97 CHROMOSOME ANEUPLOIDY IN CHILDREN WITH NON-HEMATOPOIETIC UNTREATED TUMOURS

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Systemic damages of lymphocyte chromosomes were investigated in 3o untreated children suffering from nonhematopoietic malignancies. Twelve patients with sarcomas of various types, 11 with neuroblastoma, 3 with malignant teratoma, 2 with adenocarcioma, 1 with Wilms' tumor, 1 with medulloblastoma, aged from 2 to 14 years, were examined before any treatment was started. X-ray examinations were avoided to prevent induced morphological abnormalities and aneuploidy. Compared to a normal population of 5o healthy children, the oncological patients were proved to be an homogenous population from the statical point of view /P< o.ool/. The difference of aneuploidy either hypoploidy or hyperploidy between the two groups was highly significant /P< o.ool/. The Authors think that chromosome aberrations are probably due to the malignant condition as they diseapper during remission.

98 BONE MARROW TRANSPLANTATION IN CHILDREN WITH APLASTIC ANEMIA

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Six children with severe aplastic anemia were treated with transplantation of bone marrow cells from an HL-A identical MLC negative sibling donor: two boys 1o and 6 years of age and two girls 1o and 6 years of age with idiopathic aplastic anemia, one 1o year old boy with Fanconi anemia and one 9 year old boy with aplastic anemia following infectious hepatitis. One girl showed no take of the transplanted bone marrow cells. She died from staphylococcal septicemia. One boy died from acute GvH-disease. Three children are in good condition with complete hematologic recovery 16, 9 and 4 months after transplantation respectively. They did not show any signs of GvH-disease and they did not suffer from any major infections despite rather severe immunodeficiency of long duration following transplantation. Infections were prevented by nursing in strict reverse isolation in combination with antibiotic decontamination. One girl showed hematologic recovery but developed subacute GvH-disease one month after transplantation.

99 DIMINISHED DOPAMINE CONCENTRATIONS IN HUMAN BRAIN BIOPSIES FROM PATIENTS WITH PHENYLKETONURIA

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The dopamine concentration in the caudate nucleus of two PKU patients with high blood phenylalanine was drastically reduced /< 1.9 ng/1oo ug protein/ compared with five control persons /ca. 12 ng/1oo ug protein/. The biopsy samples were obtained during therapeutic stereotactic surgery and analyzed by mass fragmentography of the N,O-trifluoroacetyl derivatives. Earlier experiments had shown that these patients excrete subnormal amounts of dopamine and catecholamine metabolites in urine. The analysis of brain biopsies confirms our postulation that the conversion of tyrosine to L-dopa by tyrosine 3-hydroxylase is inhibited by high phenylalanine concentrations also in vivo. The deficiency of catecholamines in the brain may be an important factor in the pathogenesis of the neurological symptoms and of the mental retardation observed in untreated PKU patients.

100 THE DEVELOPMENT OF HEPATIC EXCRETION MECHANISMS FOR THE ANIONIC DYE INDOCYANINE GREEN IN NEWBORNS AND OLDER CHILDREN

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Kinetic studies with Indocyanine green /ICG/ in 3o children showed, that the initial removal rate from blood increased with the dose. Since the removal rate approached a maximal value asymptotically, Michaelis-Menten equation could be applied, suggesting that ICG is bound to a receptor similar to the formation of enzyme substrate complexes. The parameters Vmax and Km, calculated from the Lineweaver-Burk-plot, increased both depending on age. The mean values of Vmax and Km in the group of babies between 1-7o days and 14o-21o days were significantly different. After oral application of 5 mg Phenobarbital per kg bodyweight for one week Vmax and Km increased both. The behaviour of these parameters indicates, that the excretion mechanisms mature during neonatal period. Since Vmax and Km increased both, it may be postulated, that more than one carrier or receptor are involved in this process.

101 FORMATION OF INSULIN ANTIBODIES DURING TREATMENT WITH MONOCOMPONENT INSULINS IN CHILDREN

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During treatment with monocomponent Lente and Semilente insulins for on the average 2 years, seven out of 14 diabetic children developed antibodies to insulin /IgG binding exceeding o.o5 mU/ml of serum/, and four had a borderline response. The positive cases usually had a low antibody formation. A 1o year old girl, however showed a strong antibody response, the IgG binding being 4.92 mU/ml at one and 11.16 mU/ml at two years after the start of MC-insulin therapy. She had no severe infection in the history. In order to evaluate the capacity to form antibodies against some other antigens than insulin, a booster dose of o.1 ml tetanus vaccine was given to her and to six other cases. Three weeks later the tetanus antibody level had risen 3o-fold in the first case, whereas in the others the rise was 2.5-5 fold. Thus the first mentioned individual formed antibodies extraordinarily both to insulins of high purity and to tetanus toxoid. Diabetic children differ from adults in their tendency to antibody formation during MC-insulin therapy.

102 GROWTH HORMONE LEVELS DURING THE FIRST HOURS OF SLEEP IN CHILDREN

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Employing a simple suction pump and catheter coated with heparine, blood could be sampled continuously and evenly. Children were investigated for 3-4 hours after going to bed. Half-hour samples of 81 children were analyzed in order to find a combination with the smallest number of false-negative results. The best results were obtained combining the first half-hour sample with either the 3rd half-hour sample after onset of sleep or the 2nd half-hour sample after stage III-IV sleep. Small children with socalled primordial growth retardation had lower levels than normal children. In overweight children levels were low. No relationship could be found between levels of FFA, cortisone, glucose and insuline on the one hand and growth hormone on the other. Observation of the child showed the onset of sleep and of stage III-IV sleep equally wells as EEG recording; therefore EEG is not necessary for routine use. This method of growth hormone determination is relatively simple, at least equally informative, cheaper as to laboratory work and registrates spontaneous instead of provoked growth hormone secretion.