(150–160bpm), mean blood pressure (43–46mmHg) and RI during infusion. Plasma lactate concentrations decreased and urine output improved over 48h. One patient developed stroke pre-treatment; another had persistent hypotension after milrinone. Sixteen (94%) neonates survived to hospital discharge.

Conclusions Milrinone improves CO and cerebral blood Vm without significant effects on blood pressure and RI. (Funded by Stollery Children's Hospital Foundation).

320 THE REGIONAL HEMODYNAMIC EFFECTS OF DOXYCYCLINE IN NEWBORN PIGLETS WITH ASPHYXIA-REOXYGENATION

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Background Neonatal asphyxia has significant morbidities including hypoxic-ischemic encephalopathy, necrotizing enterocolitis and acute renal failure. These complications are associated with regional perfusion deficits. During reoxygenation, oxygen free radicals are produced and can activate matrix metalloproteinase-2, leading to cardiovascular dysfunction. There is little information regarding the effect of doxycycline, a known inhibitor of matrix metalloproteinase –2, on regional perfusion. We hypothesized that doxycycline would improve regional hemodynamics during recovery in asphyxiated newborn piglets.

Methods Piglets (1–5 days old) were acutely instrumented for continuous monitoring of blood flow at the left common carotid, superior mesenteric and renal arteries (CAFI, SMAFI and RAFI, respectively). After stabilization, 2hrs of normocapnic alveolar hypoxia (10–15% oxygen) was induced followed by 4hrs of reoxygenation (21% oxygen). Piglets were blindly randomized to receive either normal saline or doxycycline (3, 10, or 30mg/kg) intravenously 5 minutes into reoxygenation (n=7/group). Sham-operated piglets (n=5) received no hypoxia-reoxygenation.

Results All piglets had regional perfusion deficits at 2hrs of hypoxia (CAFI: 76±[SD]16%; SMAFI: 57±21%; RAFI: 11±10% of respective normoxic baseline). During 4hrs of reoxygenation, doxycycline at 30 mg/kg increased RAFI (p<0.001) and CAFI (p=0.06)(at 240min reoxygenation: 66±33% vs. 36±21% [p=0.04] and 92±52% vs. 66±22% [p=0.09] for controls, respectively). Despite attenuating mesenteric hyperemia at 10min of reoxygenation (p=0.03), there was no difference in SMAFI at the end of reoxygenation.

Conclusions In newborn piglets with hypoxia-reoxygenation, post-resuscitation administration of high-dose intravenous doxycycline improves carotid and renal hemodynamics and may attenuate transient mesenteric hyperemia during recovery.

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321 EARLY TARGETED CLOSURE OF PATENT DUCTUS ARTERIOSUS IN EXTREME PRETERM BABIES REDUCES BRONCHOPULMONARY DYSPLASIA

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Background PDA is common among very low birth weight babies. There is however growing controversy regarding treatment and clinicians are uncertain to treat or not to treat a PDA.

Objective To compare mortality and complications of prematurity in the following groups

1. Effect of gestation; babies ≤ 28 weeks & 29–31 weeks
2. Early (< 72 hrs) treatment vs. later symptomatic treatment of a PDA
3. Treatment vs. no treatment of a significant PDA

Methods All babies born < 32 weeks gestation were included in this study. A total of 223 babies met the inclusion criteria from January 2009 to September 2011. Of these 22 were excluded from analysis due to incomplete data. SPSS version 17© was used for data analysis.

Results

1. Babies ≤ 28weeks compared to 29–31weeks gestation had significantly higher PDA (61%vs.23%; p<0.05), Bronchopulmonary dysplasia (BPD) (40%vs.12%; p<0.05), duration of respiratory support (27days vs. 9days; p<0.05) and mortality (16%vs.0%; p<0.05)
2. Among babies with significant PDA, BPD was significantly reduced with early treatment of a PDA as compared to later symptomatic treatment (66.7%vs.82.3%; p<0.05)
3. There was significantly higher incidence of death among babies not treated for PDA as compared to those who received treatment (29% vs. 0%; p<0.001).

Conclusion

1. Babies born ≤ 28 weeks have higher burden of PDA, mortality and complications of prematurity.
2. Treatment of PDA significantly reduces mortality.
3. Early treatment of PDA significantly reduces BPD compared to later treatment.

322 COULD CARDIAC ENZYMES AND THE CARINAL ANGLE MEASUREMENT BE USED AS INDICATORS OF HEMODYNAMICALLY SIGNIFICANT PATENT DUCTUS ARTERIOSUS?

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Aim In this blind prospective study, we aimed to examine the utility of cardiac enzymes and the carinal angle measurement in detecting hemodynamically significant patent ductus arteriosus (PDA), evaluating response to treatment and follow-up in preterm infants.

Patients and Methods We evaluated 39 preterm infants < 32 gestational weeks. Every patient had an echocardiogram (ECHO) taken on postnatal day 3 by a cardiologist blinded to clinical findings and laboratory results. ECHO was repeated when necessary. N-terminal pro-brain natriuretic peptide (NT-proBNP), cardiac troponin T (cTnT), creatine kinase MB isoenzyme (CK-MB) levels were measured on postnatal days 0, 3 and 7. The carinal angle on chest radiographs taken on the same days was measured. Those with PDA deemed hemodynamically significant based on ECHO were referred to as ehsPDA group. Those in this group who also had clinical signs were referred as sPDA subgroup.

Results The mean gestational age was 28.7 weeks; mean birth weight was 1120 g. Initial ECHO showed PDA in 27 patients (69.2%), 11 of which (40.7%) had ehsPDA. Eight patients had sPDA. When the ehsPDA and sPDA groups were compared to the rest, no statistically significant difference was found in terms of the carinal angle, NT-proBNP and cTnT. CK-MB levels were significantly low in ehsPDA and sPDA groups on postnatal days 3 and 7 (p=0.017, p=0.026, respectively).

Conclusion NT-proBNP, cTnT, CK-MB and the carinal angle were not found useful in detection and follow-up of hemodynamically significant PDA.

323 ROLE OF AMINO TERMINAL PRO-BNP IN DIFFERENTIATING CARDIAC FROM RESPIRATORY PROBLEMS IN EGYPTIAN NEONATES PRESENTING WITH RESPIRATORY DISTRESS

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Background and Aim The role of N terminal pro- B type natriuretic peptide (NT-pro-BNP) to differentiate cardiac and respiratory causes of dyspnea in adults has been previously investigated. This study is conducted in order to evaluate the diagnostic value of this peptide in differentiating between cardiac and respiratory causes of neonatal respiratory distress.
Methods A prospective case-control study was conducted on 30 neonates >34 weeks gestational age, presenting with signs of respiratory distress who were evaluated clinically and underwent NT-pro-BNP assay on the 4th and on the 10th days of life if respiratory symptoms continued. Echocardiography was performed for all cases and accordingly classified into cardiac and respiratory problems (CP&RP) groups based on the presence of significant cardiac defects. The control group included 17 healthy neonates.
Results Each of the CP and RP groups included 15 infants. The mean value of NT-pro-BNP was significantly higher in the CP group than the RP group on the 4th day of life. The best calculated cut-off point was 196.4 fmol/L (95% CI 61.7–95.2%, sensitivity of 73.3% and specificity of 64.3%). A level of 127fmol/L could be used to rule out cardiac disease (sensitivity of 100% and specificity of 37%). A level of 480 fmol/L can be used to rule in cardiac disease (sensitivity of 46% and specificity of 100%). In between these 2 levels, there is a grey zone with 5 cases (33.3%).
Conclusions NT-pro-BNP levels can be a useful biomarker to identify neonates with cardiac problems.

324 A NEUROBEHAVIORAL INTERVENTION AND ASSESSMENT PROGRAM IN VERY LOW BIRTH WEIGHT INFANTS; OUTCOME AT 5 YEARS OF CORRECTED AGE

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Background We carried out a RCT to evaluate the effect of the Infant Behavioral Assessment and Intervention Program (IBAIP) in 176 VLBW infants. This post discharge intervention program was given until 6 months CA. Positive intervention effects were found on mental outcome at 6 and on motor outcome at 6, 24, and 44 months.
Aim To evaluate the effect of the IBAIP in VLBW infants on cognitive, neuromotor, and behavioral development at 5.5 years CA.
Methods Development was assessed using the Wechsler Preschool and Primary Scale of Intelligence (WPPSI-III-NL), the Movement Assessment Battery for Children (MABC-2), the Developmental Test of Visual Motor Integration (VMI), a neurological examination, and the Strength and Difficulties questionnaire (SDQ).
Results Sixty-nine VLBW children in the intervention and 67 VLBW children in the control group participated at 5.5 years CA (response rate 77.3%). Some important social and perinatal risk factors were at the disadvantage of the intervention group. Verbal and performance IQ-scores < 85 occurred significantly less often in the intervention group (17.9% versus 33.3%, p=0.041, and 7.5% versus 21.2%, p=0.023, respectively). After adjustment, only the odds ratio for performance IQ was significant: 0.24, 95% CI: 0.06–0.95. Significant intervention effects on mean scores were found on WPPSI-III-NL subtasks block design and vocabulary. After adjustment, mean scores were significantly better in the intervention group on these WPPSI-III-NL subtasks, MABC-2 component aiming and catching and the VMI.
Conclusions The IBAIP leads to improvement in intelligence, ball skills and visual-motor integration at 5.5 years CA.

325 ATTENTION PROBLEMS IN VERY LOW BIRTH WEIGHT PRESCHOOLERS

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Aims To compare very low birth weight (VLBW) children's performance on attention measurements at preschool age to term-born peers, and to assess associated risk factors.
Methods Attention was assessed in 151 VLBW preschoolers and 41 term-born peers at 44 months of corrected age, using the Visual Attention task of the Developmental Neuropsychological Assessment, and the Gift Delay task. Parents completed the Attention Problems domain of the Child Behavior Checklist (CBCL-AP), the Inhibit domain of the Behavior Rating Inventory of Executive Function (preschool version), and the Inattention/Distractibility scale of the Sensory Profile. The investigator completed the Attention domain of the Miller Assessment for Preschoolers' Behavior During Testing (BDT-AD). Potential perinatal and socio-demographic risk factors for attention problems were analyzed using logistic regression analysis.
Results Compared with term-born peers, VLBW children scored worse on five out of six attention measurements and had significantly more abnormal scores on the CBCL-AP and BDT-AD. Analyses of BDT-AD indicate that VLBW children mostly scored abnormally on the items regarding attention maintenance. VLBW children were at higher risk for attention problems according to a composite score of significant attention problems (OR 4.6, 95% CI: 1.7–12.4). Risk factors for attention problems were having a mother born abroad (OR 3.5, CI: 1.7–7.2) and bronchopulmonary dysplasia (BPD) (OR 2.5, CI: 1.0–6.0).
Conclusions At the time of school entry, VLBW children have more difficulty maintaining attention than their term-born peers. Both social and biological risk factors were predictive of attention problems. Using the CBCL-AP and BDT-AD may lead to timely intervention.

326 VISUAL SENSORY AND PERCEPTIVE FUNCTIONS IN VERY LOW BIRTHWEIGHT (VLBW) PRESCHOOLERS

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Introduction Recent meta-analytic findings show impaired visual perceptive performance for VLBW children. Little is known about relationships between visual sensory and visual perceptive processes in VLBW children.
Methods VLBW children (n=121) and age matched controls (n=50) were assessed using tests for oculomotor functioning (eye position, motility, convergence, nystagmus and torticollis), visual sensory functions (visual acuity, visual field, contrast sensitivity, color perception and stereovision) and visual perceptive abilities (form and motion coherence, Position in Space, Figure-Ground, Visual Closure Form Constancy and face perception).
Results Compared to term born controls, VLBW children showed more disorders of eye position ($p = 0.01$) and convergence ($p = 0.03$). For visual sensory functions, VLBW children had lower single symbol ($p<0.001$), but not different line symbol ($p = 0.06$) visual acuity and displayed reduced or absent stereovision more often ($p = 0.04$). Visual perceptive tasks showed reduced performance on both form and motion coherence tasks ($p = 0.01$) and on the subtests Position in Space ($p = 0.001$), Figure-Ground ($p = 0.002$), and Visual Closure