

ASSESSMENT OF GRANULOCYTE VIABILITY AND NBT REDUCTION TEST RESULTS IN CHILDREN LIVING IN AN AREA POLLUTED BY HEAVY METALS

89

Franciszek Śliwa, Aldona Lukas, Witold Lukas
Clinic of Pediatrics and Hematology Silesian Medical Academy 41-800 Zabrze, Poland

Granulocyte Viability /G.V.T/ and the Nitro-blue-Tetrazolium reduction test /NBT RT/were evaluated in 258 children living in the area of Zinc Smelting Works, Miasteczko Śląskie/Katowice District/ polluted very strongly by heavy metals /Pb,Zn,Cd/. G.V.T. was determined by Cocchi and al. and NBT RT by Raman and al. method. An increase in the percentage of dead granulocytes and a decrease in the value of NBT RT were found, particularly in the youngest children. A large number of examined children showed an elevated Pb and decreased Zn and Mg levels in blood. A correlation was found between Mg and granulocyte viability / $t = -3,011$, $p < 0,05$ /, as well as between Zn and NBT RT values / $t = 4,434$, $p < 0,05$ /. The results of investigations confirm the negative influence of heavy metals polluted environment on intracellular metabolic processes in granulocytes. This phenomenon is highly intensified in the youngest children. The unfavourable Pb influence on children's immunity may be also caused by the interaction of Pb with Mg and Zn in the process of absorption in the intestinal tract.

MEASURED FINAL HEIGHT AND TARGET HEIGHT IN BOYS WITH CONSTITUTIONAL GROWTH DELAY

90

Michael Sperlich, Otfried Butenandt, Ursula Kuhnle and Hans Peter Schwarz
University Children's Hospital, D-8000 Munich, Germany

There is considerable dispute as to whether boys with constitutional growth delay (CGD) do reach their target height (mid-parental height + 6.5cm). To answer this question, patients with short stature and CGD seen at our institution within the last 15 years are being restudied. So far, 20 adult males have been seen and their height has been measured by stadiometer. At the initial presentation, chronological age was 14.0 ± 1.6 (SD)yr, bone age 11.4 ± 1.7 yr, height 147.4 ± 7.1 cm, testicular volume 5.6 ± 3.7 mL. A positive family history with late menarche >14yr in the mother and/or continued fast growth >16yr in the father could be elicited in 18/20 patients. When restudied, chronological age was 22.7 ± 1.7 yr (20.2-26.9), testicular volume 23.0 ± 4.3 mL, final height 171.9 ± 5.2 cm. This height was very close to the self-estimate of the patients (171.8 ± 5.5 cm). Moreover, it was not significantly different from the target height of 173.1 ± 4.3 cm and from the initial Bayley-Pinneau prediction of 172.2 ± 6.7 cm (paired t-test). We conclude that on the average our patients with CGD did reach their full height potential and Bayley-Pinneau predictions were useful.

MATERNAL PHENYLKETONURIA (MPKU) - DISEASE SPECIFIC KNOWLEDGE OF FEMALE PATIENTS

91

B. Fünders, J. Weglage, K. Ullrich
Dept. of Pediatrics, Univ. of Münster, FRG

68 patients, 30 with classical PKU and 38 with persistent hyperphenylalaninemia (HPA) were interviewed about their knowledge concerning MPKU. Mean age was 23 ± 4 y. All patients had not contacted a metabolic unit for at least 10 y. Mean IQ (Hawie) in PKU patients was 93 ± 7 in HPA 106 ± 5 . Only 15 % of the patients knew that their children could be affected by elevated maternal Phe-levels; none could specify the Phe-toxicity on their offsprings. 85 % of patients for example believed that their children would have PKU. Knowledge of PKU and HPA patients did not differ significantly. The poor knowledge of patients at risk for MPKU demands for a systematic medical and social care to guarantee successful treatment in the future. This especially as a second interview revealed that 20 % of the patients with classical PKU were not convinced of the need for dietary treatment during pregnancy.

CANCER FREQUENCY IN THE REGION OF GOMIEL AFTER THE NUCLEAR PLANT ACCIDENT OF CHERNOBYL.

92

M. Andolina, M. Cuttini, A. de Manzini, V.V. Yuchnel.
Istituto per l' Infanzia, Trieste, Italy; Dept. of Health, BSSR, USSR.

Since the Chernobyl nuclear disaster about 1.6 million people in the area of Gomiel (Southern Byelorussia) have been exposed to most of the radioactive pollution derived from the plant. Starting already with 1986, the frequency of malignant tumors showed a steady increase: from 223.7 to 246.3/100000 in 1990. Cancer mortality was 141.9/100000 in '86 and 159.3 in '90. Incidence of thyroid tumors rose from 3.1 in '86 to 4.1/100000 in '90, but in the same period also diagnosis of endemic goiter increased threefold. Frequency of acute leukemia was 1.4/100000 in '85 and 2.0 in '90, but also that of chronic lymphoid leukemia increased from 2.7 to 4.4/100000 in the same years. Frequency of chronic myeloid leukemia and of multiple myeloma showed only slight variations. The induction period after radioactive contamination is said to be 2-5 years for thyroid carcinoma and leukemias. The early increase of cancer diagnosis in the area of Gomiel, therefore, may in part be the effect of increased clinical attention and improved health services after the nuclear accident.

MUNICH ASTHMA- AND ALLERGY SURVEY. IS ASTHMA BEING UNDERDIAGNOSED ?

93

Erika von Mutius¹, Eva Stiepel², Peter Reitmeir², Thomas Nicolai^{1,2}
¹Department of Pediatrics, University of Munich, D-8000 München 2, Germany. ² Medis-Institut, GSF, D-8042 Neuherberg, Germany.

There is evidence that morbidity and mortality from asthma as well as the prevalence of allergic diseases is increasing. As data were missing in Germany, we studied in a crosssectional design 9 403 schoolchildren (age 9-11 years) in an urban and rural area of Bavaria using a questionnaire, skin prick tests and pulmonary function tests before and after cold air challenge. The responderates were: 87% for questionnaires, 77% for allergy or pulmonary function tests. Evaluation of the questionnaires gave the following prevalences: 18,1% allergic rhinitis, 19,7% atopic dermatitis, 2,5% asthma and 5,5% recurrent wheezy bronchitis. Beyond this 8,3% had recurrent wheezing and 3,4% chronic cough by night or exercise without any diagnose of asthma or wheezy bronchitis. 42 % of all german children are atopic, ie exhibit at least one positive prick test reaction for the six aeroallergens tested. Bronchial hyperreactivity was found in 9% of german children. Atopic diseases and asthma are more frequent in the urban than the rural area. In summary there is an important underdiagnosis of asthma in this pediatric population.

CARDIOVASCULAR RISK FACTORS IN CHILDHOOD OBESITY.

94

K. Zwiauer, Renate Pakosta, and K. Widhalm. Department of Pediatrics, University of Vienna Medical School, A-1090 Vienna, AUSTRIA.

Obesity is a major risk factor for atherosclerotic diseases. In adults, the purpose of the study was to investigate cardiovascular risk factors in childhood obesity and associations of risk factors with different measures of obesity, body composition and fat distribution.

105 grossly obese children and adolescents (64 female and 41 male, mean SD overweight 52±19%, BMI 28±4, age 12.4±1.3 years) were studied. Blood was drawn after an overnight fast and blood lipids (enzymatically), lipoproteins (polyanionprecipitation) and apolipoproteins (RID), glucose, and insulin were determined. Systolic (SBP) and diastolic blood pressure (DBP) were measured after a 15 min rest duplicate, body composition with body impedance analysis (BIA 109, AKERN/RJL), waist and hip measured for calculation of waist-hip-ratio (WHR).

| | Partial correlation coefficients | | | | | |
|----------------|----------------------------------|----------|---------|---------|---------|----------|
| | SBP | DBP | TG | HDL-C | LDL-C | Insulin |
| overweight (%) | 0.480 * | 0.472 * | 0.113 | 0.148 | 0.190 | 0.123 |
| BMI | 0.385 + | 0.481 * | 0.111 | 0.138 | 0.182 | 0.134 |
| WHR | 0.537 ** | 0.489 ** | 0.348 + | 0.372 + | 0.321 + | 0.531 ** |

*p<0.05 **p<0.01 ***p<0.001
SBP and DBP in the obese children and adolescents were closely related to percentual overweight, BMI and WHR, too. Triglycerides (TG), HDL-C, LDL-C and Insulin showed no correlation with any of the measurements of adiposity. However, these parameters were associated with the body fat distribution. Independently from the degree of adiposity. We therefore conclude that WHR is a better indicator for cardiovascular risk factors in obese children compared to percent overweight or BMI.