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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

($p=0.03$) but not on Form Constancy ($p=0.17$). Compared to VLBW children without any oculomotor or visual sensory deficit, VLBW children with one or more of these deficits performed worse only one visual perceptive measure (Figure-Ground perception; $p=.01$).

Discussion We found reduced functioning in VLBW children for binocularity, perceptual grouping, visual-spatial judgment and figure-ground segmentation. Except for figure-ground segmentation, these visual perceptive deficits remain present in the absence of oculomotor and sensory deficits.

327 ANTENATAL FACTORS ASSOCIATED WITH DEVELOPMENTAL DELAY IN MODERATELY PRETERM-BORN CHILDREN, RESULTS OF A COHORT STUDY

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Background Worldwide 6–9% of all children are born moderately preterm (32nd–35th weeks' gestation). They are at risk for developmental delay in early childhood. Knowledge on the influence of antenatal maternal, fetal, and delivery-related factors on the development of moderately preterm-born children is limited.

Objective To determine the association between developmental delay in early childhood and antenatal factors in moderately preterm-born children.

Design/methods We measured development with the Ages and Stages Questionnaire (ASQ) at age 43–49 months in 834 moderate preterms born in 2002–2003, in a community-based cohort study.

A total ASQ score > 2SD below the Dutch mean reference was considered to indicate developmental delay. Data on maternal, fetal, and delivery-related factors were obtained from medical records. We used logistic regression to estimate odds ratios (ORs) for developmental delay, adjusted for socio-demographic variables.

Results In univariate analyses, several fetal and maternal factors were associated with risk of developmental delay. In multivariate analyses, only pre-existent obesity (odds ratio (OR) 3.0, 95% confidence interval (CI): 1.5–5.8), multiparity (OR:2.8, CI: 1.6–4.9), Small-for-gestational-age (SGA) (OR:2.9, CI: 1.4–6.1), multiple pregnancy (OR:1.8, CI: 1.0–3.3), and male gender (OR:4.1, CI: 2.2–8.6) increased risk of developmental delay.

Conclusions Of all antenatal factors studied, no modifiable factors were associated with developmental delay except for SGA. Enhanced prevention of intra-uterine growth restriction, interventions aiming at reducing pre-pregnancy weight in fertile women, and reducing number of transferred embryos in assisted reproduction might offer routes to improve developmental outcomes in children eventually born moderately preterm.

328 VALIDATION OF ERIC - A NEW PARENTAL REPORT INSTRUMENT FOR DETECTION OF COGNITIVE DELAY IN AT-RISK INFANTS

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Background and Aims At 2 years, cognitive delay is the most common form of developmental disability in the preterm population (Marlow, 2004). We have established the diagnostic properties of a new cognitive developmental screen (Early Report by Infant Caregivers, ERIC), between 10–24 months.

Methods Participants. 362 infants aged 10–24 months, with at least one of: weight < 1500g, < 34 completed weeks gestational age, 5-min Apgar < 7, HIE. Children with impairments preventing fair assessment by ERIC were excluded. Parents/caregivers completed ERIC at home before administration of the Cognitive Scale of the Bayley Scales of Infant Development III. Delay was defined as a prematurity-corrected Bayley score < 80 (Moore et al, 2011).

Results Nineteen infants were delayed, with age-corrected ERIC scores lower than those without delay ($p<0.001$). On ROC analysis, Area Under the Curve was 0.86, with 83% sensitivity (95% CI 66–99.9%), 79% specificity (75–83%), 19% Positive Predictive Value (PPV) (2–36%), and 98% Negative Predictive Value (NPV) (96–99.6%). The low PPV reflects low prevalence of delay (5.2%) in this sample.

Conclusions ERIC provides a useful diagnostic screening tool, able to rule out developmental delay in this population (NPV = 98%).

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329 SEVERE RETINOPATHY OF PREMATURITY (ROP) REMAINS A MARKER OF CHILDHOOD DISABILITIES: RESULTS FROM THE CAFFEINE FOR APNEA OF PREMATURITY TRIAL

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Background The Cryotherapy for Retinopathy of Prematurity Cooperative Group showed that the severity of ROP was a marker for functional disability at 5.5 years in infants ≤1250 g BW who were born in the late 1980s.

Objective To determine whether severe ROP remains a strong predictor of visual and non-visual disabilities at age 5 years in infants ≤1250 g BW who were enrolled in the CAP trial between 1999 and 2004.

Methods 5-year follow up of 1580 surviving CAP children with known ROP status. Severe ROP was defined as stage 4 or 5 disease or receipt of retinal therapy in at least one eye. Outcomes were disabilities in 6 domains, and including cognitive impairment (Full Scale IQ < 70), motor impairment (GMFCS level 2–5), deafness and blindness. Odds ratios were adjusted for antenatal steroids, gestational age, sex, multiple birth, and mother's education.

Results There were 94 survivors with and 1486 without severe ROP. Rates of visual and non-visual disabilities were significantly higher in children with severe ROP (Table 1).

Abstract 329 Table 1

Outcome	Severe ROP	No Severe ROP	Adjusted OR	95% CI
IQ < 70	15%	4.5%	4.0	1.9 to 8.4
Motor impairment	13%	2.4%	4.0	1.9 to 8.6
Deafness	13%	2.4%	4.0	1.9 to 8.6
Blindness	14%	0.1%	129	21 to 786
Any disability	45%	16%	3.5	2.2 to 5.6