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ADAPTED BARKOVICH SCORING SYSTEM (ADBARKO) IN ASPHYXIA-TATED FULL-TERM INFANTS.

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Aims: To develop an extended asphyxia-score based on ultrasound and MR-scan in order to gain further insight into the pathophysiology and to refine individual prognostication.

Methods: Full-term infants born between January 2001 and February 2005, fulfilling criteria of Levens for asphyxia. Serial sonograms and MR-scan (T1, T2 and DWI) on day 4 or 5 post partum were used for designing a score of injury concerning the basal ganglia/thalamus (Bg/Thal) and (sub)cortex/white matter (Sc/Wm). Involvement of caudate and equivocal inversion of signal intensity in posterior limb of the internal capsule (PLIC) were added. This score was compared with the Barkovich score (Barko) from which ours was derived. Bad outcome (cerebral palsy (CP) or death) was related to the scores.

Results: 60 MR/ultrasound scans were scored. Whether or not neonates developed CP was examined at the minimum age of 18 months. 4 scans were normal as were the neonates. In 29 (48%) the scores differed from Barko. Bg/Thal were bilaterally affected in 39: 3 developed CP, 27 died. In 13, only Bg/Thal were affected (CP1,died5). A combination with Sc/Wm-injury was seen in 26: watershed injury (WI) in 5 (CP0,died2), extensive cortical lesions (ECL) in 20 (CP1,died18) or punctate white matter haemorrhage (PWMH) in 1. In 17 only the Sc/Wm was affected: WI in 5 (CP1,died0), ECL in 3 (CP0,died1) or PWMH in 4 (CP1,died1). In 5 isolated diffuse leukomalacia was seen (CP1,died1). There was a significant difference in involvement of caudate in severe (17/28) and mild (8/32) Sc/Wm-injury ($p=0.005$, Fisher's-exact-test).

Conclusion: The adBarko includes new patterns. Among others isolated diffuse leukomalacia is seen with a pathophysiological mechanism of axonopathy rather than selective-neuronal-necrosis. There is a significant difference in involvement of caudate in severe and mild Sc/Wm-injury. At this moment relation to outcome is difficult (many died or age under 18 months yet).

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EFFECT OF WATCHING TELEVISION AND USING COMPUTER ON OBESITY IN 14–16-YEAR-OLD CHILDREN LIVING IN TWO DIFFERENT SETTINGS.

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Background: Over the past 30 years, the prevalence of children obesity has increased. Watching television is associated with obesity, because of eating during viewing and eating highly advertised foods and poor fitness.

Aim: The purpose of this study was to evaluate the effect of television viewing and using computer on pediatric obesity in three different environments: town and village.

Methods: Data were collected from 2 grammar-schools (in the town and the village). Short questionnaires were used to gather data on the time spent by watching TV, using computer during a weekday and weekend. Height and weight were measured by using standard methods and were used to calculate BMI (the weight in kilograms divided by the height in meters squared).

Results: In total 591 children (aged 14–16 years) were included in the analyses, 299 boys and 292 girls, and 327 in the town (group 1) and 264 in the village (group 2). Overall, 12.8% of children had a BMI at or above the 85th percentile, and 1/3 these kids (3.9%) had at or above the 95th percentile. Rates were lower for group1: 10.3% and 2.14%; group2: 15.9% - 85th and 6% - 95th. More village children (group2: n=178 vs group1: n=33) watched television longer than 2h per day and spend more than 2h using computer (group2: n=113 vs group1: n=64), and these findings were related to higher BMI.

Conclusions: Television viewing and using computer were longer in children, who live in the village. In the village there were more children, who had a BMI at or above 85th and 95th percentile. Time spent watching television and using computer was significantly associated with obesity and was related to setting.

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IS MATERNAL AGE AT DELIVERY RELATED TO CHILDHOOD ALLERGY?

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Background: The frequency of atopic diseases appears to have been increasing during recent decades. There has been a large rise in the development of precipitating factors. Several studies report that allergic diseases depend on maternal age at delivery.

Aim: The aim of our study was to investigate the relationship between maternal age at delivery and the prevalence of atopic symptoms.

Methods: A retrospective cohort study included 124 children aged 4 months–16.5 years (average age 4.87 years) was investigated by the questionnaire. The group of children with allergy (group A) consisted of 65(52.4%) patients and in the control group(B) there were 59(47.6%) children. All mothers were questioned about the age at delivery, family atopic history, and children atopic diseases recorded.

Results: The enrolled children were divided into 3 groups: 1st maternal age at birth was <25 (n=39; 31.4%), 2nd- 26–30 (n=56; 45.2%), 3rd- >30 (n=29; 23.4%). The 1st group showed atopic symptoms in 59(16%), for 2nd group it was 50%(28), 3rd -48.3%(14). The mean age at birth of children with allergy symptoms(gr.A) was 27.7 years while it was 28.2 for the children without allergy symptoms(gr.B). In the group A 80%(n=52) children suffered from respiratory symptoms, 32.3%(n=21) - skin allergy, 10.8%(n=7) met criteria for food allergy. In those three groups the mean maternal age at delivery was respectively 28.03, 28.33 and 27.86 years.

Conclusions: 1.The allergy symptoms were more frequent in the children whose maternal age at birth was <25 years, however the distribution was not statistically significant. 2.The difference between average ages in the groups A and B was not statistically significant. 3.Our study has not demonstrated any association between the maternal age at birth and the allergy symptoms in the child and has not confirmed previous reports. 4.We assume that further research should be performed.

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COMPLICATION OF PREGNANCY, MODE OF DELIVERY AND DEVELOPMENT OF ATOPIC DISEASE DURING THE FIRST YEAR OF LIFE.

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Background: During recent decades the frequency of atopic diseases has been increasing and the cause of allergy is multi-factorial. Its expression appears to be the outcome of an interaction between genetic and environmental factors. However the problem of the influence of the course of pregnancy and delivery on the occurrence of allergic diseases has been studied by few authors. Furthermore the results are controversial.

Aim: To assess if the course of pregnancy and delivery can influence the development of allergy during the first year of life.

Methods: This prospective study included 189 infants followed up during the first 12 months of life. We evaluated pregnancy complications, delivery way, sex, birth weight, gestational age and Apgar score (with a questionnaire) and the appearance of atopic symptoms (check visits).

Results: Atopic symptoms occurred in 93 infants (49.2%)- 48.9% boys, 49.5% girls. The children born by mothers with complicated pregnancy had atopic symptoms in 54% (n=54) vs 44% (n=39) with correct pregnancies ($p=0.2$). The allergy affected 62.5% children born by caesarian section and 46.5%- by vaginal delivery ($p=0.1$). Among neonates whose birth weight was <3300g the atopy was present in 31.8%, for 3300–3690g in 55.2% and for >3700g- 61% ($p=0.01$). The longer gestation was related to higher percentage of infants demonstrating allergy symptoms - from 0% for <36Hbd up to 56% for 40Hbd ($p=0.2$). The children, who scored <8 points in Apgar scale suffered from allergy in 44.4%(n=4), while those who scored >8 -49.4%(n=89).

Conclusions: 1)Almost half of the babies presented atopic symptoms during the first year of life. 2)The factors that correlate with the occurrence of atopic symptoms are: complicated pregnancies, caesarian section, large birth weight and delivery at term. 3)No correlation between the development of allergy and the Apgar score or sex has been observed.

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ERYTHROPOIETIN (EPO) PREVENTS OXIDATIVE STRESS INDUCED IN HUMAN UMBILICAL VEIN ENDOTHELIAL CELLS (HUEVC) BY HIGH GLUCOSE CONCENTRATIONS

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Background/aims: Hyperglycemia disturbs normal oxidation-reduction reaction of cells leading to the increase in generation of reactive oxygen species (ROS). Erythropoietin (EPO), a sensitive to hypoxia physiological erythropoiesis regulator, is described as a factor inhibiting cell oxidative stress. In the present study, we examined an effect of high glucose concentrations on oxidation-reduction reaction of human umbilical vein endothelial cells (HUEVC) and investigated an anti-oxidation effect of EPO by measure of malonyldialdehyde (MDA) content in the HUEVC lysate.

Methods: Human umbilical vein endothelial cells were cultured in a standard medium (M 199) as a control; simultaneously cells were pretreated (24 hours) with EPO (20 IU/ml). The control culture cells and the cells with EPO were incubated for 48 hours with a different concentration of glucose (5.5; 11.0; 22.0 mM/ml) and next disintegrated by repeated (3x) freezing. In the HUEVC lysate, MDA content were measured by HPLC method.

Results: In the culture cells lysates, MDA content at the incubation with 5.5; 11.0; 22.0 mM/ml glucose were respectively 15.1±1.6; 18.1±1.3 and 21.5±2.5 nM/mg protein and was significantly higher than MDA content in the cultures cells lysate pretreated with EPO (13.9±1.3; 15.1±1.1; 18.9±1.6 nM/mg protein, respectively).

Conclusions: Exposure of HUEVC to high glucose concentrations for 48 h markedly increased MDA content in the cells. Erythropoietin inhibits oxidative stress induced by high glucose concentrations in HUEVC.

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CAN OBSTETRIC FACTORS PREDICT ARGinine VASOPRESSIN RELEASE AND THE TIMING OF FIRST VOIDING IN THE NEWBORN INFANT?

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To evaluate obstetric predictors of umbilical blood arginine vasopressin (AVP) levels and the timing of first voiding, 87 singleton term newborns were delineated into three groups: group A, vaginal delivery (N=30), group B, cesarean section (CS) during labor (N=26) and group C, elective CS (N=31). 26 (87%) mothers in group A and 21(81%) in group B received labor pain relief. Four (15%) group B mothers received epidural analgesia and spinal anaesthesia, 13 (50%) spinal and 9 epidural anaesthesia. In the group C 30 (97%) received spinal and 1 epidural anaesthesia. Labor pain was evaluated with a visual analog scale (VAS, range 0–5). Data on the infants' health and time of the first voiding was recorded.

Results: 70% of group A and 86 % of group B mothers experienced adequate pain relief. The median (range) intensity of pain in the groups A and B were 3.40 (0.90–4.90) and 3.68 (0–4.95) (NS). The median (range) AVP concentration (ng/L) was 120 (0.7–2170) in the group A, 1.8 (0.01–183) in the group B and 0.8 (0.01–30) in the group C ($p<0.05$), having a positive correlation with duration of labor ($p>0.001$), time from membrane rupture ($p=0.002$), umbilical cord length ($p=0.002$) and gestational age ($p=0.025$) and a negative correlation with umbilical arterial pH ($p=0.007$) and mothers' blood loss ($p=0.001$). The infants voided first time at median (range) age of 8.7 (0–38.9) hours in group A, 7.8 (0–31.0) in group B and 0.8 (0–16.5) in group C ($p=0.017$). The timing had a positive correlation with time from membrane rupture ($p=0.037$), gestational age ($p=0.003$), volume of formula feeding ($p<0.001$) and umbilical AVP concentration ($p=0.023$).

Conclusion: Maturity, labor and factors, dangerous to placental perfusion, seem to increase AVP secretion in the fetus and affect timing of the first voiding in the neonate. Labor induces mechanisms protecting circulation in the newborn.