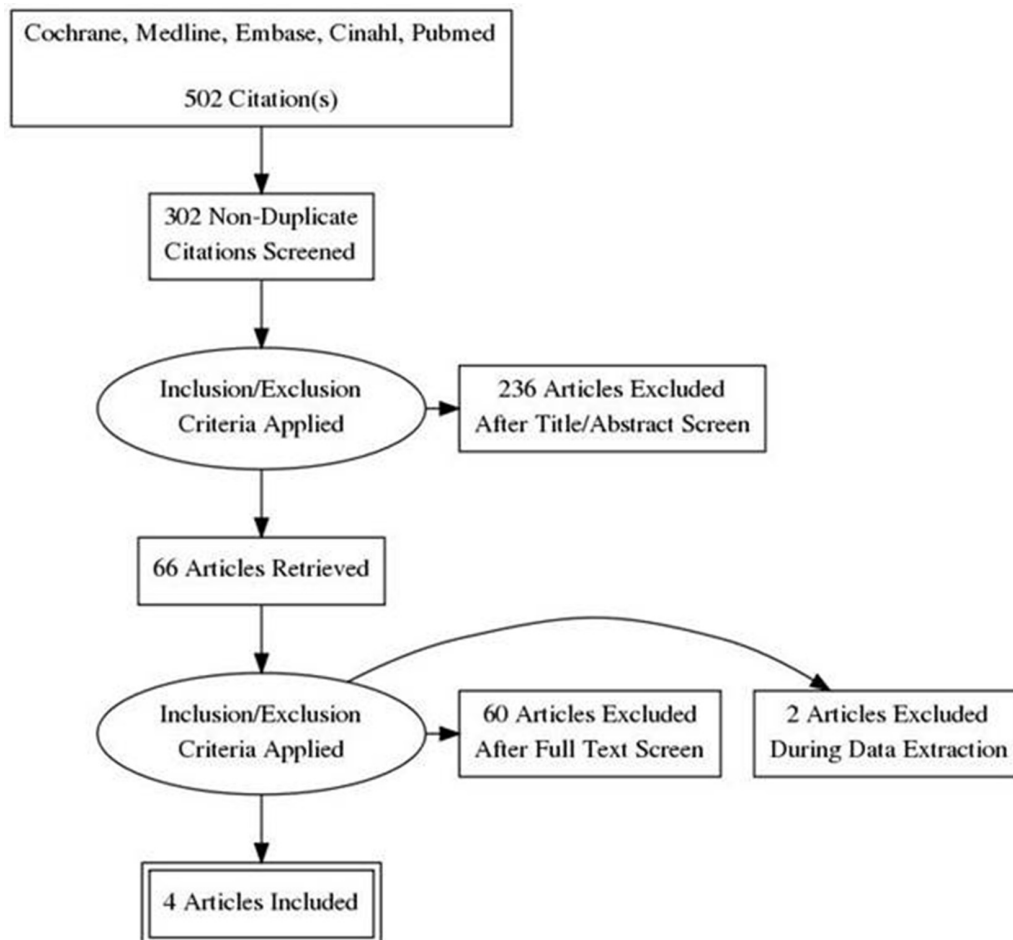
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Purpose of study A variety of treatment options are available for the management of PIP joint fracture-dislocations. The aim

Abstract DP7 Table 1 Outcomes of closed reduction and ORIF techniques

Outcome (number of digits on which data is available)	Closed reduction (number of digits on which data is available)	ORIF (number of digits on which data is available)	p value
ROM at PIP joint (n=165)	83 (8–110) (n=103)	82(10-115) (n=62)	N/A
Pain score (VAS) (n=99)	1.5 (0–8) (n=76)	9 (0–75) (n=23)	N/A
Grip strength (% of contralateral hand) (n=66)	95% (n=53)	85% (n=13)	N/A
DASH score (n=81)	6 (0–29) (n=57)	4 (0–30) (n=13)	N/A
Radiographic OA at final review (n=165)	40% 95% CI (31%–50%)* ^{***} (n=103)	7% 95% CI (2%, 16%) (n=62)	$p<0.001$
PIP joint incongruency (n=165)	11% 95% CI (6%, 18%) (n=103)	31% 95% CI (20%, 43%) (n=62)	$p=0.002$
Complications (n=165)	35% 95% CI (26%, 45%) (n=103)	18% 95% CI (10%, 29%) (n=62)	$p=0.02$
Additional procedures (n=165)	11% 95% CI (6%, 18%) (n=103)	18% 95% CI (10%, 29%) (n=62)	$p=0.20$



Abstract DP7 Figure 1

of this study was to perform a systematic review of the surgical and non-surgical interventions for proximal interphalangeal [PIP] joint fracture-dislocations.

Methods used A study protocol was designed in line with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses [PRISMA] statement.

Due to limited data in the primary assessment, the hypothesis was tested in a secondary analysis of articles that marginally met the inclusion criteria (i.e. studies that included in their cohort patients under 18 years of age). A tertiary analysis was conducted and studies were divided into: closed reduction techniques, open reduction internal fixation [ORIF] and 'other studies'.

Summary of results Only the range of motion [ROM] at PIP joint and the complications were consistently reported in all studies. The outcome measures were heterogeneous and a narrative synthesis was carried out. The tertiary analysis identified a higher rate of complications and posttraumatic arthritis in the closed reduction group compared to ORIF, whilst similar ROM was achieved with either technique.

Conclusions The primary analysis of this systematic review found insufficient evidence to make an evidence-based recommendation for the management of acute PIP joint fracture-dislocations. On further analysis, closed treatment was associated with higher risk of complications and arthritis.

DP8 INVESTIGATING THE POTENTIAL OF SMART PHONE APPLICATIONS AS A MEANS OF IMPROVING COLONOSCOPY PREPARATION COMPETENCY

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Purpose of study Colonoscopy preparation (prep) profoundly affects the endoscopist's ability to thoroughly investigate and diagnose colonic disease and obtain pathology. Despite the importance of a good colonoscopy prep many patients (pts) continue to have fair to poor prep quality. Several studies have shown that smart phone applications (apps) can be a tool to improve prep quality but fail to address if this technology is widely available and feasible in the pt population undergoing colonoscopies. We have attempted to gain an understanding of what percent of our pt population have questions or confusion during the colonoscopy prep process and thus potentially benefit the most from a smart phone app and if providing a free smart phone app would be a tool potentially utilized by the patient to increase their understanding of the colonoscopy prep process and therefore increase colonoscopy prep quality. We hypothesize that greater than 50% of our patients own a smart phone and an app may augment instructions for a better colon prep.

Methods used In a quantitative design 100 patients undergoing colonoscopy were surveyed with three questions: Do you own a smart phone? During your colonoscopy prep did you have any questions or confusion? Would you be willing to download a free smart phone app that would aid in the

understanding of colonoscopy prep and answer common questions?.

Summary of results 100 pts were surveyed, 69 pts owned a smart phone and of those owning a smart phone 39 would be willing to download a smart phone app. Of the 15 pts that had confusion or questions during their colonoscopy prep. 7 pts had a smart phone and were willing to download an app.

Conclusions Based upon our results only 7% of our pts had confusion during their colonoscopy prep, owned a phone and would be willing to download a smart phone app. However, 39% of our pts that owned a phone responded they would download an app. which may result in improved colonoscopy prep competency and thus prep quality. The next step will be to provide a smart phone app. to our patients to determine if it makes a significant difference in the quality of prep or decreases confusion.

DP9 NECROTIZING FASCIITIS FOLLOWING MARINE WATER EXPOSURE CAUSED BY SHEWANELLA PUTREFACIENS

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Purpose of study *Shewanella putrefaciens* is a gram-negative bacillus which is found as a microflora of marine environments. In rare cases it can be a human pathogen which usually occurs in the patients with underlying disease. *Shewanella putrefaciens* usually causes the soft tissue infections including leg ulcer and cellulitis. We aim to expand understanding of this rare disease and its effective management.

Methods used No method.

Summary of results A 65 year old male with the past medical history of multiple sclerosis, presented with leg swelling and pain. Patient had few scratches on his foot after having a mild leg injury. He went to the bay few days after the injury and started to have swelling and pain in the injured foot. In physical exam, cellulitis changes with hemorrhagic blisters was noticed over the left hallux and foot. X-ray of the left foot demonstrated soft tissue swelling. Patient started on Vancomycin and Piperacillin/Tazobactam in the setting of cellulitis. Blood and wound culture became positive for *Shewanella putrefaciens*. Biopsy report after second tissue debridement revealed necrotizing inflammation and abscess formation. Magnetic resonance imaging (MRI) of foot showed cellulitis and myositis with no evidence of osteomyelitis. After few weeks of antibiotic therapy, the repeated wound and blood culture was still positive for *Shewanella putrefaciens*, therefore Amikacin added as the second coverage. The repeated MRI showed early osteomyelitis associated with the proximal phalanx of the great toe but it was considered as reactive osteitis secondary to multiple debridement. Treatment continued for another 4 weeks and the repeated blood and wound culture became negative. Patient continued receiving hyperbaric oxygen therapy and skin grafts with significant improvement.

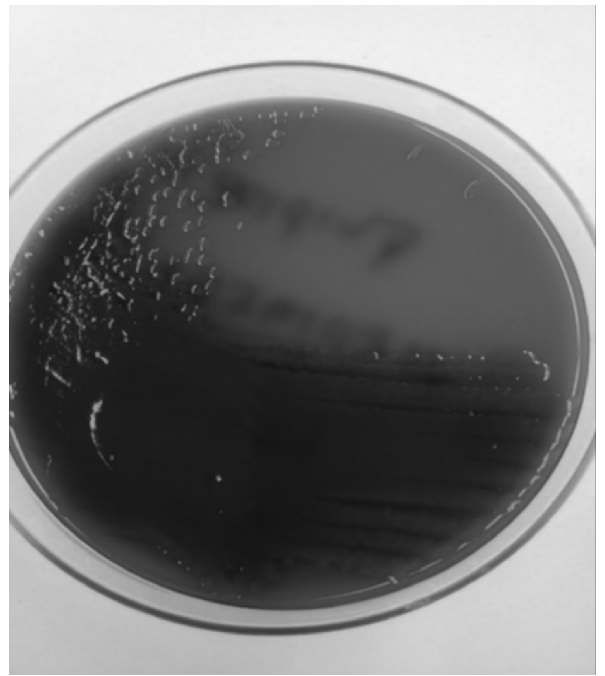
Conclusions Underlying chronic disease increases the occurrence of the infection and is usually associated with poorer prognosis. Immunocompromised patients are also prone to primary bacteremia with fulminant course. In this study, the only underlying disease in the patient medical history is MS which might increase the risk of *Shewanella* infection in our patient. To our knowledge this is the first case of *Shewanella* infection in a patient with chronic neurologic condition such as MS.



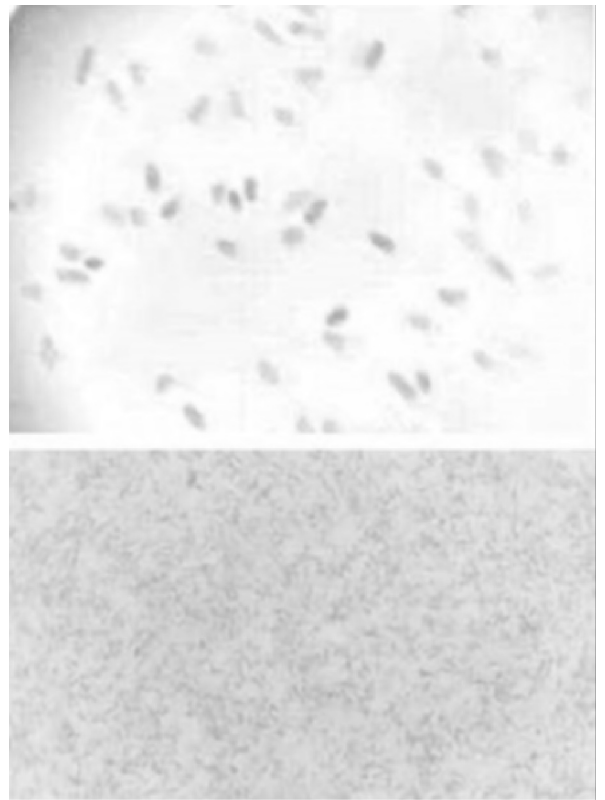
Abstract DP9 Figure 1 Cellulitis changes with hemorrhagic blisters over the patient's left hallux and foot secondary to *Shewanella putrefaciens* infection



Abstract DP9 Figure 2 Patient's foot after extensive debridement



Abstract DP9 Figure 3 Colonies of *Shewanella putrefaciens* from the wound of the patient



Abstract DP9 Figure 4 *Shewanella putrefaciens* under microscopy



Abstract DP9 Figure 5 Patient's foot after antibiotic therapy for *Shewanella putrefaciens* and skin grafts

DP10 BLOOD STREAM INFECTIONS (BSI) SURVIVAL IN BLACK PATIENTS WITH HIGH COMORBIDITY INDEX

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Purpose of study Black patients with blood stream infections have far worse outcomes (30% lower overall survival) than white patients. Significant cancer health disparities exist in Blacks with blood stream infections. These patients have far worse outcomes (30% lower overall survival) than white patients. We seek to understand population specific disease manifestations and treatments. We analyzed retrospectively survival from blood stream infection in 236 consecutive patients diagnosed with blood stream infections. Type of infection, resistance to antibiotics and overall survival patients with high comorbidity burden and blood stream infection were analyzed.

Methods used Survival was defined as the time from positive blood culture to discharge. We did a retrospective review of consecutive BSI were evaluated as part of performance improvement process to detect trends of microorganism resistance and avoid using inappropriate treatments for infections. Two group of infected patients were analyzed those with central venous catheters, versus those without. Characteristics of patients in different groups were compared using Chi-square or Fisher's exact tests for categorical variables, and Wilcoxon rank-sum test for continuous variables. $p \leq 0.05$ (two-tailed) considered statistically significant. A multivariable logistic regression model was constructed to identify baseline factors independently associated with one year mortality.

Summary of results A 50% better median OS (HR=0.67; 95% confidence interval 0.43–0.78) was seen in patients with BSI and no catheter compared to those with inserted catheters.

Conclusions Black patients with advanced malignancies often have blood stream infections (BSI) and if this occurs in the hospital the infection is attributed to nosocomial intervention. Little is known and published about microorganism incubation times, epithelial barrier disruption, sepsis, systemic inflammatory symptoms definition in minority black population. Population specific studies of mechanisms explaining the immune anergy detected in patients with high comorbidities and BSI.

DP11 ROLE OF CENTRAL VENOUS CATHETER IN BLOOD STREAM INFECTIONS OF PATIENTS WITH HIGH COMORBIDITY INDEX

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10.1136/jim-2019-001036.43

Purpose of study To estimate the burden of bacterial infections in black inner city minority population with advanced malignancies and/or high comorbidity burden. Multiple comorbidities and cancer are the leading cause of death in Central Brooklyn and a major public health problem for this population and requires a more precise understanding of blood stream infections and their relation to cancer.

Methods used A retrospective review of consecutive blood stream infections were evaluated as part of performance improvement process to detect trends of microorganism resistance and avoid using inappropriate treatments for infections in cancer patients. Two group of infected patients were analyzed those with central venous catheters, versus those without. Characteristics of patients in different groups were compared using Chi-square or Fisher's exact tests for categorical variables, and Wilcoxon rank-sum test for continuous variables. $p \leq 0.05$ (two-tailed) considered statistically significant. A multivariable logistic regression model was constructed to identify baseline factors independently associated with one year mortality. All variables with $p \leq 0.1$ in univariate analysis were entered into the multivariable model and a backward stepwise selection process applied. SPSS, version 22.0 (IBM SPSS, IBM Corporation, Somers, NY) used for all statistical analyses.

Summary of results Bacterial stream infections in black inner-city patients with Charlson comorbidity index >7 occur as frequent in patients with and without central venous catheter rate of (28%; 33% $p=0.1$) In black patients with advanced malignancies defined by metastatic disease epithelial barrier disruption (EBD) is a source of blood stream infections. Our study shows that finessing understanding of nosocomial infection in population of cancer patients with high burden of comorbidity is needed.

Conclusions In black patients with advanced malignancies defined by metastatic disease epithelial barrier disruption (EBD) is a source of blood stream infections. Our study shows that finessing understanding of nosocomial infection in population of cancer patients with high burden of comorbidity is needed.

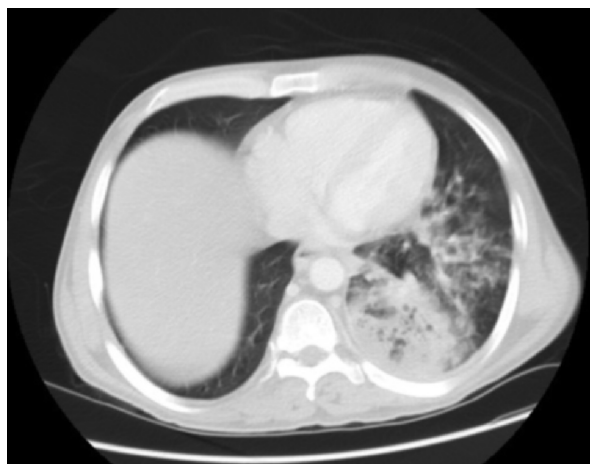
DP12 ACTINOMYCOSIS

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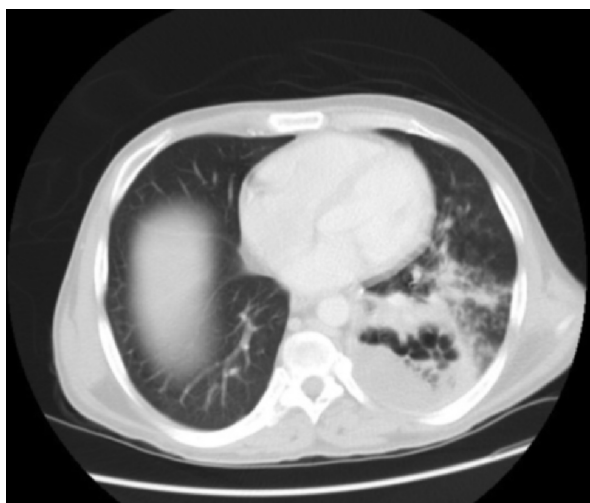
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Purpose of study Actinomycosis is a rarely encountered infection and technically difficult to culture, hence may pose a challenge for the clinician.

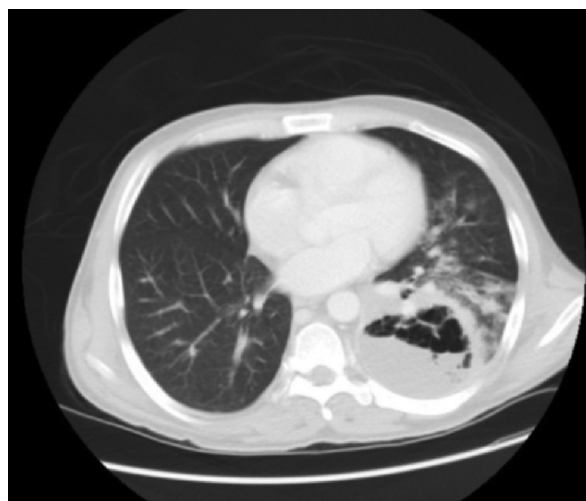
Methods used 37 M with history of chronic alcohol abuse, presented with hemoptysis, SOB and fever. CT revealed 9x6 cm inflammatory-appearing cavitary opacity in the LLL with left sided loculated pleural effusion. Patient was intubated and empiric antibiotic therapy was started. 2 left CT were placed for loculated pleural effusion. Sputum and pleural fluid AFB were negative. Pleural fluid was exudative and revealed Gram positive cocci and Gram positive rods, with identification of sulfur granules which was highly suggestive of Actinomyces. Intrapleural fibrinolytic agents were given with optimal drainage of empyema. Patient was extubated and improved clinically.



Abstract DP12 Figure 1



Abstract DP12 Figure 2



Abstract DP12 Figure 3

Summary of results Imaging studies commonly show air-space consolidation and/or cavitary or mass-like lesions. Parenchymal disease can also extend to pleural cavity and chest wall. BAL for culture is inappropriate since it may only represent colonization. Acceptable specimen include lung biopsy or pleural fluid. Gold-standard for diagnosing Actinomycosis is growth of the bacteria in culture, but is technically difficult and occurs only in a minority of cases. If the suspicion is high, the clinician should indicate this to the microbiologist to ensure appropriate processing specimen measures. Identification of sulfur granules from pleural fluid is strongly supportive of Actinomycosis and may be enough to lead the clinician into the diagnosis and appropriate management. Carbapenems or combination of a beta-lactam with beta-lactamase inhibitor is a proper empiric approach. Therapy should be targeted once Actinomycosis has been diagnosed. Intravenous therapy should be given for 2 to 6 weeks, followed by oral route. Length of the oral antibiotic depends on clinical and radiological response. Resolution or stabilization of radiographic findings may take several months, with 6 months to 1 year of oral antibiotics being recommended.

Conclusions Actinomycosis should be suspected in patients with history of aspiration and chronic alcohol abuse. High clinical index of suspicion could lead to proper usage of diagnostic tools and facilitate the rare growth of the causative pathogen in culture. Proper diagnosis should guide to targeted management and follow up, along with optimal duration of antibiotics.

DP13 PROTECTIVE HEALTH EFFECTS OF NATURAL DIETARY PRODUCTS ON DISEASE AND AGING

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10.1136/jim-2019-001036.45

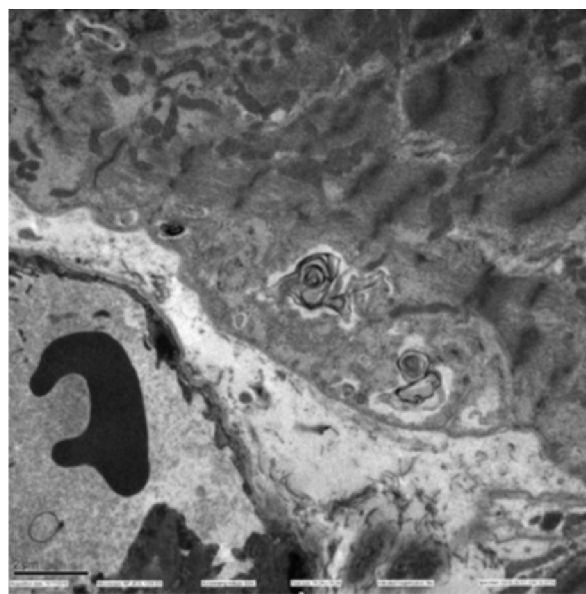
Purpose of study An increased aging population and the alarming prevalence of the obesity epidemic and its related comorbidities, make an imperative demand for different lifestyles and therapeutic strategies that include exercise, natural remedies, and emphasis on dietary shifts with the inclusion of vegetables, fruits, and nuts. This presentation aims to

underline the beneficial effects of the addition of different natural products, such as walnuts, to high fat western diets, reflected through a review of animal and human research.

Methods used Nutrition analysis has shown that walnuts contain components that could play a key role in prevention of atherosclerosis and cancer: phytosterols, n-3 fatty acids, tocopherols and α -linolenic acid. We have reviewed the available evidence suggesting that diabetes, cardiovascular disease and cancer share common mechanisms as oxidative stress and inflammation, which are impacted by dietary fatty acids.

Summary of results Research on mice reported that addition of walnuts to a high fat diet did not change body weight or visceral fat mass, but decreased liver size and reduced the amounts of hepatic triglyceride. Animal studies report a protective role for walnuts in inflammation-related cancer mechanisms. In human studies, walnut addition to the diet for 6 months, significantly improved endothelial function and total and LDL cholesterol. Furthermore, a randomized clinical trial shows that daily diet supplementation with walnuts in older adults can induce benefits to the nutrient profile. Limited epidemiological studies consider walnuts separately from nuts in cancer prevention. PREDIMED (Prevención con Dieta Mediterránea) cohort has been sorting the independent effects of walnuts over a median of 4.8 year. For those who consumed more than 3 servings of walnuts per week versus none, the multivariate-adjusted HR for death from cancer was 0.46 (0.27–0.79, 95% CI, P-trend=0.005).

Conclusions Analyzing how the addition of certain natural products to an otherwise average or unhealthy diet can affect obesity, aging related comorbidities and cancer, proves useful in today's world by providing information for consumers to use to their advantage. Therefore, investigations of these beneficial effects of dietary changes may be very meaningful in limiting obesity, aging related diseases and cancer from regional and global perspectives.



Abstract DP14 Figure 1 Electron micrograph of myocardium showing myelin bodies (round, concentric laminations within the sarcomeres), typical of HCQ toxicity

cardiomyopathy and thus, a myocardial biopsy was performed. Endomyocardial biopsy showed electron microscopic evidence of HCQ toxicity (figure 1). Hydroxychloroquine was thus discontinued indefinitely.

Summary of Results Hydroxychloroquine-induced cardiotoxicity is a rare condition seen with long term HCQ use. On review of the literature, the number of cases prior to July 2017 ranges between 40 and 70, and only half of these are biopsy proven. While our patient developed cardiac toxicity after ten years of intermittent HCQ use, varying dosages and durations can lead to cardiac toxicity. Hartmann et al reported toxic effects from as little as 290 g of cumulative dose to as much as 4380 g of HCQ. Similarly, cardiac damage can develop after a mean of 10 years in some patients, while in others, 30 years of therapy was noted before the development of heart failure. To prevent cardiac manifestations, sources have recommended screening patients on HCQ using routine EKG and TTE. However, no consensus has been established regarding screening modalities and larger studies are needed to elucidate the utility of this practice.

Conclusions We report a case of biopsy-proven HCQ cardiac toxicity.

DP14 A GROWING CONCERN: CARDIOMYOPATHY WITH LONG TERM HYDROXYCHLOROQUINE USE

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10.1136/jim-2019-001036.46

Purpose of study Hydroxychloroquine (HCQ) is used widely in the treatment of Systemic Lupus Erythematosus (SLE). Cardiac toxicity from HCQ is exceedingly rare and may lead to myocardial hypertrophy, cardiomyopathy or conduction abnormalities. We present a case of a 42 year-old female with SLE treated with long-standing HCQ who was found to have acute onset heart failure attributed to HCQ toxicity.

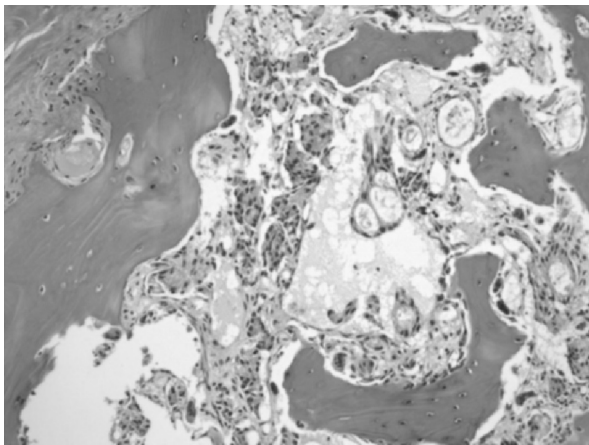
Methods used A 42 year-old female with history of hypertension, chronic kidney disease and SLE presented with a six month history of shortness of breath. She was diagnosed with SLE in 2008 and has been on 400 mg of HCQ (5.4 mg/kg) without periodic monitoring. On presentation, her blood pressure was 210/135 mmHg and exam was significant for hyperpigmented lesions on the face, hands and hard palate. Electrocardiogram (EKG) showed nonspecific t-wave inversions and QT prolongation. Transthoracic Echocardiogram (TTE) revealed severe bi-atrial dilation and moderate bi-ventricular hypokinesis. Her TTE findings were atypical for hypertensive

DP15 A RARE INITIAL PRESENTATION OF LINITIS PLASTICA WITH BACK PAIN

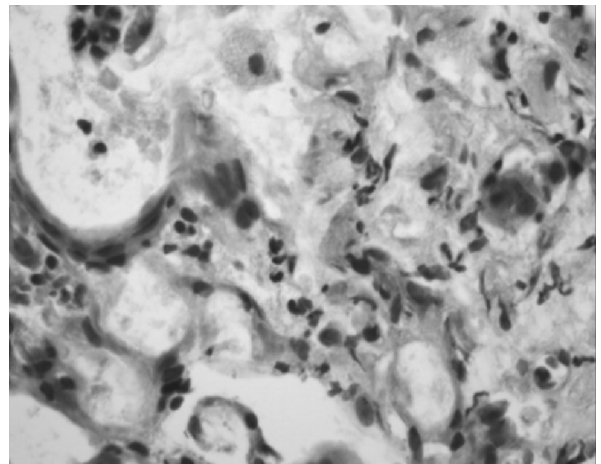
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10.1136/jim-2019-001036.47

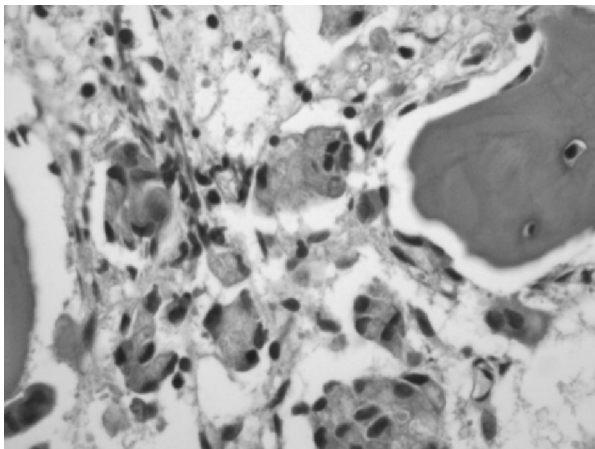
Purpose of study Linitis plastica (LP) is one of the most aggressive subtypes of the gastric adenocarcinoma. Bone metastases is more commonly seen in the LP type of the gastric cancer and is rarely reported as the initial symptom without previous gastrointestinal manifestations. We describe an unusual presentation of LP which initially presented with



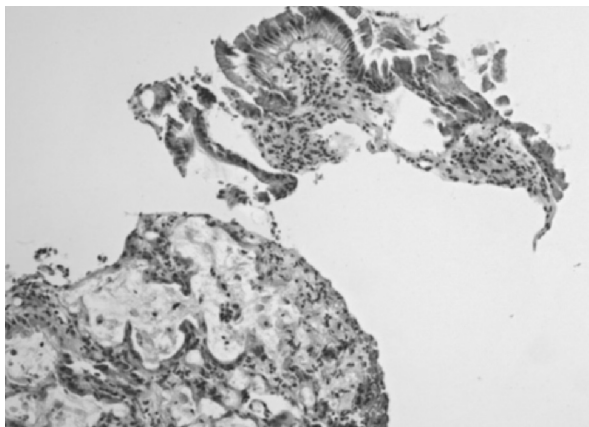
Abstract DP15 Figure 1 Bone marrow, non-hematopoietic cells fill the bone marrow interstitial space. (10x power field)



Abstract DP15 Figure 4 Stomach, signet ring shaped gastric adenocarcinoma cells. (40x power field)



Abstract DP15 Figure 2 Bone marrow, neoplastic cells are signet ring shaped, abundant cytoplasm push nuclear to the side. (40x power field)



Abstract DP15 Figure 3 Stomach. Beneath superficial gastric epithelium are neoplastic cells. (10x power field)

Summary of results A 70 year old female admitted for a lower back pain and weight loss. Laboratory examinations showed hemoglobin of 10.2 g/dl and Alkaline phosphatase (ALP) of 3000 U/L with normal Gamma-, Glutamyl Transpeptidase. The remaining serum biochemistry values, including calcium, were normal. Lumbosacral x-ray revealed degenerative changes. Complete bone survey was negative for discrete lytic or sclerotic lesions. In the computed tomography (CT) of thorax, abdomen and pelvis multiple areas of sclerosis and lucency was noted. Positron Emission Tomography/Computed Tomography revealed diffusely heterogeneous fluorodeoxyglucose activity throughout the skeleton corresponding to diffuse skeletal changes on CT scan representing osseous involvement of the underlying malignancy. A bone marrow biopsy and aspiration was performed to determine the underlying malignancy which revealed an extensive infiltration of signet ring cells. Patient underwent an upper endoscopy to rule out the gastric malignancy which demonstrated erythematous mucosa of the stomach body. The biopsy of the stomach was positive for signet ring cell adenocarcinoma and patient initiated on palliative chemotherapy with mFOLFOX 6 regimen. ALP trended down to 983 U/L after systemic chemotherapy.

Conclusions Our case highlights the importance of a broad differential diagnosis when approaching a patient with bone pain. It is prudent to consider gastric cancer as the possible primary site of disease even in the absence of overt gastrointestinal symptoms. Also an elevated serum ALP level is an important diagnostic factor in patients with bone metastases and is suggestive as a predictive marker of the treatment response.

DP16 HELIOTROPE RASH PRECLUDING METASTATIC OVARIAN CANCER

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10.1136/jim-2019-001036.48

Purpose of study Dermatomyositis is a chronic inflammatory disease of the muscle and skin. The cardinal symptom is a heliotrope rash preceding progressive muscle weakness. The disease is rare, incidence of 0.5–0.89 per 100,000, female to

lower back pain. We aim to expand understanding of this rare case.

Methods used Not applicable.

male predominance 2:1. The recognition is challenging but important as there appears to be an association with underlying malignancy as a paraneoplastic phenomenon. Here we report a case of a patient with heliotrope rash with negative surveillance workup for malignancy, however, after 24 months diagnosed with stage IV ovarian cancer.

Methods used Case report.

Summary of results A 61-year-old Cambodian female presented to emergency department with subjective fever and sharp, non-radiating right eye pain for three days. No associated neuropathies or muscle pain. On examination, patient was afebrile, hemodynamically stable, a circumscribed raised plaquoid lesion noted on right medial eye, erythematous excoriation of upper right eyelid consistent with heliotrope rash. Musculoskeletal and neurological examination was normal. Initial lab work ruled out infectious, immunological, oncological etiology. CT chest/abdomen/pelvis with contrast and colonoscopy completed showed no underlying malignancy. She was prescribed steroid cream, which helped improve the rash to follow-up outpatient but was lost to follow-up until two years later when she presented to emergency department with complain of severe diffuse abdominal pain, intractable nausea/vomiting, and heavy post-menopausal vaginal bleeding. Repeat CT chest/abdomen/pelvis with contrast showed 10 cm left ovarian mass. Lab finding significant for elevated CA 125 of 1661 U/ml. She underwent surgical resection of tumor. Ultimately diagnosed with stage IV ovarian carcinoma and stage IB1 squamous cell carcinoma of the cervix and initiated chemotherapy.

Conclusions Dermatomyositis as a paraneoplastic phenomenon in ovarian cancer has been reported. The diagnosis should be highly suspected based on clinical findings and inconclusive immunological findings. The interval from recognition of dermatomyositis to development of underlying malignancy is variable but often at time of diagnosis or shortly thereafter. Thus patients should receive initial malignancy evaluation and yearly surveillance for malignancy screening to aid in early detection and management.

DP17 DEVASTATING CASE OF DISSEMINATED COCCIDIOIDOMYCOSIS IN A PREVIOUSLY UNDIAGNOSED AIDS PATIENT

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10.1136/jim-2019-001036.49

Purpose of study Disseminated coccidioidomycosis (cocci) is a condition that most commonly presents in immunocompromised patients. While it is a severe infection, adequate and early treatment can have a fair prognosis in the absence of other comorbidities or if comorbidities are treated early. We are presenting the management of a patient with disseminated cocci complicated by hepatic and kidney failure secondary to advanced previously undiagnosed AIDS.

Methods used Case report.

Summary of results A 47-year-old Hispanic male with a history of pulmonary cocci presented to our ED with two weeks of progressive shortness of breath. Review of records indicated that patient was diagnosed with pulmonary cocci two years prior, but was never tested for HIV. He was started on fluconazole, but his condition worsened one year later. He was then diagnosed with Tuberculosis in Mexico but after 5 days of

treatment presented to our facility with worsening of productive cough, vomiting 10 times per night, and a 45-pound weight loss. He was found to be septic with multiorgan failure. Labs revealed WBC of 23.3, neutrophil count of 22.1 with 26% band, BUN of 92, creatinine of 6.47, total bilirubin 5.2, and INR 4.67. Viral hepatitis panel was negative. HIV viral load was over 6 00 000 copies/ml with absolute CD4 cells<20. Cocci complement fixation titer was 1:256. Imaging showed bilateral diffuse miliary pulmonary infiltrations. Empirical antibiotics, anti-tuberculosis medication, liposomal amphotericin B, prednisone, and hemodialysis were initiated. Blood and Bronchoalveolar lavage grew coccidioidomycosis immitis. TB was ruled out and medication was adjusted accordingly. Patient was intubated due to hypoxia. Initiation of HIV treatment was a challenge due to his Child-Pugh Score of 11, Class C, and HIV-associated nephropathy. Lamivudine, enfuvirtide, zidovudine, and etravirine were started. Patient continued to deteriorate and passed away in comfort care on hospital day 16.

Conclusions In cases of combined liver and kidney failure the management of either coccidioidomycosis or HIV is perplexing. In the case of coinfection, this complexity becomes a real ordeal. Early diagnosis and suppression of HIV could prevent organ failure as a limiting factor for selection of appropriate treatment for other conditions.

DP18 FIRST REPORTED CASE OF OSTEOPOIKILOSIS MIMICKING DISSEMINATED OSSEOUS COCCIDIOIDOMYCOSIS

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10.1136/jim-2019-001036.50

Purpose of study The clinical manifestation of coccidioidomycosis (cocci) infection ranges from asymptomatic disease to severe dissemination forms such as to bones. Diabetes a known risk factor in severity and dissemination. In the presence of coexistence of other osseous conditions, the diagnosis of dissemination becomes a difficult task. Here we are presenting a case of a severe form of pulmonary coccidioidomycosis co-infected with Methicillin-Resistant Staphylococcus Aureus (MRSA) with cavitation in the presence of underlying uncontrolled diabetes and congenital osteopoikilosis mimicking osseous dissemination.

Methods used Case report.

Summary of results 40-year-old Hispanic woman with poorly controlled diabetes, previous history of MRSA bacteremia and amphetamine abuse presented to our facility with significant weight loss and glucose of 835 mg/dL. Imaging showed bilateral diffuse alveolar and nodular densities with a large cavitary lesion in the lingula. Serology confirmed the diagnosis of cocci with complement fixation (CF) of 1:4. Her sputum and bronchoscopy samples grew MRSA and *Coccidioides immitis* simultaneously. Blood cultures remained sterile. She was placed on liposomal amphotericin B and Linezolid. Her chest CT also showed diffuse medullary sclerotic lesions in the sternum, and bilateral clavicles and humerus bones. She had a high protein albumin gap above six gm/dl suspecting gammopathy. The bone survey showed similar findings in bilateral acetabulum, ischium, femurs, and tibias without lytic lesions and sparing spine. Technetium 99 m bone scan also did not show any increased in uptake. She was diagnosed with osteopoikilosis.

The patient continued to improve and was discharged home to complete 4 weeks of linezolid and will be continued on liposomal amphotericin B infusion. Her titers increased to 1:16 despite clinical improvement suggesting immune reconstitution syndrome.

Conclusions Osseous dissemination of coccidioidomycosis should be suspected in the right clinical setting. However, the coexistence of other bone involvement such as hereditary disease, prior fractures, and metastasis makes the proper diagnosis difficult. A combination of different complementary imaging modalities should be used, and biopsies will remain the last resort.

DP19 **A FATAL CASE OF COCCIDIOIDES MENINGOENCEPHALITIS WITH ISOLATED VENTRICULAR HYDROCEPHALUS AND INTERVENTRICULAR HEMORRHAGE**

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10.1136/jim-2019-001036.51

Purpose of study Disseminated coccidioidomycosis (cocci) to the central nervous system is amongst the most severe and devastating forms of this infection. Here we are presenting a patient with coccidioidomycosis meningoencephalitis with interventricular hemorrhage leading to ventricular hydrocephalus with over 30 foci of microinfarcts secondary to vasculitis due to basilar meningitis.

Methods used Case report

Summary of results A 42-year-old Hispanic man with a history of alcoholism and pulmonary cocci presented to our facility after he was found to be unresponsive by his roommate. On arrival, he was obtunded, nonverbal, moved extremities and opened eyes only to painful stimuli. His liver tests were consistent with alcoholic hepatitis. CT brain was negative. Lumbar puncture revealed opening pressure of 640, WBC of 670 (53% neutrophils, 17% lymphocytes), RBC 900, glucose of 12, and protein of 2700. Empirical antibiotics, fluconazole, and dexamethasone were started. CXR showed 15 mm left upper lobe nodule. He was intubated due to respiratory failure. Repeat CT brain showed new onset left ventricular hemorrhage and bilateral ventricular hydrocephalus. Cocci serology showed serum complement fixation (CF) of 1:64 and CSF CF of 1:32. Liposomal amphotericin B and voriconazole were started. MRI brain confirmed the presence of blood in both ventricles, aqueduct of Sylvius, and the fourth ventricle suggesting a clot within the foramen of Monro as the etiology behind acute bilateral ventricular hydrocephalus. MRI revealed over 30 diffuse non-enhancing microinfarcts and diffuse and basilar leptomeningeal enhancements.

Ommaya reservoir was suggested to start intrathecal amphotericin but deemed to be too risky. Subsequently, patient's reflexes became diminished and absent on hospital day 10. His level of care was changed to comfort care, and he passed away of hospital day 12.

Conclusions Hydrocephalus and vasculitic infarcts are commonly seen in disseminated central nervous system coccidioidomycosis. To the best of our knowledge, hemorrhagic ventriculitis with acute isolated bilateral ventricular hydrocephalus is rarely seen. Early diagnosis and treatment are crucial to prevent morbidity and mortality associated with this form of infection.

DP20 **COCCIDIOIDES: A STEALTHY ALIEN FOREVER**

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10.1136/jim-2019-001036.52

Purpose of study Disseminated coccidioidomycosis (cocci) to the central nervous system (CNS) is one of the most severe and debilitating forms of this infection. The definitive etiology behind dissemination and chronicity of CNS cocci is unknown but certainly lies in the host immune response. Treatment of cocci meningitis is life-long. Here we are presenting a case of CNS cocci with incidental findings of pathognomonic cocci spherules in his cervical lymph nodes six years after continuous treatment with azoles.

Methods used Case report

Summary of results A 52-year-old Hispanic male field worker with diabetes had presented six years prior to our institute with respiratory failure, headache, night sweats, and 40-pound weight loss. He was diagnosed with severe pulmonary cocci with hypoxemia and placed on liposomal amphotericin B and steroid taper. His serum cocci Complement Fixation (CF) was >1:512. He was also diagnosed with cutaneous cocci with several lesions around his mouth and disseminated cocci meningitis as his CSF result revealed WBC of 615 (40% lymphocytes, 51% neutrophils), a protein of 168, and glucose 22 and cocci (CF) at 1:16. Fluconazole 1000 mg was also initiated. After completion of his amphotericin treatment, he continued on fluconazole and follow up with a serial lumbar puncture as an outpatient. His cutaneous lesions resolved. His treatment was switched to voriconazole two years later after the failure of response based on his CSF findings. He developed severe side effects and had difficulties with access to voriconazole, therefore, his treatment was changed to isavuconazonium two years later utilizing patient assistance program from the drug company. His serum and CSF CF titers remain stable at 1:32 and 1:16 respectively. Six years after being on continuous azole therapy since his diagnosis, he was found to have a 1.5 × 1.5 cm ulcer on his tongue. His biopsy showed squamous cell carcinoma and he underwent left partial glossectomy and supraomohyoid neck dissection. Lymph node histology was free of cancer but revealed the presence of cocci spherules with endosporeulation.

Conclusions Experts believe that coccidioidomycosis could remain dormant in chronic forms of infection, even after successful completion of treatment. The clinician should be aware of this form and reactivation particularly in immunocompromising conditions.

DP21 **RAMSAY-HUNT SYNDROME COMPLICATED BY BACTERIAL MENINGITIS, SUBARACHNOID HEMORRHAGE AND CEREBELLAR STROKE**

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10.1136/jim-2019-001036.53

Purpose of study Herpes zoster oticus, known as Ramsay Hunt syndrome, is the reactivation of the varicella zoster virus in the geniculate ganglion. Reported complications include meningoencephalitis, posterior circulation strokes, and dysphagia. This is an unusual case of Ramsay Hunt syndrome complicated by bacterial meningitis, subarachnoid hemorrhage, and cerebellar stroke.

Methods used Retrospective case report.

Summary of results 88-year-old Filipino woman with several comorbidities presented with a three-day history of right ear pain associated with pinna swelling, fever, chills, and right facial droop. The family noted vesicular lesions in the right ear and her trunk prior to presentation. On exam, she was found to have purulent discharge from the ear canal. Neuroimaging showed localized enhancement of the external auditory canal and mastoid. Vancomycin, piperacillin/tazobactam, otic ciprofloxacin, intravenous acyclovir, and methylprednisolone were started. Ear drainage grew methicillin-susceptible *Staphylococcus aureus*. On hospital day three, she developed fever; antibiotics were switched to ampicillin and cefepime. Lumbar puncture revealed opening pressure 11 cm H₂O, glucose 78, protein 480, white blood cell 1100 with 63% neutrophils consistent with bacterial meningitis picture. Methylprednisolone was stopped after seven days, but her leukocytosis with left shift persisted. Repeat neuroimaging found a right cerebellar hemorrhagic stroke, subarachnoid hemorrhages in the right sylvian fissure around the foramen magnum and superior cervical spinal canal, and the left temporal lobe. Repeat LP found glucose 104, protein 366, RBC 16000, WBC 140 (99% lymphocytes). VZV DNA PCR was negative.

Serial CT images showed improvement in subarachnoid bleeds. She was discharged to an acute rehabilitation facility. She completed a 14 day course of acyclovir and a 21 day course of cefepime and ampicillin. At ten month follow up, the patient had persistent right eye ptosis with cranial nerve VII paralysis.

Conclusions Multiple intracranial complications in Ramsay Hunt syndrome is rare. Physicians should be aware of the risks of intracranial complications in the elderly with Ramsay Hunt syndrome.

DP22 DEVASTATING CASE OF CRYPTOCOCCAL MENINGITIS IN AN HIV NEGATIVE HOST

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10.1136/jim-2019-001036.54

Purpose of study Cryptococcal meningitis is an opportunistic fungus transmitted by inhalation of infective spores from an environmental source. The most common presentation is in patients with HIV or a known immunocompromised condition. Recent studies, however, have shown an increasing incidence of cryptococcal infection amongst immunocompetent hosts. We are presenting an HIV negative patient who suffered a devastating and fatal course of disseminated cryptococcal infection.

Methods used Case report.

Summary of results A 46-year-old African American woman with hypertension and diabetes was incidentally found to have a speculated right upper lobe mass but lost to follow up. She then presented to an outside hospital with a severe headache and found to have disseminated *Cryptococcus neoformans* grown in CSF and Blood. Liposomal amphotericin B and flucytosine was initiated for 5 weeks. She developed cachexia, mental status deterioration, and contracture of extremities. She was admitted to our hospital right after discharge with a new onset of a seizure. Imaging showed no intracranial lesions but redemonstrated the lung lesion which was biopsied and showed pulmonary cryptococcoma. Induction therapy with liposomal

amphotericin B and dexamethasone taper was restarted. Elevated intracranial pressures were reduced by the serial lumbar punctures and temporary lumbar drain. Fluctuating serum and CSF *Cryptococcus Ag* titers were noted, but cultures remained negative. HIV test was negative. Blood was sent to NIH for immunogenetics testing but did not show any known defect. IV voriconazole was started, and she was discharged on comfort care to her family. Patient remained relatively stable until 5 months later when she presented with septic shock due to line infection and passed away ten days later in comfort care.

Conclusions Little is known about the mechanism of progression of *Cryptococcus meningitis* in Non-HIV hosts. Perhaps the underlying cause remains deep in the host immunogenetics. The management of recurrent progressive forms of this disease remains difficult, and trending titers has not shown to be helpful. Some experts recommend high dose glucocorticoid adjuvant therapy. Further research is needed to uncover the complex dynamic between this evolving fungus and its human host counterpart.

DP23 TRACHEAL DIVERTICULAE

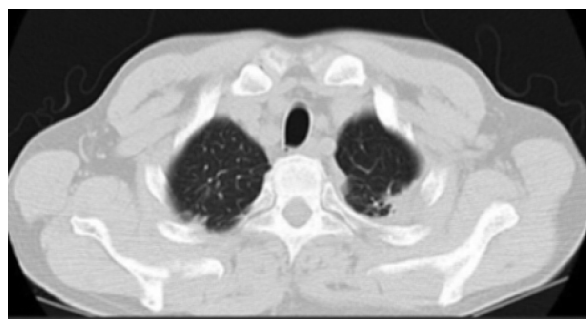
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10.1136/jim-2019-001036.55

Purpose of study Tracheal diverticulae (TD) are a rare finding on chest imaging, often seen incidentally in asymptomatic patients with underlying lung disease. Congenital and acquired types exist and have characteristic features on CT imaging and histopathologic exam.

Methods used 63 m with history of treated tuberculosis, bladder cancer, obstructive lung disease, hypertension and hypothyroidism presented with cough associated with chest pain, SOB. He is an ex-smoker (35 years.pack) with occupation as a chef. PFTs showed mild obstructive defect with positive BD response. Chest CT revealed biapical pleural thickening with parenchymal nodularity and focal air density along the right posterolateral margin of the trachea consistent with tracheal air cyst or tracheal diverticulum.

Summary of results TD are rare findings on imaging defined as a benign out-pouching of the tracheal wall. TD are congenital or acquired. Congenital TD represent a malformation of the supernumerary branches of the trachea and usually occur above the carina with small neck openings. Acquired TD are typically larger, can occur at any level of the tracheobronchial tree and result from increased intraluminal pressure such as chronic cough or weakening of structures after surgical procedures. Differential diagnoses of TD include laryngocele,



Abstract DP23 Figure 1

pharyngocele, esophageal diverticulum, apical herniation of the lung, apical bullae, tracheocele, lymphoepithelial cysts and bronchogenic cysts. CT can be used to distinguish congenital and acquired diverticulae, the former occurring more often proximal to the carina with smaller outpouching necks and the latter occurring at any part of the tracheobronchial tree with larger sizes of both neck and diverticulae. Bronchoscopy is an optional test for direct visualization of the TD, but if small with narrow necks or if without tracheal communication, can lead to missed diagnosis. Management is usually conservative (antibiotics, mucolytics, physiotherapy) while surgical management (resection, fulguration or endoscopic cauterization) is considered more in young, symptomatic patients.

Conclusions TD are a rare and often asymptomatic manifestation of either congenital or acquired causes. Diagnosis is made by chest CT and histopathological examination, with or without bronchoscopic evaluation. Management is usually conservative, though surgical options are available in select patients.

DP24 FOREIGN BODY ASPIRATION AS A CAUSE OF CHRONIC RECURRENT PNEUMONIA

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10.1136/jim-2019-001036.56

Purpose of study Foreign body (FB) aspiration is a serious medical condition demanding early recognition and prompt action.

Methods used 52 smoker male with PMH of DM and asthma presented with cough with greenish sputum, fever and worsening SOB for one week. Patient reported being diagnosed with pneumonia several times per year for the last 10 years. CT

showed bilateral diffuse centrilobular nodules with RUL predominance, bronchiolar wall thickening and ectatic changes and a calcified FB in the right bronchus intermedius. Patient was placed on broad spectrum antibiotics and steroid regimen with symptomatic improvement. Bronchoscopy was performed with successful removal of the FB measuring 1.2×0.7×0.4 cm.

Summary of results FB aspiration is most commonly secondary to unconscious accidental indigestion. Special situations can be also related such as anesthesia, sedation, intoxication, seizures or neurologic disorders affecting the oropharynx. FB can be dietary or non-dietary but both are associated with similar consequences. Although clinical presentation of airway FB depends on the site of impaction, there may be minimal symptoms if the FB passes into the bronchi. Classic triad of cough, wheezing and choking is only present in a small percentage of patients. Most common site of impaction in the RLL because it is anatomically larger are more vertical creating continuity with the trachea. Because of the absence of specific symptoms, adult airway FBs diagnosis is often delayed. Complications to FB aspiration include but are not limited to recurrent pneumonia, bronchial stenosis, bronchiectasis, recurrent hemoptysis, chronic lung disease, pleural effusion and empyema. FB can also mimic other pulmonary entities such as asthma, lung cancer or tuberculosis. Diagnosis is made by chest radiography in most cases, although CT of the chest can be valuable when identifying small aspirated objects. Flexible Bronchoscopy is preferred in adults and is both diagnostic and therapeutic. Surgical removal constitutes the final option and is generally well tolerated.

Conclusions Occult tracheobronchial FB are rare in adult population and are usually incidentally detected during radiological test or chest tomography. Flexible bronchoscopy the best option for both diagnosis and treatment.



Abstract DP24 Figure 1