

history of angina, myocardial infarction, heart failure, stroke, peripheral vascular disease) in this predominantly African American patient population. We conducted a cross-sectional study involving 41 African American patients (14 M, 27 F; 60 ± 16 years) who were on hemodialysis ≥ 3 months. Patient demographics and medical histories were obtained. Pre-dialysis serum PAI-1 (ELISA) and serum carnitine levels (spectrophotometry) were measured. Other markers of inflammation and oxidative stress, including C-reactive protein (CRP), IL-6, IL-10, and TNF-α, were also measured (ELISA). The subjects were divided into two groups: group 1 (*n* = 36) – low total serum carnitine (< 31 μmol/L for women and < 42 μmol/L for men) and group 2 (*n* = 5) – normal total serum carnitine (≥ 31 μmol/L for women and ≥ 42 μmol/L for men). There were no significant differences in mean age (60 ± 16 years vs 64 ± 13 years; *p* = ns), gender, presence of hypertension or diabetes, etiology of CKD or serum levels of CRP, IL-6, IL-10, or TNF-α between the groups. PAI-1 levels were significantly higher in subjects in group 1 as compared to group 2 (62 ± 24 IU/mL vs 37 ± 21 IU/mL; *p* = .03). Nine subjects in group 1 had a composite cardiovascular end point as compared to none in group 2. In this population, patients with low carnitine levels had higher levels of PAI-1 as compared to patients with normal carnitine levels. This study was limited by small sample size and the high prevalence of low carnitine levels in hemodialysis patients. More studies are needed to further clarify this observation and the association with cardiovascular disease.

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### COMPUTED TOMOGRAPHY ANGIOGRAPHY SOURCE IMAGES ARE MORE ACCURATE THAN UNENHANCED COMPUTED TOMOGRAPHY FOR THE DETECTION AND DELINEATION OF ACUTE ISCHEMIC LESIONS: RECEIVER OPERATOR CHARACTERISTIC CURVE ANALYSIS USING A MODIFIED ASPECTS RATING SCALE.

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**Purpose:** ASPECTS is a robust method for quantifying acute stroke hypodensity on non-contrast CT (NCCT) and helps predict clinical outcome. Whole brain source images obtained with CT angiography (CTA-SI) may increase ischemic brain conspicuity. We sought to determine if CTA-SI is more sensitive than NCCT in detecting acute middle cerebral artery (MCA) infarction and in predicting final infarct size using a modified ASPECT score for lesion delineation. **Materials and Methods:** After informed consent, we reviewed NCCT and CTA-SI scans of 51 patients with suspected MCA stroke, imaged within 12 hours of symptoms onset, enrolled in a dual-center cohort study. Two blinded neuroimagers rated presence and extent of NCCT and CTA-SI hypodensity using modified ASPECTS. Level of certainty for hypodensity detection was graded on admission and follow-up images using a 5-point scale (5 = definitely present; 1 = definitely absent). Linear regression and receiver operator characteristic (ROC) analyses were performed. **Results:** Thirty-three patients had confirmed infarction at follow-up (mean 6.5 days). Using certainty levels ≥ 4 (probable/definite) for ischemic hypodensity, sensitivity for acute stroke detection was 49% with NCCT and 70% with CTA-SI (*p* = .04, ROC analysis); specificity was 100% for both. Linear regression showed  $R^2 = .42$  (*p* < .0001) for the correlation between acute NCCT modified ASPECTS and follow-up modified ASPECTS, and .73 (*p* < .0001) for the correlation between CTA-SI and follow-up modified ASPECTS (*p* < .0001 for the NCCT/CTA-SI comparison). **Conclusion:** CTA-SI, compared to NCCT, is more sensitive in detecting early irreversible ischemia and more accurate for final infarct volume prediction using modified ASPECTS.

## 8

### IMPACT OF INTRAUTERINE GROWTH RESTRICTION ON EXTRAUTERINE GROWTH RATE OF VERY LOW BIRTH WEIGHT INFANTS. M. Campos, S. Arce, L. García, I. García, M. Valcárcel, University of Puerto Rico School of Medicine, San Juan, Puerto Rico.

It has been established that small for gestational age (SGA) infants have a higher risk of developing chronic disease in adulthood. Our hypothesis is that SGA have a different early extrauterine growth rate than adequate for gestational age (AGA) infants. The main purpose of our study is to determine if there are differences in the early growth patterns of SGA vs AGA infants born of very low birth weight. The determination of the differences in the growth rate between SGA and AGA infants can lead to the development of nutritional guidelines directed to the needs of SGA infants and the reduction of health risks later in life. **Methods:** We performed a statistical analysis of a nested case control. Two hundred sixteen infants born of very low birth weight at the University Pediatric Hospital between 1999 and 2003 who survived to discharge were included. Patients with gastrointestinal conditions, birth defects, and those who were transferred to another institution during the first week of life were excluded from the study. The group of analysis was derived by pairing all the SGA infants with AGA infants by sex, year of birth, and birth weight (within 100 g). Data were obtained from the Vermont Oxford Network forms. Growth rate was defined as grams gained per kilogram of birth weight per day. We used two-sample *t*-test to determine the difference in growth rate between groups, and  $\chi^2$  for the evaluation of categorical variables. Odds ratio was determined to assess the impact of morbidity elements. Simple regression was used to establish the effect of morbidities on growth rate. **Results:** The mean birth weight for all the infants was 1,105 g (± 223 g), mean gestational age was 30 weeks (± 2.7 weeks), and mean growth rate was 13.4 g/kg/d (± 6.8 g/kg/d). The mean growth rate for AGA was lower (11.9 g/kg/d ± 7.6) than that of SGA infants (14.9 g/kg/d ± 5.5), resulting in a statistically significant difference in the extrauterine growth rate of AGA and SGA infants (*p* = .0000). Odds ratio analysis showed a higher risk of bronchopulmonary dysplasia (OR = 0.3), low APGAR (OR = 0.4), and sepsis (OR = 0.4) for the AGA group. When all variables were analyzed using the linear regression model, only having a low APGAR score (*p* = .02) and being SGA (*p* = .0004) produced a difference in the growth rate of statistical significance. We conclude that the growth patterns of SGA and AGA infants are different and that the disparity in growth rate is not explained by the differences in the incidence of morbidities that affect extrauterine growth. Other elements, such as differences in the utilization of nutrients by SGA infants, should be evaluated in the future.

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### EXPRESSION PROFILES AS PREDICTORS OF BRONCHOPULMONARY DYSPLASIA IN EXTREMELY LOW GESTATIONAL AGE NEWBORNS. J. Cohen,\* Y. Sun,\*\* L. Van Marter,\* A. Leviton,\*\*\*,\*\*\*\* E. Allred,\*\*\* I. Kohane,\*\*\*\* \*Division of Newborn Medicine, Children's Hospital Boston, Boston, MA; \*\*Department of Neonatology, Kaiser Permanente Santa Clara, Santa Clara, CA; ---Neuroepidemiology, Children's Hospital Boston, Boston, MA; \*\*\*\*Department of Neurology, Harvard Medical School, Boston, MA; \*\*\*\*\*Division of Genetics and Genomics Program, Children's Hospital Boston and Harvard Medical School, Boston, MA.

**Background:** Approximately half of all infants born before the 28th week of gestation develop bronchopulmonary dysplasia (BPD). Inflammatory regulators appear to be involved in the development of BPD both antenatally and postnatally. Postnatal factors contributing to BPD include hyperoxia, hypoxia, infection, patent ductus arteriosus, oxygen toxicity, and barotrauma from mechanical ventilation. **Objective:** To evaluate to what extent RNA expression profiles in umbilical cord tissue distinguish between infants who do and do not develop BPD. **Study Design/Methods:** Flash-frozen pieces of umbilical cord were available from 21 infants born before gestational age 28 weeks who developed BPD (defined as oxygen dependent at 36 weeks postmenstrual age) and from 34 of their peers who did not develop BPD. RNA extraction and microarray hybridization were performed at the core laboratory at Children's Hospital Boston. **Results:** Infants who developed BPD had decreased umbilical cord expression of mitochondrial membrane, energy metabolism (oxidative phosphorylation, citric acid cycle), RNA synthesis, and DNA repair gene sets. These genes were also expressed at lower levels in those with the lowest gestational age. We are not yet able to distinguish gestational age correlates from insult/response contributions to BPD pathogenesis. **Conclusions:** Expression profiles evident at the time of birth provide a meaningful window into the physiologic development of extremely low gestational age newborns. Expression profiling is likely to help identify pathways that contribute to the evolution and development of BPD.

## 10

### THE EFFECTS OF SHORT-TERM OVERFEEDING ON NEURONAL ACTIVATION IN THIN AND REDUCED-OBESE INDIVIDUALS. M.A. Cornier, S.S. Von Kaenel, J.R. Tregellas, University of Colorado Health Sciences Center, Denver, CO.

Certain individuals appear to be resistant to weight gain in an obesigenic environment, yet the mechanisms for this adaptation are unclear. These individuals may sense positive energy balance more appropriately leading to changes in intake. Preliminary studies have shown that thin individuals are very sensitive to overfeeding with significant changes in eating behaviors as compared to reduced-obese individuals. Sixteen thin 'obese-resistant' individuals (9 women and 7 men) and eight reduced-obese (RO) individuals (4 women and 4 men) were studied on two occasions in a randomized crossover design. Functional magnetic resonance imaging (fMRI) was performed in the morning after an overnight fast following 2 days of eucaloric feeding and following 2 days of overfeeding by 30% over basal needs. fMRI was performed with visual stimuli of three different categories: objects (O), utilitarian foods (U), and hedonic foods (H). BOLD echo-planar data (TR = 2000, TE = 30, 64° matrix, 240 mm<sup>2</sup> FOV, 28 axial slices angled parallel to the planum sphenoidale, 4 mm thick, 0 mm gap, 3 T) were motion corrected, normalized to standard space, spatially smoothed, and assessed using the general linear model in SPM2. In the eucaloric state, visual stimuli of U as compared to O (U > O) resulted in greater activation of insula and inferior temporal visual cortex in RO as compared to thin individuals, while H > U resulted in frontal cortex activation in RO but not thin individuals. Overfeeding resulted in attenuation of visual and parietal cortex in both groups but also resulted in activation of posterior cingulate cortex in RO individuals and hypothalamic 'deactivation' in thin individuals (H > U). In summary, there appears to be a phenotypic difference in the neuronal activation in response to external food-related cues. Overfeeding appears to have a greater impact on neural structures important in processing of emotions in RO individuals while having a greater impact on neural structures involved with the homeostatic regulation of food intake in thin individuals.

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### ILLEGAL DRUG BODY PACKING: RADIOLOGICAL EVALUATION AND MEDICAL MANAGEMENT. W.E. De Jesus-Monge, J. Martinez, Department of Medicine, University of Puerto Rico School of Medicine, San Juan, Puerto Rico.

**Introduction:** Body packing, transportation of illegal drugs by oral ingestion or rectal/vaginal insertion, has been reported in multiple countries. Occasionally, it involves ingestion of multiple drug types at a time. The most commonly transported drugs are cocaine, heroin, amphetamines, and marijuana, among others. Body packers usually carry about 1 kg of drug, divided into 50 to 100 packets of 8 to 10 g each. Each drug packet contains a life-threatening dose of drug. Drug packets are usually identified by abdominal x-rays. **Purpose:** To describe the radiological evaluation and medical management of body packing based on the case report of 2 patients. **Case 1:** A 31-year-old male without systemic illness complained of dizziness, nausea, whitish vomit, and diffuse, intermittent, and stabbing abdominal pain. He stated ingestion of more than 100 drug packets, confirmed later by x-rays. The abdomen had bowel sounds present, was diffusely tender to superficial and deep palpation, with voluntary guarding, no rebound, and no hepatomegaly. The patient was treated with gastrointestinal motility agents, and 119 heroin packets were recovered without complication. The patient was discharged from hospital 2 days after admission. **Case 2:** A 20-year-old male without systemic illness denied any symptom or complaint. He stated ingestion of three to four foreign bodies, confirmed later by x-rays. The abdominal examination was unremarkable. Latex fragments were recovered from stools 6 days after admission, but the patient was clinically unchanged without signs or symptoms of drug intoxication and no drug packet recovery despite therapy. The patient underwent an exploratory laparotomy to remove the drug packets, which were found intact, and was discharged 12 days after admission. **Discussion:** Body packing involves both genders, children, and pregnant women seeking cash compensation or safe passage into a foreign country. Suspects may be identified through observation, inconsistent statements, intelligence information, and trained personnel. The most life-threatening medical complications are drug intoxication and gastrointestinal obstruction or perforation. Case incidence has increased recently because of increased border and airport security, so the appropriate medical management of these patients is of importance.

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