

### 1411 VALIDATING THE AGREEMENT BETWEEN NEWER INFRARED FOREHEAD THERMOMETRY WITH AXILLARY DIGITAL THERMOMETRY IN NEONATES

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<sup>1</sup>AR Sethi, <sup>1</sup>AS Nimbalkar, <sup>1</sup>DV Patel, <sup>2</sup>AG Phatak, <sup>1,2</sup>SM Nimbalkar. <sup>1</sup>Department of Pediatrics, Pramukhswami Medical College; <sup>2</sup>Central Research Services, Charutar Arogya Mandal, Anand, India

**Background and Aims** The traditional mercury thermometer has been replaced by the more “user friendly” digital thermometer. As accuracy is comparable with both instruments and mercury remains an environmental hazard they are no longer recommended. New non invasive method of measuring temperature may reduce infection rate as well as intangible pain and suffering of neonate.

**Methods** The body temperature of patients admitted in Neonatal Intensive Care Unit was measured using axillary digital thermometer as well as a handheld infrared non touch thermometer. Patients placed under radiant warmers were included. Temperature recordings were taken as required routinely for clinical care. Axillary temperature was recorded within 30 seconds and the forehead temperature within 5 seconds.

**Results** The body temperature measured by Axillary digital thermometer and forehead method do not agree well (95% limits of agreement: -4.2, 2.2). A trend was observed suggesting that agreement depends on the magnitude of the temperature. The agreement slightly improved when patients in warmer were excluded (95% limits of agreement: -4.1, 2.1) with similar trend. The best possible agreement was observed between warmer and axillary temperature but was not clinically acceptable (95% limits of agreement: -0.99, 2.36).

**Conclusion** Forehead temperature due to non touch may appear less disturbing to the neonate and also time saving for the nurse but they are misleading. The infrared technology needs further improvement before it can be used in our setting. Although advent of technology is tempting, a scientific validation of new technology under different settings is caveat before adapting it.

### 1412 TRANSCUTANEOUS BILIRUBINOMETERS USED WITHIN A STRUCTURED PATHWAY PREDICTS HIGH SERUM BILIRUBIN LEVELS IN HEALTHY TERM JAUNDICED NEONATES MONITORED AT HOME

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<sup>1</sup>JO Menakaya, <sup>1</sup>S Davies, <sup>2</sup>N Callender, Jaundice Early Treatment Study In Term Newborns (JETSET). <sup>1</sup>Neonatal Paediatrics; <sup>2</sup>Obstetrics & Gynaecology, Hillingdon Hospital NHS Foundation Trust., London, UK

**Background** UK (NICE) guidelines recommend that bilirubin is monitored in all jaundiced babies. We implemented a home based integrated care pathway to monitor healthy term jaundiced neonates with transcutaneous bilirubinometers (TcB). Babies were readmitted to hospital for phototherapy at total serum bilirubin (TsB)  $\geq 340\mu\text{mol/l}$ . TcB  $\leq 250\mu\text{mol/l}$  correlates highly with TsB.

**Aim** To determine the TcB values in term babies monitored at home that could predict TsB values  $\geq 340\mu\text{mol/l}$ .

**Methods** Healthy jaundiced neonates were monitored at home using Bilichek® (Ver 6.12) bilirubinometer. Babies with TcB  $> 250\mu\text{mol/l}$  had TsB measured using the Beckman Coulter timed endpoint diazo method within 4 hours to confirm result. We carried out statistical analysis of the paired samples to determine the TcB value with the best predictive value for TsB  $\geq 340\mu\text{mol/l}$ .

**Results** Eighty-three paired samples were analysed from 63 babies. 6 (7%) had TsB values of  $\geq 340\mu\text{mol/l}$ . The Receiver Operating Characteristics (ROC) curve analysis suggested an area under the curve (AUC) of 0.9037. TcB values  $\geq 315\mu\text{mol/l}$  predicted TsB  $\geq 340\mu\text{mol/l}$  with sensitivity of 0.83 (0.36, 1.00); specificity of 0.82 (0.71,

0.90); positive predictive value of 0.26 (0.09, 0.51) and overall accuracy of 0.82 (0.72, 0.90). TcB values  $\geq 303\mu\text{mol/l}$  predictive ability had a sensitivity of 1.00 (0.54, 1.00); specificity of 0.71 (0.60, 0.81), positive predictive value of 0.21 (0.08, 0.41) and overall accuracy 0.73 (0.63, 0.83).

**Conclusion** Bilichek® TcB of  $303\mu\text{mol/l}$  had higher sensitivity but lower specificity than TcB of  $315\mu\text{mol/l}$  for predicting TsB values  $\geq 340\mu\text{mol/l}$  in healthy term jaundiced neonates monitored at home.

### 1413 RELATION BETWEEN MATERNAL BLOOD LEVEL OF SOME METALS AND BIRTH WEIGHT USING LIBS

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J Alsharnoubi. Cairo University, Cairo, Egypt

**Objective** Aim of this study is to investigate the relation between intensities of some blood metals as Fe, Zn, Pb, and Cd, in both mothers and their newborn, and their effects on the newborn birth weight, height as well as head circumference using Laser Induced Breakdown spectroscopy LIBS as a non invasive technique.

**Methods** 34 pregnant women and their normal birth weight newborn (NBW, group I) were recruited and matched against 34 pregnant women and their low birth weight newborn (LBW, group II). Blood samples were collected from the umbilical cords of the newborns from both groups and venous blood samples were taken from their mothers after delivery. Samples were prepared then exposed to laser. We used the laser induced breakdown Spectroscopy (LIBS), to analyze the metal intensity of (Cd, Pb, Zn, and Fe), for each sample for both mother and her infant.

**Results** There were significant differences between both groups regarding Cd, Pb, Zn, more in group I, while there were no significant differences in both groups in the mother and her newborn regarding to Fe. There were significant differences regarding Cd, Pb, Zn, more in group I, while no significant differences in both groups in the mother and her newborn regarding to Fe.

**Conclusion** We found that there was significant negative correlation between birth weight and maternal blood intensity in both groups. We found positive correlation between maternal and newborn blood metals and a negative correlation between intensity of both maternal and infant blood metals regarding weight in both groups.

### 1414 INSIGHTS INTO NEONATAL ORAL FEEDING PATHOLOGY THROUGH RNA SEQUENCING OF SALIVARY SAMPLES

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<sup>1,2</sup>JL Maron, <sup>3</sup>KL Bodi, <sup>3</sup>KL Johnson, <sup>2,4</sup>DW Bianchi. <sup>1</sup>Pediatrics, Floating Hospital for Children, Tufts University; <sup>2</sup>Mother Infant Research Institute at Tufts Medical Center; <sup>3</sup>Tufts University School of Medicine; <sup>4</sup>Pediatrics, Division of Genetics, Boston, MA, USA

**Background and Aims** To improve our understanding of newborn feeding pathophysiology at the molecular level, our laboratory studies transcripts in neonatal saliva. Previously, we used whole transcriptome microarrays. Here, we tested the hypothesis that sequencing of RNA would provide additional and more specific information.

**Methods** RNA was extracted and prepared for sequencing from salivary samples (10  $\mu\text{L}$ ) collected from two term infants matched for post-conceptual age, gender and ethnicity who could and could not orally feed, respectively. Paired-end 100 x 100 base pair sequencing was performed on the Illumina HiSeq 2000. Sequence data were aligned against human reference genome GRCh37/hg19. Cuffdiff analysis identified differentially expressed genes, promoters, and splicing variants between subjects. Ingenuity Pathway Analysis was performed on statistically significantly differentially expressed genes.

**Results** There were 405 genes, 3 splicing variants, and 2 promoters that were statistically significantly different between case and control. We detected abnormal thyroid function, impaired myelination, and delayed ossification of the mandible in the poor oral feeder ( $10^{-5} < p < 10^{-2}$ ). Genes involved in neurodevelopment, hyperphagia, and adipocyte development were differentially expressed between subjects ( $10^{-3} < p < 10^{-2}$ ).

**Conclusions** Targeted comparative RNA sequencing analyses identify global, and patient specific, aberrations in developmental pathways directly related to oral feeding pathology. Our study demonstrates the feasibility of neonatal salivary sequencing for identifying key regulatory genes and pathways that are differentially expressed and regulated between successful and unsuccessful oral feeders, and suggests that this approach will lead to new insights into neonatal pathophysiology.

#### 1415 THE DIURETIC EFFECT OF UREA ANALOG DIMETHYLTHIOUREA IN RATS

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<sup>1</sup>20 Cil, <sup>2</sup>M Ertunc, <sup>2</sup>R Onur. <sup>1</sup>Department of Pediatrics; <sup>2</sup>Department of Pharmacology, Hacettepe University Faculty of Medicine, Ankara, Turkey

**Background and Aims** Urea plays important roles in urinary concentrating mechanisms in the kidney by contributing greatly in generation of hyperosmolar medulla, due to presence of urea transporters which mediate facilitated transport of urea. Urea transporter knock-out mice were reported to have increased daily urine volume. In this study, we investigated the possible diuretic effect of a urea analog and urea transporter inhibitor, dimethylthiourea (DMTU), in rats.

**Methods** Female Wistar rats were divided into two groups, group 1 (Control, n=7) rats were injected with saline (ip), whereas group 2 (DMTU, n=7) rats were injected with 500 mg/kg DMTU (ip) and an additional dose of 125 mg/kg DMTU 8 h after.

**Results** DMTU administration induced a ~3 times increase in daily urine volume ( $p < 0.001$ ) and decreased urine osmolality to ~%35 of controls ( $p < 0.0001$ ). DMTU also increased free water clearance ( $p < 0.0001$ ) without a significant change in osmolar clearance. DMTU treatment caused an increase in urea clearance ( $p < 0.05$ ) and fractional excretion of urea ( $p < 0.05$ ) with a decrease in serum urea concentration ( $p < 0.001$ ). DMTU had no effect on creatinine clearance or serum electrolytes, creatinine levels and osmolality.

**Conclusions** We report for the first time that DMTU has a prominent diuretic effect with increased urea excretion, which may be explained by the inhibitory effect of the drug on urea transporters. Our findings suggest that DMTU may be used as a diuretic agent and also could be used as a lead compound for development of a novel group of diuretics.

#### 1416 INSULIN RESISTANCE CORRELATES IN OBESE ADOLESCENTS

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I Papandreou, G Papadopoulos, M Bourneli, Z Gerle. *Paediatrics, Tzaneio General Hospital of Piraeus, Piraeus, Greece*

**Background and Aims** Obesity is an epidemic that affects adolescents and afflicts changes in their metabolic profile. The purpose of our study was to compare glucose metabolism, insulin resistance, dyslipidemia and blood pressure between obese and healthy adolescents.

**Methods** We included in our study 126 adolescents followed at the outpatient clinic of our hospital, aged  $13.9 \pm 2.01$  (Mean  $\pm$  SD) in the course of 2011. The Body Mass Index (BMI) was calculated from weight and height measurements and was used to divide the

adolescents into two groups, (obese, those above the 95th percentile, which corresponds to a BMI of 30 (considered obese in adults) and non obese). Blood pressure, fasting insulin, glucose and lipid blood levels were measured. Estimates of insulin resistance (homeostatic model assessment (HOMA-IR) and the quantitative insulin sensitivity check index (QUICKI), were derived from fasting measurements. For the statistical analysis we used SPSS 20.0 (IBM Corp.). Mann-Whitney and Spearman tests were applied.

**Results** Among the adolescents in our study 47 were obese. Obese adolescents had a higher systolic and diastolic blood pressure ( $p < 0.001$  and  $p: 0.04$  respectively), higher blood levels of fasting insulin ( $p < 0.001$ ) and lower High Density Lipoprotein (HDL) ( $p: 0.01$ ) compared to non-obese. Insulin resistance and insulin sensitivity indexes were associated with obesity (HOMA-IR,  $p < 0.001$ , QUICKI  $p < 0.001$ ).

**Conclusions** Increased insulin resistance, higher blood pressure and low levels of HDL were associated with increased adiposity among adolescents. It is therefore necessary to screen for elevated blood pressure and hyperlipidaemia amongst obese adolescents.

#### 1417 METABOLIC SYNDROME AND INSULIN RESISTANCE IN CHILDREN AND ADOLESCENTS

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<sup>1</sup>M Erol, <sup>1</sup>O Yigit, <sup>2</sup>M Çömççe, <sup>1</sup>Ş Zengi, <sup>3</sup>O Zengi. <sup>1</sup>Pediatrics; <sup>2</sup>Family ph; <sup>3</sup>Department of Biochemistry, Bağcılar Training and Research Hospital, Istanbul, Turkey

Overweight and obesity in children and adolescents have become a major public health problem in recent years. The prevalence of metabolic syndrome in childhood increases in parallel with the high prevalence of obesity in children. The metabolic syndrome was defined as having at least three of the following: abdominal obesity, low high-density lipoprotein (HDL) cholesterol, hypertriglyceridemia, hypertension, and/or impaired glucose tolerance. Insulin resistance is the principal metabolic abnormality that is common to the development of the metabolic syndrome in children and adults.

Metabolic syndrome was found in %17.2 (12 cases). In our study, we aimed to investigate the potential risk factors in development of obesity evaluate metabolic syndrome and insulin resistance frequency in children and adolescent population. Seventy obese children with a mean age of  $10.8 \pm 2.47$  years and body mass index > 95th percentile were enrolled the study. Patients were assessed birth weight, duration of breast-feeding, prevalence of obesity and type 2 diabetes in parents, age at onset of obesity and components of metabolic syndrome. The diagnosis of metabolic syndrome were defined according to modified WHO criteria adapted for children. Each subject was submitted to an oral glucose tolerance test. Obesity and type 2 diabetes rates in parents of cases, were %42.8 (30 cases) and %12.8 (9 cases) respectively. According to homeostasis model assessment insulin resistance (HOMA-IR) index, insulin resistance was determined %88.5 (66 cases). In our study birth weight, duration of breast-feeding weren't association with metabolic syndrome and insulin resistance.

#### 1418 NUTRITIONAL SURVEILLANCE IN OVERWEIGHT/OBESE COELIAC CHILDREN (OCC)

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<sup>1</sup>R Mercurio, <sup>1</sup>D Guttadoro, <sup>2</sup>A Piedimonte, <sup>1</sup>A Mosca, <sup>1</sup>L Petrarca, <sup>1</sup>M Barbato, <sup>1</sup>A Giacomini, <sup>1</sup>A Vania. <sup>1</sup>Dept of Paediatrics and Paediatric Neuro-Psychiatry; <sup>2</sup>Institute of Nutrition, 'Sapienza' University of Rome, Rome, Italy

**Background and Aims** Gluten-free-diet (GFD) in Coeliac Disease is often complicated by excessive body weight. This study aims to evaluate the efficacy of a balanced GFD.

**Methods** Retrospective study. We included OCC followed-up from 2006–2010, with a 1 year follow-up after the diagnosis. For all