

(mean age at surgery: 1.4 years) and 32 healthy subjects. ROCFT was scored according to three different validated scoring methods.

Results Results varied markedly between the scoring methods. When scored according to Meyers & Meyers, patients performed significantly worse than controls in the copy task ($p=0.03$), whereas no significant differences were found in the memory task. Scoring according to Wallon and Mesmin showed clear differences between subjects and controls with respect to the approach how to construct the figure: 78% of CHD patients (controls: 47%) displayed an unstructured or intermediate approach to drawing the figure, whereas only 22% of CHD patients (controls: 53%) chose a complex approach ($p=0.001$). Scoring according to Bernstein et al. showed no differences between groups.

Conclusions Adolescents with surgically treated CHD demonstrate deficits in visuospatial and executive function. The ROCFT provides information on different functional aspects, which cannot adequately be assessed with one single scoring method.

154 BORN TOO SMALL OR TOO EARLY - THE EFFECT OF PHYSICAL FITNESS IN YOUNG ADULTHOOD ON COGNITIVE PERFORMANCE

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Background and aims Physical exercise has been demonstrated to give positive cognitive effects. We have previously reported lower exercise capacity in otherwise healthy young men with low birth weight or preterm birth. The objective of this study was to investigate the association between perinatal risk factors, cognitive performance and physical fitness in young adulthood.

Methods This was a population-based cohort study including 218,915 young men born in Sweden 1973–1981, conscripted for military service in 1993–2001. Data on birth characteristics was obtained from the Medical Birth Register and linked to information on cognitive test scores and results on ergometer cycling test from the Military Conscript Register.

Results Exercise capacity, as measured by ergometer cycling, was positively associated with cognitive performance, as measured by global intelligence stanine scores, $p<0.001$. The subgroup with shortest gestational age, less than 28 weeks, exhibited both the lowest cognitive test scores and the lowest exercise capacity. Low birth weight standard deviation scores (BWSDS) for gestational age was associated with lower cognitive performance in a stepwise manner. Using ordinal regression analysis, low BWSDS remained independently associated with low cognitive scores in young adult age.

Conclusions The lower cognitive performance observed in young adults born prematurely or with low birth weight is associated with physical fitness. Targeting physical exercise may be an intervention to enhance cognitive performance and educational achievements in a population at risk, such as survivors of preterm birth and poor fetal growth.

155 EFFECT OF IN UTERO EXPOSURE TO ISCHEMIC-HYPOXIC CONDITIONS ON CHILDHOOD ATTENTION DEFICIT HYPERACTIVITY DISORDER

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Objective To examine the association between ischemic-hypoxic conditions (IHC) and Attention Deficit Hyperactivity Disorder (ADHD) by gestational age at delivery and race/ethnicity.

Methods A nested case-control study using the Kaiser Permanente Southern California (KPSC) medical records. Study cohort were children aged 5–11 years who were delivered and cared for in KPSC Healthcare system between 1995–2010 ($n=308,634$). Cases were children with a clinical diagnosis of ADHD and obtained at least 2 prescriptions specific to ADHD during the follow-up period. For each case, five controls matched to cases on child age at time of diagnosis were selected. Exposures were defined based on ICD-9 codes. A conditional logistic regression model was used to estimate adjusted odds ratios (OR).

Results Among eligible children, 13,613 (4.3%) had a diagnosis of ADHD. Compared to control children, case children were more likely to be male and of White or African-American race/ethnicity. Case children than controls were more likely to be exposed to IHC (OR=1.16, 95% confidence intervals [CI] 1.11–1.21). Analysis of cases and controls stratified by gestational age revealed that case children born at 28–33, 34–36, and 37–42 weeks of gestation, were significantly more likely to be exposed to IHC; 1.6-fold (95% CI, 1.2–2.2), 1.2-fold (95% CI, 1.0–1.4), and 1.1-fold (95% CI, 1.0–1.2), respectively, compared to control children. IHC was associated with increased odds of ADHD across all race/ethnicity groups.

Conclusion These findings suggest that IHC is independently associated with an increased risk of childhood ADHD especially in early preterm birth.

156 CEFAZOLIN PLASMA PROTEIN BINDING AND ITS COVARIATES IN NEONATES

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Background and aim Cefazolin (CFZ) is highly and saturably bound to albumin in adults. It is mainly used as prophylactic antibiotic agent. The aim of the present study is to describe CFZ protein binding and its covariates in neonates.

Methods Neonates to whom intravenous CFZ (50 mg/kg) was administered as standard care prior to an invasive procedure were included. Total and unbound CFZ plasma concentrations were determined at ½; 2; 4 and 8 hours after CFZ administration. Linear and multiple regression analyses were used to document covariates of unbound CFZ fraction. For paired analysis of unbound CFZ fractions Wilcoxon signed rank test was used.

Results Forty patients with median weight 2767 (range 830–4200) grams and median postmenstrual age (PMA) 39 (25–45) weeks were included. Median unbound CFZ fraction was 0.39 (0.10–0.73). Linear regression of unbound CFZ fraction versus unbound CFZ plasma concentration ($R^2=0.39$) had a slope significantly different from zero ($p<0.001$). In a multiple regression analysis, albuminaemia, total CFZ concentration, indirect bilirubinaemia and PMA resulted in an R^2 value of 0.496. Median unbound CFZ fraction at peak concentration (0.46; range 0.28–0.69) was significantly higher compared to trough level (0.36; range 0.17–0.73) ($p<0.001$).

Conclusions Between patient and within patient saturability of CFZ protein binding were also documented in neonates. We revealed a median plasma unbound CFZ fraction of 0.39 in neonates, which is higher than reported values in adults. The integration of CFZ protein binding aspects in future pharmacokinetic/pharmacodynamic research is warranted to optimize CFZ dosing, especially in neonates.