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SIZE OF PANCREAS IN CHILDREN AND ADOLESCENTS WITH TYPE 1 DIABETES MELLITUS: A STUDY BASED ON ULTRASONOGRAPHIC EVALUATION.

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The size of pancreas was evaluated by ultrasound in a group of 60 children (30 males) and adolescents with type 1 diabetes mellitus; the age ranged from 3 to 15 years and the duration of the disease from 1 to 13 years. Sixty sex- and age- matched healthy children were the controls (C). The children were divided into three groups: group A and AC, aged 3 to 7 years; group B and BC, aged 8 to 11 years; group C and CC, aged 12 to 15 years. We measured longitudinal and transverse diameters of the pancreatic head, body and tail and total area.
The area of the pancreas was significantly smaller in diabetic children of all the groups when compared with C (area, A vs AC: 8.3 ± 2.6 cm vs 10.1 ± 2.5, $p < 0.05$. B vs BC: 9.3 ± 3.6 vs 12.7 ± 4.5, $p < 0.05$. C vs CC: 8.1 ± 3.1 vs 14.8 ± 2.6, $p < 0.005$). The sum of the diameters was lower in the 3 groups of diabetics (A vs AC: 117.7 ± 22.2 mm vs 136.7 ± 14.8, $p < 0.005$. B vs BC: 117.4 ± 17.1 vs 144.7 ± 24.5, $p < 0.002$. C vs CC: 112.2 ± 32.6 vs 163.6 ± 15.0, $p < 0.01$). Diabetic subjects with duration of disease < 2 yr had pancres size similar to that of children with duration of diabetes > 2 yr. (area 9.0 ± 3.6 cm^2 vs. 8.4 ± 3.5, $p > 0.05$: sum of diameters 123.1 ± 20.9 mm vs 113.2 ± 21.6, $p > 0.05$). No difference was found among the three groups of diabetic children. Significant reduction of the size of pancreas was evident already after 1 year of disease. In diabetics the size of pancreas was significantly ($p < 0.005$) related to basal C-peptide levels. In C area and diameters of pancreas were positively related ($p < 0.001$) to age, weight, height, waist and thigh circumference and the tickness of abdominal wall. In diabetic children no correlation was found.
In conclusion, the size of pancreas is significantly reduced in children with diabetes; furthermore, the disease interferes with the normal growth of the pancreas.

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TRANSIENT SYNOVITIS OF THE HIP IN DUTCH GENERAL PRACTICE

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Little is known about the occurrence and management of transient synovitis of the hip. Using data from the Dutch National Survey of Morbidity and Interventions in General Practice (NIVEL), a study was undertaken to look at the incidence and management of transient synovitis of the hip in children under 15 years of age. In 103 practices of 161 general practitioners, with a total practice population of 64 000 children, all contacts were registered. Practices participated in four consecutive groups of three months each in 1987-1988. The diagnosis transient synovitis was classified by NIVEL as 'other disorders of soft tissues and joints' and 'infections of musculo-skeletal system not classified elsewhere'. The original forms were checked in order to ascertain that transient synovitis of the hip was the working hypothesis actually used.
Transient synovitis of the hip was diagnosed in 19 children, 17 of whom were new cases. The mean age of the children was six years six months with a sex ratio of 2.8:1.0 boys to girls. An incidence rate of 1.1 per 1000 person years was calculated. General practitioners prescribed drug treatment for six children and bed rest was advised for six children. Two children were referred for an x-ray examination. Clear follow-up arrangements were made for 16 of the 19 children.
We conclude that incidence rates are similar to those found in Nordic countries. Dutch GPs prefer a wait-and-see approach when suspecting this diagnosis.

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EXTREMELY LOW BIRTHWEIGHT INFANTS; PREDICTION OF OUTCOME AT 5 YEARS

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Improved prenatal and neonatal care have contributed to the increased survival of VLBW. The tiny infants, however, have an increased risk of later sequaleae, such as cerebral plasy, retinopathy, schoold difficulties and chronic lung disease. These sequaleae are a great concern for both the parents and the society. The purpose of this study was to analyse the neonatal risk factors to these problems in extremely low birthweight (<1000 g) infants.

During the period 1982-1987 96 (56%) ELBWI survived at the NICU of Children's Hospital, University of Helsinki. At five years of age all children underwent neuropsychological testing and a neurological investigation. The data about the neonatal period were collected retrospectively. They included the social background of the family, duration of the pregnancy and birthweight, several parameters from the first day of life and from the NICU treatment.The CRIB score was calculated from these data to all infants. Cranial ultrasound examination was performed several times to all infants.

Of the infants 11% had neurological abnormalities, 16% had retinopathy, 19% had emotional disturbances, 17% had delayed verbal development, 32% had visuomotor abnormalities and 20% had slight to severe intellectual impairment. All these aspect were normal in 53% of the infants. Intellectual impairment was associated with low gestational age, low birthweight, long respirator care, long oxygen demand, sepsis during the NICU care, severe IVH, and also with high CRIB score. Logistic regression analysis indicates that sepsis and third grade IVH were most important of these. Other outcome variables showed similar associations. However, neurological abnormalities were associated only with severe, fourth grade IVH.

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INTRACRANIAL LESIONS IN THE FULLTERM INFANT WITH HYPOXIC ISCHAEMIC ENCEPHALOPATHY : ULTRASOUND AND AUTOPSY CORRELATION

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To test the hypothesis that cranial ultrasound correlated with postmortem findings in neonates with hypoxic ischaemic encephalopathy(HIE), the brains of 20 infants who died after at least two real time ultrasound scans were examined. The ultrasound abnormalities detected in the periventricular/subcortical white matter, cortex or thalami were compared with the macroscopic and histological appearances. Comparing the last ultrasound scan which was performed no longer than 12 hours before the infant died, with histological data, the sensitivity and specificity for lesions in the thalamus was 100% and 83.3% respectively; for cortical lesions 76.9 and 100% respectively and for lesions in the periventricular white matter 80% and 75% respectively.
The value of cranial ultrasound for detecting intracranial abnormalities in infants with HIE was considerably better than reported previously. This could mainly be attributed to the use of a 10 MHz transducer which was of critical importance to identify lesions in the superficial cortical layer.

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MICROASSAY FOR IMMUNOPHENOTYPING OF INFANT LYMPHOCYTE SUBPOPULATIONS

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The increased susceptibility to infections in neonates is probably based on immaturity of the immune system. The reported immunophenotypic differences in neonatal, infant, and adult lymphocyte subpopulations may reflect age-related maturational changes. Detailed immunophenotyping is needed for further investigation of these maturational processes.
Flowcytometric immunophenotyping of neonatal and infant blood lymphocyte subpopulations poses several problems. Firstly, the blood volume needed for detailed characterization of lymphocyte subpopulations is too large for studies in young infants, especially in small prematures. Secondly, erythroid cell contamination (e.g. normoblasts) of the flowcytometric "lympho-gate" may lead to considerable miscalculations of the relative and absolute cell numbers.
We developed a whole blood microassay for flowcytometric analysis of lymphocyte subpopulations using triple immunological staining with fluorochrome conjugated antibodies (FITC, PE, and the duochrome PE-Cyanine 5). This microassay only needs 20µl per test tube, which is five times less than in conventional test systems. Due to the single-step incubation our microassay is fast and cell loss is minimal.
The triple labelings allow detailed analysis of subpopulations of lymphocytes, as well as identification and quantification of the erythroid cell contamination in the flowcytometric "lympho-gate". This contamination is measured with a triple labeling for CD71, GpA and CD45, which are expressed by erythroid precursors, all erythroid cells, and all leukocytes respectively. We detected 17.9% (range 1.3-41.9) CD71+GpA+CD45- erythroid cells within the "lympho-gate" in 7 cord blood samples (gestational ages 27-42 weeks). If the "lympho-gate" is not adjusted for this erythroid contamination, the relative numbers of lymphocyte subpopulations will be underestimated down to 50% of their real values.
In conclusion, we developed a fast, reliable microassay for immunophenotyping of infant lymphocyte subpopulations. The erythroid cell contamination of the flowcytometric "lympho-gate" is much larger than previously assumed, but can easily be identified with the CD71/GpA/CD45 triple staining. This method is an important tool for future studies of the immune system in neonates and young infants.

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EVIDENCE FOR A CRITICAL ROLE OF IRON CHELATES IN OXIDATIVE HEPATIC INJURY IN RATS. Leontien S. Wafelman, Lynette K. Rogers, Agnes G. Gyurasics, Sanjiv Gupta and Charles V. Smith. Dept. of Peds., Baylor Coll. of Medicine.

Diquat (Dq) causes generation of reactive oxygen species in Fisher-344 and Sprague-Dawley (SD) rats, evoking marked liver necrosis in the former, but almost none in the latter strain. To test the hypothesis that iron homeostasis is pivotal in the resistance to injury by reactive oxygen species, we pretreated adult SD rats with FeSO4 ip and gave Dq ip at 30 min. Controls were given normal saline and/or PBS. Blood was drawn 1-24 hr after Dq and ALT measured in plasma. Data from treated rats were compared to controls by two-tailed Fisher exact test. No rats killed at 2 hours had abnormal ALTs.

FeSO4	Diquat	ALT > 100 IU/L	P value
0	0	1/8 (12.5%)	-
0	0.1 mmol/kg	0/13 (0.0%)	0.3810
0.36 mmol/kg	0	1/14 (7.1%)	0.4151
0.18 mmol/kg	0.1 mmol/kg	1/5 (20.0%)	0.4872
0.36 mmol/kg	0.1 mmol/kg	8/26 (30.8%)	0.1649
0.72 mmol/kg	0.1 mmol/kg	5/10 (50.0%)	0.0430
0.18 mmol/kg	0.2 mmol/kg	6/8 (75.0%)	0.0214
0.36 mmol/kg	0.2 mmol/kg	8/10 (80.0%)	0.0078
0.72 mmol/kg	0.2 mmol/kg	5/8 (62.5%)	0.0071

We conclude that excess free iron is critical to induce liver injury in Dq-treated rats, but the distribution of the iron needs to be determined. Supported by NIH Grant GM44263 and the International Pediatric Research Foundation.