85 ROLE OF NK CELLS IN REJECTION OF T-DEPLETED BM GRAFTS

O.Schofer, HJ.Büttner, F.Zepp, W.Mannhardt, R.Beetz

The role of NK and T cells for rejection of fully allogenic (BALB/c into C57Bl/6J) T cell depleted BM was investigated in a murine model using congenitally T (nu/nu) or NK (bg/bg) deficient mutants as recipients. All recipient animals were conditioned with 9.5 Gy TBI.
Results: 1) Injection of $1x10^7$ T-undepleted BM resulted in engraftment in more than 80% of the C57 recipients. Normal C57 and both deficient mutants accepted the T-undepleted grafts equally well. 2) Injection of $1X10^7$ T-depleted BM (1% contaminating T cells) led to an over all graft failure rate of 60%. 3) Whereas graft failure was observed in approximately 80% of normal C57 and 80% of nu/nu, only 33% of C57 bg/bg rejected the T-depleted graft.
Discussion: Transplantation of T-depleted BM is known to result in an increased rate of graft failures. Surprisingly, the incidence of graft failures was the same in normal (80%) and T deficient (80%) recipients. A rejection rate of 80% in the nu/nu mutant and the fact that no late graft failure occured argues against a significant role of classical T cell mediated rejection in this experimental model. The results clearly show that NK deficient animals had the lowest rate of graft failures. Results will be discussed in light of Hh antigens and NK target cell structures.

86 GENERALIZED YERSINIA ENTEROCOLITICA(YE)INFECTION IN THALASSEMIC CHILDREN.

Claudio Chiesa,Lucia Pacifico,Vincenzo Cianfrano,Domenico Del Principe,Elisa Rizzo,Fulvio Nanni,Mario Midulla.
1st and 2nd University,Institute of Pediatrics,Yersinia Reference Center-Institute of Experimental Medicine CNR,Rome,Italy.

Generalized infections with YE are relatively uncommon.Iron overload has been described as a major determinant of dissemination in YE infection.Recently a flurry of clinical reports have suggested that the supply of exogenous siderophores,such as desferrioxamine B,may trigger the development of systemic Yersiniosis.We report our data based upon a 10-year continuous surveillance of human Yersiniosis in Italy.Eighty-one per cent(9/11)of YE septicemia occurred in beta-thalassemia major children;YE peritonitis was exclusively observed in these patients(4/4).All but one cases of septicemia were associated with acute enteritis.Mesenteric adenitis was identified by laparotomy in all 4 patients with peritonitis,as well as in the last case of sepsis.Of the 13 children with generalized infection,6 had history of splenectomy;10 were on deferoxamine(DFX)treatment,while 3 were not.One fatal case was observed in the group on DFX treatment.Through our survey,we also received 474 human isolates recovered from fecal specimens.Only 15 of these were from beta-thalassemia children who were on daily treatment with subcutaneous DFX and were affected with non-septic clinical conditions,such as acute enteritis(11),abdominal discomfort(3),and mesenteric adenitis(1).In such instances,despite DFX therapy,intestinal infection did not lead to a generalized form.All isolates from the 28 thalassemic children belonged to human pathogenic strains(03 and 09).Thus our experience indicates that iron overload in itself account for the susceptibility of the human host to generalized YE infection,while DFX is only one of several factors that contribute to virulence of the organism.

87 SEVERE BONE DEMINERALIZATION IN PRETERM INFANTS DUE TO DECREASED TUBULAR PHOSPHATE REABSORPTION (DTPR).

F. Pohlandt, L. Gortner and P. Bartmann
Children's Hospital, University of Ulm, Ulm, Fed. Rep. Germany

Intrauterine bone mineral accretion can be achieved in VLBW infants when Ca and P are administered in sufficient quantities to result in an urinary excretion of both elements(1). We observed three ELBW infants (650g/26weeks; 780/26; 580/27) who developed serial rib fractures and general severe bone demineralization inspite of an individual Ca/P supplementation monitored by urine Ca/P concentrations(1). Retrospective comparison of all Ca and P concentrations in simultaneously taken plasma and urine samples showed P-excretion at low plasma P concentrations (1.1-1.9 µM), i.e. an DTPR. Renal threshold for P was 2.4-2.8 µM in age-matched controlls. Demineralization was a result of renal P wasting. In one severely growth retarded infant who was born after recording silent CTG this tubular defect was present shortly after birth. Two infants developed DTPR during combined antibiotic treatment for sepsis. Fosfomycin was suspected to have impaired tubular function. **Conclusion:** DTPR causes severe bone demineralization in preterm infants and interferes with monitoring the P supplementation by measuring urinary P concentrations. (1)Assessment of Ca and P requirements and prevention of osteopenia in VLBW infants. Pediatr. Res. 20:1050(1986).

88 TRACE ELEMENT / MINERAL RATIOS IN HUMAN MILK SUPPORT ZN SUPPLEMENTATION OF INFANT FORMULA

Erika Sievers, Hans-D. Oldigs, Klaus Dörner, Jürgen Schaub
Christian-Albrechts-Univ., Dep. of Pediatrics, Kiel, FRG

The ratios of (trace-) minerals may be of importance for their retention from human milk (HM) and formula. We determined the Ca, Cu, Fe, K, Mg, Mn, Na, P and Zn concentrations in more than 2300 samples of HM of 10 healthy mothers collected 2,5,8,12,16 weeks post partum. Zn/(trace-) mineral ratios (median and range) are compared with an unsupplemented formula (Pre-Aptamil (PA); Zn = 1.26 mg/l).

Element ratio	Zn/Ca	Zn/Cu	Zn/Fe	Zn/K
HM	0.006 (0.004-0.01)	2.5 (0.78-6.7)	4.2 (1.68-11.8)	0.004 (0.002-0.005)
PA	0.003	10.41	1.12	0.003

Element ratio	Zn/Mg	Zn/Mn	Zn/Na	Zn/P
HM	0.052 (0.038-0.082)	270 (70-700)	0.017(0.007-0.018)	0.015 (0.005-0.41)
PA	0.021	10	0.004	0.011

The high Zn/Cu ratio in PA may partly be ascribed to the low copper concentration (0.12 mg/l), whereas high manganese levels leading to low Zn/Mn ratios are found in formulas without supplementation. Zn supplementation to values about twofold the present level (2-3 mg/l) would render an improved approach to ratios found in HM for Ca, Fe, Mg, Mn, Na. The results are of particular concern in view of isolated supplementation of e.g. iron, which might lead to inverse ratios as found in human milk.

89 EXPERIMENTAL ZINC DEPLETION IN HUMANS: EFFECT ON PLASMA SOMATOMEDIN-C.

Z. T. Cossack, Odense University, Campusvej 55, DK-5230 Odense, Denmark.

Zinc (Zn) has been shown to be essential for growth and development of the microorganism, animal and man. However, the mechanism by which Zn promotes growth has not been well defined. We have previously reported a significant decrease in the level of plasma somatomedin-C (PSM-C) in zinc-deficient rats (Experientia 40:498-500, 1984 and Brit.J.Nutr. 56:163-169, 1986). Four healthy volunteers participated in this experiment which was designed so that each subject served as his own control. During a 1-wk baseline period subjects were fed a semi-purified diet containing 1.2 mg Zn/d and were supplemented with Zn-acetate so that their total daily intake of Zn was equal to their habitual daily intake prior to the study period. The baseline period was followed by a 12-wk depletion period where subjects consumed the semi-purified diet with no Zn supplement. By the end of depletion, we observed a significant decrease ($p<0.005$) in plasma-Zn, whole blood-Zn, urinary-Zn (µg/24 h), plasma-NH_3 ($p<0.01$), plasma-Alk.phosphatase ($p<0.01$) and PSM-C ($p<0.01$). In conclusion, the present study suggests that somatomedin-C is Zn-dependent. It provides an insight into the mechanism of growth retardation associated with Zn-deficiency in humans.

90 INFLUENCE OF SULFUR AMINO ACIDS (Saa) ON RENAL TISSUE CALCIFICATION AND THE COURSE OF CHRONIC RENAL FAILURE (CRF)

Dietrich V. Michalk, Richard Leitz and Jürgen Rauch
University Children's Hospital, D-8520 Erlangen, FRG

The progression of CRF is accelerated with a high protein (Pr) intake, however,the mechanism and the causal Pr-components are unknown. One factor might be Pr-induced hypercalciuria with calcification of the residual renal tissue.Since calcium(Ca)excretion is related to the Saa- and sulfate(Si)-content of ingested Pr,we investigated the influence of diets with different Pr- and Saa-content on GFR and renal tissue-Ca(RTca) in rats with CRF. The animals were fed for 4 weeks with either:1.high Pr diet(HP 32%,Saa:1,45%) 2.low Pr(LP8%,Saa:0,46%) 3.LP+0,89% met(LPSaa)or 4.LP(Soja 10%)+0,22% of taurine (LPTau,Saa:0,46%).Energy,Ca and phosphate (Pi)was equal in all diets. GFR(Ccr) and BUN were measured before(a) and after(p),plasma-Ca,Si,Pi and RTca after the feeding period.Results (means;P(CaSiPi)= ion product of plasma Ca,Si,Pi).

	GFR(a) ml/min/kg	GFR(b)	BUN(a) mg/100 ml	BUN(b)	P(CaSiPi) mM²	RTca µM/g dry wt.
HP	0,91	1,06	122	216	15,4	41,4
LP	0,92	1,21	97	53	8,5	24,6
LPSaa	0,90	0,90	103	88	19,9	47,2
LPTau	0,91	1,14	101	150	8,5	13,6

P(CaSiPi) was positively correlated with RTca and inversely with GFR.
Conclusion: The negative effect of high protein on renal function in CRF might partially be due to a high Saa-content, resulting in an increased sulfate production and renal calcification.