23 INDICATIONS AND RESULTS OF BONE MARROW TRANSPLANTATION IN CHILDHOOD ACUTE LEUKEMIA (AL).

H.J. Plüss, J. Sigrist, C. Sigg & W.H. Hitzig. Dept. Pediatric Hematology & Oncology, Univ. Children's Hospital, Zürich, Switzerland.

Since 1971, 7 children with AL (5 ALL, 2 ANL) have been transplanted at the University Children's Hospital. 2 of the donors were identical twins, 4 were siblings, 1 the HLA-identical father. The ALL children were transplanted after 2 to 4 relapses, the ANL earlier. 3 were in CR, 2 in PR and 2 in relapse. All got intensive chemotherapy, and 5 total body irradiation (TBI). 3 died of early complications, all others showed a take. 1 boy (w/o TBI) relapsed after 2 months, 1 with an AML had a testicular relapse after 4 months, but is in CR again since 10+ months under chemotherapy. The most recent patient shows a normal bone marrow, and no acute GvH, after 1 month. 1 boy stays in CR since 40+ mo.

Our results suggest, and those from Seattle show that bone marrow transplantation in AL is feasible. As interstitial pneumonia and relapse are the most important obstacles to success, the children should be in remission (to start with a lower tumor load) and get an intensive cytostatic pretreatment, but - to avoid pneumonitis - should not get more than 750 r to the lungs.

24 CYTOCHEMICAL DEMONSTRATION OF 5-FORMYL-TETRAHYDROFOLATE CYCLODEHYDRASE ACTIVITY IN LEUCOCYTES OF PATIENTS WITH ACUTE LEUKAEMIA.

F.Tzortzatou, L.Zannos-Mariolea, P.Karayiannis, & N.Matsaniotis. First Department of Pediatrics of Athens University, Athens, Greece.

The enzyme 5-formyl tetrahydrofolate cyclodehydrase converts 5-formyl tetrahydrofolate to 5,10-methenyl tetrahydrofolate.A method has been devised for the cytochemical demonstration of this enzyme using 5-formyl tetrahydrofolate as substrate.The activity of the enzyme has been studied in leukocytes of children with acute leukaemia.Comparison of enzymatic activity in the same types of cells showed no significant variation between normal controls and the patients with acute leukaemia.The enzyme activity was found to increase with cell maturation and was strongly positive in polymorphonuclear leukocytes and eosinophils.The blast cells of patients with acute leukaemia were weakly positive or negative. This finding is of interest since the blast cells are capable of division.Two populations of lymphocytes were observed,one positive with a few granules and one negative.Methotrexate decreased enzyme activity in some patients;the enzyme may be a target for the action of folic acid antagonists.

25 STUDIES OF PERIPHERAL BLOOD T- AND B-LYMPHOCYTES IN CHILDREN WITH EXTRINSIC BRONCHIAL ASTHMA.

H. Gunschera, Dept. of Pediatrics, Medizinische Hochschule Lübeck, Germany.

Lymphocyte subpopulations were measured in the peripheral blood of children with extrinsic bronchial asthma. In children with increased infections we found the proportion of T-cells decreased. The absolute number and the proportion of IgG and IgM-surface-bearing B-cells and the "null"-cells were elevated. In children without increased infections the proportion of T-cells only was decreased. With regard to duration, severity of disease, sort of antigen, serum Ig-E-levels, eosinophil-count, sex-proportion and family history there was no significant correlation. In longitudinal studies we observed an elevation of T-cells during hyposensitivation therapy.

26 ONTOGENETIC ASPECTS OF SECRETORY IMMUNITY

G.R.Burgio,A.Lanzavecchia,A.Plebani*,A.G.Ugazio. Dept.of Paediatrics and (*) Dept. of Dermatology,University of Pavia,Italy.

Levels of secretory IgA (SIgA) and free secretory component (FSC) and titres of antibodies against E.coli and rabbit erythrocytes (RaRBC) were determined in samples of unstimulated (US) and stimulated (SS) saliva from 166 normal subjects of 2 months to 33 years of age. SIgA levels, present in all infants at 2 months (mean 4 mg/dl in US and 1 mg/dl in SS),behaved in a parallel fashion in US and SS decreasing slightly at 6 months but then increasing to adult values at 7 years (15 mg/dl in US and 4.5 mg/dl in SS). Similarly E.coli and RaRBC antibodies increased with age in US and reached adult values at 6-8 years. On the other hand FSC levels showed no age-dependent changes although a slight but not significant decrease occurred in US and SS after 4 years. Simultaneous evaluation of these 4 simple parameters allowed demonstration of a more gradual maturation of the secretory immune system than suggested by earlier reports based on less systematic studies.

27 REEVALUATION OF 19 CHILDREN ONCE FOUND TO BE DEFICIENT IN SERUM IgA

Joller P.W., Bühler A.K., Hitzig W.H., Dept. Pediat. University of Zürich, Switzerland

The maturation of the serum IgA system is slow in comparison to IgG and IgM. Adult serum IgA levels in normal children are reached only at the age of ten years. The normal range is broad and individual fluctuations marked.

To investigate the maturation of the system and the implications of low serum IgA in infections of the respiratory and gastrointestinal tract as well as the ORL system we reexamined 19 children once found in our laboratory to be deficient in serum IgA.

We tested serum IgA, IgA and secretory component in tears of these 19 children. 53% of them showed normalization of these parameters, 26 % had low serum IgA while 4 children remained deficient.

Maturation and compensatory mechanisms are discussed.

28 CELLULAR IMMUNDEFECTS IN CHILDREN WITH RECURRENT BRONCHOPULMONARY INFECTIONS.

R. Eife, A. Enders, K. Betke, Kinderklinik der Universität München, West Germany.

Respiratory tract infections are common in patients with humoral immunodeficiency syndromes. Only a small number of children with recurrent respiratory tract infections, however, have low immunoglobulin titers. In the past, therefore, it was doubted that systemic immunodefects were involved in the pathogenesis of recurrent bronchopulmonary infection in the majority of the patients.

We have investigated the antigen and mitogen-induced DNA synthesis and lymphotoxin production of peripheral blood lymphocytes from children with recurrent bronchopulmonary infections and have found defects especially in the lymphotoxin production of peripheral blood lymphocytes in a considerable number of the patient.

Since defects in lymphotoxin production have been found to be correlated with cellular immunodefects (Mschr.Kinderheilk. 123, 402, 1975), our observations suggest that in a certain percentage of the patients impairment of cellular immune functions may be the underlying cause of the recurrent infections.

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