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LOW DOSE DEXAMETHASONE FACILITATES EXTUBATION IN VENTILATOR-DEPENDENT INFANTS – A MULTICENTRE INTERNATIONAL RANDOMISED CONTROLLED TRIAL. THE DART STUDY INVESTIGATORS

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Background: Corticosteroids (CS) given after birth in ventilator dependent infants facilitate extubation and reduce the rate of chronic lung disease, whether they are given early, moderately early, or later in the newborn period. However, recent controversy about adverse long-term effects of corticosteroids on the brain have led to a decrease in the use of CS, or to prescribing of smaller doses than shown to work in the existing randomised trials. The DART study was an international multicentre randomised controlled trial that had as its main aim to assess the effects of low-dose dexamethasone on long-term survival free of major neurologic disability. However, enrollment had to stop when recruitment fell to a rate that was too low to complete the study. A secondary aim of the DART study was to determine acute effects of low dose dexamethasone.

Aim: To determine the acute respiratory effects of low-dose dexamethasone, given after the first week of life, in ventilator-dependent very preterm/extremely low birthweight (ELBW) infants.

Methods: Very preterm (<28 weeks) or ELBW (birthweight <1000g) infants who were ventilator dependent after the first week of life and in whom the clinician considered corticosteroids were a treatment option were eligible for the study. After informed consent, infants were randomly allocated to receive either a 10-day tapering course of dexamethasone (0.89 mg/kg total over 10-days) or saline placebo. Random allocation was balanced within individual participating centres. Data were recorded on demographic variables, and ventilator settings at baseline and daily through the 10 days of treatment. Oxygen requirements at 36 weeks post-menstrual age were recorded.

Results: A total of 70 infants were recruited from 11 centres. The infants were comparable at baseline, with overall mean gestational ages of 24.9 (SD 1.3) weeks, birthweights of 701 (140) g, and postnatal ages of 24.6 (12.6) days. More infants were successfully extubated by 10 days in the dexamethasone group than in the controls (odds ratio 11.2, 95% CI 2.9, 51.6; P<0.001). The mortality rate appeared lower in the dexamethasone group but the comparison lacked precision (OR 0.52, 95% CI 0.10, 2.31; P=0.32). There was little evidence for a reduction in the rate of oxygen dependency at 36 weeks (OR 0.58, 95% CI 0.08, 3.32; P=0.71).

Conclusions: Low dose dexamethasone clearly facilitates extubation in ventilator-dependent very preterm/ ELBW infants after the first week of life.

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EFFICACY OF A MULTI-DISCIPLINARY THERAPY PROGRAMME FOR MORBIDLY OBESE CHILDREN AND ADOLESCENTS AFTER A MEAN DURATION OF 7 MONTHS TREATMENT

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Background/Aims: Concerning the treatment of morbid obesity in childhood there still do exist few evaluated treatment programmes. In Germany only 49% of 119 investigated outpatient treatment programmes work with the evidential successful combination of psychological, nutrition-oriented and physical care. 19% evaluate effects at the end of the therapy (Reinehr, T & Wabitsch, M., 2003). For the group of morbidly obese children and adolescents a special multi-disciplinary treatment procedure including dietetic, psychological and physical counselling and medical care has been introduced within the outpatient's clinic in the year 1999. The multi-disciplinary team's main objective is to achieve a change in a morbid obese person's handling of food and eating customs. This goal should be reached by means of an individual care, connected to a slow weight reduction and a rearrangement of living and nutritional habits towards a diverse, low-fat and carbohydrate-rich diet.

Methods: The period specified for participation to the programme is 6 to 12 months. Children and adolescents aged 8 to 18 years with a BMI over the 99.5 th percentile visit the ambulance weekly to attend alternately psychological or nutrition-oriented single sessions. The psychological units include cognitive-behavioural elements (Token-programmes, social competence-training, self-arrangement, ...) and cooperation with families. At the beginning of the dietetic sessions the nutritional condition of the patients is measured in order to introduce a slow change in eating habits. Therefore detailed documentations of the patient's food-intake in terms of eating-diaries are necessary. The third basic element of the MO-programme are weekly physical workouts, where patients get to know each other and (re)discover the joy of movement and sports. About every 3 months, medical controls are carried out.

Results: Only morbidly obese children and adolescents were included (n = 57, age = 13 years, BMI = 33.4), 46 patients (81%) could reduce their weight after a mean programme-participation of 7 months (range: 1–18 months). The average BMI reduction was -1.9 (-8.4 to -0.1). Regarding age, sex and duration of participation there couldn't be found any statistically significant differences.

Conclusions: Results illustrate that the majority of the patients could reduce their weight significantly due to the efforts of this special multi-disciplinary treatment.

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NEUTROPHIL APOPTOSIS IN NEONATES WITH INTRAUTERINE GROWTH RETARDATION BORN TO NORMOTENSIVE MOTHERS

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Background: Neutropenia is a common manifestation in neonates with intrauterine growth retardation (IUGR) related to preeclampsia and has been associated with decreased neutrophil production. In addition, the increased serum levels of soluble Fas Ligand (sFasL) found in neonates born to mothers with preeclampsia have been associated with increased apoptosis. Neutropenia is uncommon in neonates with isolated IUGR. AIM: To assess neutrophil apoptosis in neonates with IUGR born to normotensive mothers. **Material and methods:** Neutrophil apoptosis was studied in 19 neonates with IUGR born to mothers without hypertension and 19 gestational age matched, appropriate for gestational age (AGA) neonates during the first 12 hours after birth. Neutrophil apoptosis was evaluated by flow cytometric assessment of neutrophils stained with fluorescein isothiocyanate (FICT)-annexin-V, propidium iodide (PI) or expressing the Fas molecule.

Results: No significant difference in the percentage of neutrophils stained with FICT-annexin-V (mean 7.1%, SD 3.9% vs mean 7.8% SD 2.5%, respectively) or with PI (mean 7.6%, SD 4.3% and mean 7.8%, SD 3.4%, respectively) was found between the IUGR and the AGA neonates. Also the percentage of neutrophils expressing the Fas did not differ significantly between the IUGR (mean 30.2%, SD 11.3%) and AGA neonates (mean 24.8%, SD 9.3%).

Conclusion: Neutrophil apoptosis in IUGR neonates of normotensive mothers is not increased compared to AGA neonates. We speculate that neutropenia in IUGR is rather attributed to preeclampsia than intrauterine starvation.

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HIGH UMBILICAL CORD LEVELS OF INTERLEUKIN-1 RECEPTOR ANTAGONIST ARE ASSOCIATED WITH SEVERE NEONATAL MORBIDITY

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Background: Increased levels of umbilical cord proinflammatory cytokines are associated with early and late neonatal morbidity. Extremely preterm male infants need more circulatory and ventilatory support than female infants, and have worse outcome. Experimental interventions which include administration of interleukin-1 receptor antagonist (IL-1ra) improves cerebral outcome after neonatal brain injury, and stabilises arterial blood pressure after experimental sepsis. Furthermore, IL-1ra is increased in amniotic fluid and neonatal urine from female fetuses/newborns. We tested the hypothesis that umbilical cord IL-1ra is related to infant gender, postnatal blood pressure and neonatal morbidity. **Method:** Blood from the umbilical cord of 58 infants (33 male, 25 female) with gestational age <32 weeks was sampled at birth. Receiver operating characteristics (ROC-curve) were used for identifying IL-1ra values with high sensitivity and specificity for "poor outcome". "Poor outcome" was defined as either death (n=3), grade 3–4 IVH or cystic PVL (n=9). A cut-off for IL-1ra at 13500 pg/ml rendered an area under the curve (AUC) = 0.735, p-value=0.013, with 67% sensitivity and 85% specificity for "poor outcome".

Results: There was no correlation between IL-1ra and newborn gender, blood pressure during the first 72 hours or need for inotropic support. There were significant correlations (p-value; r_s) between IL-1ra and a) depression at birth, including Apgar at 1 minute (0.020; -0.305) and 10 minutes (0.020; -0.313) and, b) age at intubation during the first 12 hours (0.011; -0.330). Besides the association with "poor outcome", IL-1ra values above 13500 pg/ml were associated with other parameters of neonatal morbidity such as development of NEC (p=0.015), sepsis with positive blood culture (p=0.027), and need for extra oxygen at 36 weeks (p=0.033). There were no significant correlations between IL-1ra >13500 pg/ml and development of ROP (p=0.096), days with mechanical ventilation (p=0.098), or clinical seizures (p=0.220).

Conclusion: IL-1ra levels above 13500 pg/ml in umbilical cord blood are associated with depression at birth, need for early intubation and severe neonatal morbidity.

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BODY SIZE AT BIRTH, BLOOD PRESSURE AND METABOLIC PROFILE IN GREEK CHILDREN AGED 3 TO 10 YEARS

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Background: The low birth weight has been reported to be associated with the development of premature atherosclerosis and increased risk of diabetes, coronary heart disease and hypertension. The aim of this study was to assess the role of birth weight on metabolic profile in childhood.

Methods: Plasma total cholesterol (t-CHOL), high density lipoprotein cholesterol (HDL-C), low density lipoprotein cholesterol (LDL-C), triglycerides (TRG), apolipoprotein A-1 (Apo A-1), apolipoprotein B (Apo B), apolipoprotein E (Apo E), lipoprotein (a) [Lp(a)], fasting glucose (Glc) and insulin (Ins) were measured in 172 Greek children aged 3 to 10 years old, born small-for-gestational age (SGA, n=28), large-for-gestational age (LGA, n=45) and appropriate-for-gestational age (AGE, n=101). Body mass index (BMI, kg/m²) and waist circumference were measured.

Results: There were no significant differences in plasma t-CHOL, HDL-C, LDL-C, TRG, Apo A-1, Apo B, Apo E and fasting Ins between the three groups. Children born LGA, with birth weight 97th percentile for age and gender had lower Lp(a) levels than AGA (p=0.01) and SGA with birth weight <3th percentile for age and gender (p=0.05), according to Kruskal-Wallis test and Mann-Whitney U test for Lp(a). Also, children born SGA had lower Glc levels than AGA (p<0.05) and LGA (p=0.001). BMI (p<0.01) and waist circumference (p<0.0001) were lower in children born SGA (p<0.01) than AGA. In children born LGA, there was a negative correlation between Apo E levels and BMI (p<0.05), waist circumference (p=0.05) and body weight at the time of the examination (p<0.05), (Spearman correlation test). In children born SGA, there was a significant positive correlation between Glc levels and body weight (p<0.01), height (p<0.01) and waist circumference (p<0.01) at the time of the examination. Lp(a) levels were correlated positively with height (p<0.05) in children born SGA.

Conclusion: Birth weight might not affect considerably the examined metabolic parameters in Greek children with exception to Lp(a) and Glc levels

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RELATIONSHIP BETWEEN BIRTH WEIGHT, BLOOD PRESSURE, BMI AND OTHER ANTHROPOMETRIC INDICES IN GREEK CHILDREN 3 TO 10 YEARS OLD

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Background: The "fetal origins hypothesis" asserts that birth weight is inversely related to later blood pressure. Additionally, low birth weight seems to be associated with later risk for central obesity, which also confers increased cardiovascular risk. This study investigates the relationship between birth weight, blood pressure, BMI and some anthropometric indices in Greek children, aged 3 to 10 years.

Methods: A total number of 173 Greek children 3 to 10 years old were classified into 3 groups according to their birth weight: small-for-gestational age (SGA, n=28), large-for-gestational age (LGA, n=43) and appropriate-for-gestational age (AGE, n=102). Anthropometric indices were measured as: BMI, head circumference (HC), skinfold thickness at biceps (BCF), triceps (TCF), subscapular (SSF) and suprailiac (SIF) areas, chest, waist and hip circumference, and were correlated to arterial blood pressure (systolic-SBP and diastolic-DBP).

Results: No differences were observed as for SBP and DBP in relation to percentiles for age, height and gender for BCF, SSF and SIF. Children born SGA had lower BMI (p<0.05), HC (p<0.0001), TCF (p<0.01), chest (p<0.001), waist (p<0.0001) and hip circumference (p<0.0001) than children born AGA. Children born LGA had lower TCF (p<0.05) and waist circumference (p<0.05) than AGA, but they had higher chest (p<0.001) and hip circumference (p<0.01) than SGA. There was positive significant correlation between BMI and SBP in children born SGA (p<0.01) and AGA (p<0.0001) but not LGA. Positive correlation was found between BMI and DBP (p<0.01) in children born LGA but not in SGA and AGA.

Conclusion: This study demonstrates that it is the BMI which correlates with blood pressure in the studied group of Greek children.