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ARE ATTENTION PROBLEMS ASSOCIATED WITH EXECUTIVE DYSFUNCTIONS IN ADOLESCENTS WITH LOW BIRTHWEIGHT?

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Background/Aim: Adolescents with low birth weight are reported to have an increased prevalence of ADHD. Few studies have reported on executive functions in these children. The aim of this study was to examine attention and executive functions in two groups of low birth weight adolescents compared to controls. **Design/methods:** At age 14, two groups of adolescents with low birth weight (54 prematures with birth weight <1500 g (VLBW) and 60 small for gestational age born at term (SGA)) were compared to 83 controls with normal birth weight at term. Intellectual abilities were assessed using vocabulary and block design from the WISC-III. Attention was assessed by Conners' Continuos Performance Test (CPT-II), the Stroop Colour-Word test, Trail Making Test A&B (TMT A&B), and the Knox Cube test. Executive functions were assessed with Wisconsin card sorting test (WCST).

Results: On the CPT-II there were no differences in the scores of attention, impulsivity or vigilance between the groups and all were within normal limits. In contrast, the performances on Stroop, TMT A&B and the Knox Cube indicated problems with divided attention, active attention control and attention span among VLBW, but not SGA and controls. The differences persisted when adolescents with low IQ were excluded. In contrast to CPT-II, these tests demand mobilising initiative, scanning and active attention control. These abilities are elements of executive functions. To what extent tests of attention demands executive abilities may therefor be crucial to the outcome. The results on WCST suggests unsystematic problem solving, repetition of errors, and a poor ability to adjust responses to feedback in the VLBW but not in the other groups and thus problems with executive functions.

Conclusion: Our results suggest that attention problems in VLBW adolescents are not in the ADHD spectrum as assessed by the CPT-II, but may reflect dysfunctions in various aspects of executive abilities. We speculate that attention problems in VLBW adolescents may reflect a combination of attention and executive problems rather than classical ADHD.

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OUTCOME OF EXTREMELY LOW GESTATIONAL AGE (ELGA) INFANTS IN A SINGLE CENTRE

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Background: Due to improvements in perinatal and postnatal care viability of preterm infants has increased tremendously during the last decades. Unfortunately, recent population based data about outcome of ELGA infants suggest that severe disability is high among survivors. From random follow-up visits we suggested better outcome of infants born at our centre since 2000. We therefore initiated this study to evaluate the neurodevelopmental outcome of these high risk children.

Methods: We assessed the outcome of all liveborn ELGA infants (GA <27 weeks) admitted during 2000, 2001, and 2002. Follow-up evaluation was performed starting 2/2004 and included a clinical and neurological examination, Bayley Scales of Infant Development II, and assessment of height, body weight, and head circumference.

Results: Overall, 71 ELGA infants were admitted. Birth weight ranged between 360g and 1300g (median 690g). Nineteen infants (27%) died before discharge (22wk: 0/2; 23wk: 6/7; 24wk: 6/17; 25wk: 4/18; 26wk: 3/27). Follow-up is completed in 33 (63%) of the 52 survivors (22wk: 2/2; 23wk: 1/1; 24wk: 8/11; 25wk: 9/14; 26wk: 13/24). Corrected age ranged from 10 to 42 months (median 28 months). MDI-Scores were >84 in 23, 84–70 in 4, and <70 in 5 infants. PDI-Scores were >84 in 24, 84–70 in 4, and <70 in 4 infants. One infant was blind, 12 had visual impairment, five required hearing aids. Height, body weight, and head circumference at follow-up were below 2 SD in 21%, 24%, and 33%, respectively. Overall, neurodevelopment was classified as normal in 20 of 33 (61%) infants (22wk:1/2; 23wk: 1/1; 24wk: 4/8; 25wk: 7/9; 26wk: 7/13).

Conclusion: In our centre, survival rates were 70% for ELGA infants born since 2000, but follow-up data still show a high rate of disability in survivors. 61 % were normal on follow-up at 10 to 44 months. Follow-up of all survivors will be done till July to allow a more definite statement on outcome.

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VASCULAR ENDOTHELIAL GROWTH FACTOR GENE POLYMORPHISM AND THE RISK OF RETINOPATHY OF PREMATURITY

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Background: Vascular endothelial growth factor (VEGF) can play important role in the development of retinopathy of prematurity (ROP). There are interesting observations of VEGF concentration in the serum depending on its gene polymorphism and VEGF gene polymorphism can have an impact on abnormal vessel development in the retina in type II diabetes.

Aim: Analysis of association of C(-634)G polymorphism of VEGF gene promotor and the risk of ROP.

Methods: A sample of 62 newborns with mean birth weight 1082±32g and mean gestational age 28,3±0,3 wks. was evaluated. The infants were divided into 3 groups: A – no ROP (n=39), B – ROP not requiring treatment (n=10) and C - ROP requiring laser or cryotherapy (n=13). Molecular studies of VEGF polymorphism were performed with PCR-RFLP and RG-PCR methodology.

Results: The frequency of each alleles are similar in the studied groups (table).

Group	GG	GC	CC
A	22(56%)	14(35%)	3(8%)
B	6(60%)	4(40%)	0
C	9(69%)	4(31%)	0

Conclusion: There is no association of C(-634)G polymorphism of VEGF gene promotor and the risk of retinopathy of prematurity.

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GASTRIC ADENOCARCINOMA IN A BOY WITH X-LINKED AGAMMAGLOBULINEMIA

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Introduction: Gastric carcinoma is a rare tumor in childhood with mostly fatal prognosis. It is well recognized that children with severe combined immunodeficiency have an increased risk for atrophic gastritis and gastric lymphoma, but this association has never been described in children with X-linked agammaglobulinemia (XLA or Bruton's disease). We report the first case of a boy with XLA (diagnosis was confirmed by mutation analysis of the Btk gene) who developed gastric carcinoma following atrophic gastritis. **Case report:** At the age of 15 years, the boy developed megaloblastic anemia, paresthesias, and ataxia due to vitamin B12-deficiency. A pathologic Schilling test confirmed a lack of intrinsic factor with reduced absorption of vitamin B12. At this time, gastroduodenoscopy revealed complete intestinal metaplasia with glandular epithelial dysplasia of the antral mucosa. Parenteral administration of vitamin B12 led to remission of all complaints. A second gastroduodenoscopy 9 months later showed a polypoid tumor near the pylorus. Histologic examination of biopsy material confirmed diagnosis of a highly differentiated gastric adenocarcinoma from the intestinal type. Complete gastrectomy with jejunal interposition was performed. The resected lymph nodes showed normal tissue without any hint for metastasis. As early as six months after operation, the boy was in good health without any abdominal discomfort. He showed sufficient weight gain. Today, ten years after diagnosis, the young man is still in good health, and repeated follow-up investigations gave no clue for relapse.

Conclusion: XLA may be associated with atrophic gastritis and gastric carcinoma. Children with XLA should be regularly screened for vitamin B12-deficiency. In case of atrophic gastritis, only repeated gastroduodenoscopies may allow early diagnosis of gastric malignancies.

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ORGANOCHLORINE COMPOUNDS IN BREAST-FED VS. BOTTLE-FED INFANTS: PRELIMINARY RESULTS AT SIX WEEKS OF AGE

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Background : Polychlorinated biphenyls (PCBs), hexachlorobenzene (HCB), and 1,1,1-trichloro-2,2-bis(p-chlorophenyl)ethane (DDT) are ubiquitous compounds with carcinogenic and teratogenic properties. They are chemically very stable and lipophilic and, therefore, accumulate in our food-chain. They are prenatally transmitted from mother to fetus, and mother's milk due to its high lipid content is an elimination pathway of special importance. Therefore, breast-feeding has been held responsible for elevated concentrations of these organochlorine compounds as well as for harmful effects in children later in life.

Methods: Blood samples (2.5 mL) were taken from each 10 breast-fed and bottle-fed infants at 6 weeks of age. Blood specimens were immediately centrifuged, and serum was stored in glass tubes at –20°C until analysis. Three higher chlorinated PCB congeners (IUPAC nos. 138, 153, and 180), HCB, and the organic metabolite of DDT, *p,pá*-DDE, were analysed with capillary gas chromatography with electron capture detection. Reliability was tested with gas chromatography-mass spectrometry.

Results: There were no differences between the study groups of breast-fed and bottle-fed infants with regard to sex distribution, gestational age, birth-weight, age of the mothers, and smoking behaviour of the parents. In contrast, serum concentrations of all organochlorine compounds were significantly higher ($p<0.0001$) in breast-fed than in bottle-fed infants (mean): PCB 138, 0.38 vs. 0.10 ig/L; PCB 153, 0.49 vs. 0.11 ig/L; PCB 180, 0.31 vs. 0.04 ig/L; ΣPCB, 1.19 vs. 0.29 ig/L; HCB, 0.13 vs. 0.04 ig/L; *p,pá*-DDE, 1.05 vs. 0.18 nig/L.

Conclusions: Breast-feeding significantly increases the pollution of our infants with different organochlorine compounds as early as at 6 weeks of age. The progress of the present study will show whether this pollution will further increase with longer duration of breast-feeding, and whether breast-feeding bears any health risks for our offspring.

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CHRONOLOGICAL CHANGES OF NEONATAL SERUM *P,P*A-DDE CONCENTRATIONS IN GERMANY DURING THE PAST 20 YEARS

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Background: p,pá-DDE, the main metabolite of the insecticide DDT, is prenatally transmitted from mother to fetus. Many potential effects of low-level exposure have been reported, including preterm delivery, growth retardation, and neurological impairment, although scientific evidence is still lacking. We present *p,pá*-DDE concentrations in full-term human neonates over a time-period of 20 years in Germany.

Methods: Peripheral venous blood samples were taken from neonates born in 1984–1985 (n = 80) and 1994–1995 (n = 80), respectively, as well as cord-blood samples from neonates born in 1998 (n = 199), and peripheral venous blood samples from neonates born in 2002 (n = 20). Blood specimens were immediately centrifuged, and serum was stored at –20°C until analysis. Serum *p,pá*-DDE concentrations were determined with capillary gas chromatography followed by electron capture detection. Differences between study groups were tested for mean differences with Kruskall-Wallis test.

Results: There were no differences between the study groups with regard of sex distribution, birth-weight, gestational age, age of the mothers, or smoking behavior of the parents. We found a chronological, significant ($p<0.0001$) decline of neonatal serum *p,pá*-DDE concentrations, with highest values in 1984–1985 (mean; range: 1.49 ig/L; 0.30–5.58) and lowest in 2002 (0.18 ig/L; 0.07–0.54; reference value [95th percentile by rank], 0.30 ig/L).

Conclusions: Neonatal *p,pá*-DDE concentrations today are significantly lower than in the mid-1990s, when many studies of adverse side-effects of *p,pá*-DDE were performed. The present results suggest that the neonatal burden with *p,pá*-DDE is now so low that there may be no attendant health risks for our newborns and children, although further studies are warranted to elucidate possible long-term health effects even of low-level organochlorine pollution.