35

PROLONGED AND PREMATURE RUPTURE OF THE MEMBRANES (PPROM) AND ITS RELATIONSHIP TO CHRONIC RESPIRATORY MORBIDITY

Thompson P, Greenough A, Blott M, Nicolaides K, King's College Hospital, London

PPROM is frequently associated with pulmonary hypoplasia. Some infants, however, do survive and our aim was to determine the incidence of impaired lung growth and its relationship to chronic respiratory morbidity in these children. 53 pregnancies complicated by PPROM before 32 weeks gestation were studied. Of these, there were 2 termination, 2 spontaneous abortions, 1 utrauterine death, 22 neonatal deaths, and 26 were discharged home. Of these 26, 5 were lost to follow up. The remaining 21 had a mean gestation of 32 weeks (range 25-41), mean rupture of membranes (ROM) at 24 weeks (range 15-32) and mean duration of ROM of 8 weeks (range 1-20). The mean length of follow up was 15 months (range 6-22). Only 5 infants (4 of whom were ventilated) had recurrent respiratory problems. These infants were born more prematurely than the asymptomatic infants ($p<0.05$). Only 3 children required hospital admission for chest related disorders and all 3 suffered with recurrent respiratory symptoms. No relationship was found between either recurrent symptoms or hospital admission and duration or length of membrane rupture. At one year, abnormal lung volumes were only found in the symptomatic ventilated infants, except for 2 infants who had very early onset and prolonged duration of ROM. We conclude that chronic respiratory morbidity following PPROM relates to the gestation at birth and neonatal ventilation and only in extreme cases to the duration and onset of membrane rupture.

36

STUDIES OF ENDOTOXIN (LPS) INDUCED HUMAN MACROPHAGE (Mø) PRODUCTS WHICH INDUCE POLYMORPHONUCLEAR LEUKOCYTE (PMNL) RECRUITMENT DURING INFLAMMATION.

Pál J. Megyeri and Andrew C. Issekutz, Szent-Györgyi Albert Medical School,Szeged, Hungary, Dept of Pediatrics and Microbiology Dalhousie Univ, Halifax, N.S., Canada

Previously we reported that LPS induced rabbit Møs release protein factors which recruit PMNLs into rabbit skin as measured with ^{51}Cr labelled leukocytes. Here we report that in vitro stimulation of human monocyte derived Møs with LPS (3-100 ng/ml for 1-24 hours) results in their secretion of at least one protein factor capable of attracting PMNLs into the skin of rabbits following intradermal injection. The predominant PMNL recruiting activity (PRA) had a molecular weight on gel filtration (Sephadex-100, Superose-12) of 40-45 Kd. The production of the PRA was inhibited by cycloheximide (2 µg/ml) and the PRA was found to be relatively heat stable (43% loss of activity at 56° C 30 min) and had no in vitro chemotactic activity for PMNLs. The gel filtration fractions most active for PRA had 7-20 U/ml TNF and no detectable IL-1 (<0.2 U/ml) activity. The active gel filtration fractions were tested after treating them with neutralizing polyclonal anti-human IL-1α and IL-1β and with neutralizing monoclonal anti-TNFα antibody. This combined treatment decreased the in vivo PRA activity by only 16%. These results suggest that LPS stimulated human Møs secrete a yet unidentified 40-45 Kd component (PRA) which can be distinguished from TNFα, IL-1 and macrophage derived factors chemotactic for PMNLs in vitro.

37

FOLLOW UP AND COMPARISON OF IMMUNOLOGICAL PARAMETERS IN HIV-INFECTED AND HIV-AB NEGATIVE HIV-EXPOSED INFANTS

C.Rosendahl, U.Wintergerst, E.Fahrenheim, E.Eisl, B.H. Belohradsky Immundefekt-Ambulanz der Universitäts-Kinderkliniken, Lindwurmstr.4, 8000 München 2, FRG

Introduction: Infants with AIDS-related complex (ARC) or AIDS following vertically acquired HIV-infection develop severe B- and T-cell defects.

The immunological parameters and clinical symptoms of the HIV-infected children were studied and compared with those of the HIV-exposed infants, who became HIV-Ab negative and were otherwise healthy.

Methods: 35 children could be evaluated for clinical, immunological, serological, and virological parameters regularly. The following immunologic data were investigated: Total number of CD4, CD8, CD20 positive cells, stimulation with phytohaemagglutinin (PHA), OKT3, pokeweed mitogen (PWM), staphylococcus aureus protein (SAC) and the antigens mumps, tuberculin, vaccinia, streptolysin O, and tetanustoxoid. 15 HIV-infected children could be compared with 12 children, who lost HIV-Antibodies and seem clinically, serologically, and virologically not infected. In 8 further children the infection is still uncertain.

Results: Until the age of 20 months there was no detectable difference in the immunological findings of children with, without or with uncertain HIV-infection (children with full blown AIDS excludes). The total number of CD4 positive cells decreases in older infected children, especially in those with AIDS, despite IVIG- and/or Zidovudine-therapy. The pathological results of the lymphocyte-stimulation with PHA and OKT3 correlate with the declining course of CD4 cell count and CD4/CD8 ratio Stimulation with PWM in infected children is already low when CD4 cell counts are still normal. In all children under 20 months the antigenic stimulation could not be demonstrated.

Conclusion: With cautious interpretation of our data. PWM seems to be the earliest immunological marker for HIV-infection. For routine immunological surveillance of HIV-infected children the determination of the CD4/CD8-ratio is sufficient.

With support of the Government of the FRG)

38

LOCAL T CELL RESPONSE IN POSTINFECTIOUS ENCEPHALOMYELITIS

H. W. Kreth, G. W. Hofmann and F. Hashimoto Univ.-Kinderklinik, D-8700 Wuerzburg, FRG

Postinfectious encephalomyelitis (PE) is a well-known complication of viral infections such as measles, rubella or varicella. The pathogenesis of these complications is still unclear. The absence of infectious virus or viral antigens from cerebrospinal fluid (CSF) and brain tissues led to the assumption that PE might be a T cell-mediated autoallergic process resembling experimental autoallergic encephalitis (EAE).

In this study, we have investigated the local T cell response in 5 children with PE (2 x measles encephalitis, 1 x rubella encephalitis, 2 x varicella cerebellitis). T cells were directly cloned from CSF exudate cells by limiting dilution in the presence of irradiated feeder cells and IL-2. A variable proportion of T cell clones and lines was found to react specifically to viral antigens in either cytotoxicity or proliferative assays. Responses to brain antigens (myelin basic protein, galactocerebrosides, gangliosides) were not seen. These observations strongly argue against the autoallergic hypothesis. The results are much more compatible with the direct invasion of the CNS by the infecting viruses.

39

IN VIVO AND IN VITRO IMMUNE REACTIONS INDUCED BY BOVINE SURFACTANT (SF-RI 1)

P.Bartmann*, U.Bamberger**, F.Pohlandt*, L.Gortner*
*University of Ulm, Dept. of Pediatrics, D-7900 Ulm, FRG, **Dr.K.Thomae GmbH, D-7950 Biberach, FRG

We performed a multicenter randomized trial to investigate the effect of a bovine surfactant preparation (SF-RI 1) on the treatment of respiratory distress syndrome in 69 preterm infants less than 30 weeks of gestation. 34 infants were treated with 50 mg/kg birth weight of SF-RI 1 with a maximum of 4 doses.

Sera of all children were collected before as well as 2, 4 and 6 weeks after the initial treatment. 71% of the exspected number of sera was obtained and tested for the presence of anti-surfactant antibodies using an ELISA with a detection limit of 10 ng/ml specific antibody. Anti-surfactant antibodies could not be detected in any of the serum samples.

T-cells from patients with surfactant treatment were tested by 3H-thymidine incorporation for the induction of a proliferative response to SF-RI 1 2 to 70 days after the in vivo application. SF-RI 1 alone did not stimulate T-cells from these patients in vitro. Mitogen induced T- and B-cell activation in vitro was found to be altered in the presence of SF-RI 1.

Conclusion: No immune responses could be detected after in vivo application of SF-RI 1 though in vitro immune functions are altered in the presence of bovine surfactant.

40

PATTERNS OF ABNORMAL CEREBRAL ENERGY METABOLISM FOLLOWING BIRTH ASPHYXIA.

James Moorcraft, Nicholas M. Bolas, Peter L. Hope, N. Kevin Ives, Bheeshma Rajagopalan, Philip Sutton, George K. Radda. University of Oxford, John Radcliffe Hospital, Dept of Paediatrics, and MRC Clinical Magnetic Resonance Unit, Oxford, England.

Phase modulated rotating frame imaging (PMRFI) was used to study 23 asphyxiated neonates of gestation 34-42 (median 40) weeks by phosphorus magnetic resonance spectroscopy (MRS) at 1-16 (med. 4) days of age. Six infants with severe encephalopathy had global phosphocreatine/inorganic phosphate (PCr/Pi) ratios of 0.18-0.86 (med. 0.59) and global Pi/adenosine triphosphate (Pi/ATP) ratios of 0.5-1.59 (med. 0.64). PMRFI data showed a progressive rise in Pi/ATP in slices 1 and 2 cms below superficial brain tissue. Seventeen infants with mild or moderate asphyxia had median global PCr/Pi of 1.62 and Pi/ATP of 0.35, and PMRFI did not show any consistent pattern of changing energy metabolism with depth. However, many individual infants (e.g. Infant A, global Pi/ATP 0.27) had focal areas of impaired metabolism although ultrasound and conventional MRS were normal.

	Superficial	1cm deep	2cm deep
Med. Pi/ATP severe asphyxia	0.41	0.83	0.95
Med. Pi/ATP mild/mod. asphyxia	0.35	0.45	0.34
Pi/ATP Infant A	0.35	0.72	0.18