1009 SELECTIVITY OF THE IMMUNOLOGICAL DISTURBANCES IN A ZINC DEFICIENT INFANT. James G. McNamara, Chester C. Wood, John M. Dwyer, Richard A. Ehrenkranz (Spon. by Ian Gross) Yale Univ. School of Med. Dept. of Ped. New Haven.

An infant born prematurely (25wk;720g) presented at six months with acrodermatitis enteropathica. Despite adequate dietary zinc (zn), good weight gain and a normal stooling pattern, the serum zn level was 15 ug/dl (nl range 50-150 ug/dl). Lymphocyte response to the T cell mitogen PHA was normal, but the patient was anergic, and had abnormally high numbers of circulating B cells (1,847 cells/ul;nl 115/cells/ul). The serum IgG level was 140 mg/dl and IgA level was 6 mg/dl. No significant antibody to Tetanus, and no detectable antibody to Pertussis developed after primary immunization. Zn sulphate (2mg/kg/day) rapidly reversed the clinical condition, but immunological abnormalities responded slowly. After three months of zn replacement therapy (with adequate serum zn levels), the infant remained hypogammaglobulinemic, B cells in circulation remained elevated, and the response to the B cell mitogen Pokewood (PWM) was depressed. B cells, however, did respond in vitro to the T cell independent B cell mitogen Staph aureus Cowan (SAC). Responses to allogenic lymphocytes have shown consistent improvement. Overall, the absence of antigen specific responses, the decreased expression of the T3 marker, with normal proliferative responses to PHA and SAC, but not PWM, suggests that prolonged zn deficiency produces chronic disturbances in antigen presentation and/or T cell interactions that respond only slowly to zn replacement therapy. The selectivity of these immunological defects points to those areas of the immune system that may be critically zn dependent.

1010 LABORATORY FINDINGS IN VARIOUS CONGENITAL IMMUNODEFICIENCIES. James E. Nagel, Bradley S. Bender, William H. Adler, John P. Johnson, Kathleen M. O'Neil, and Jerry A. Winkelstein, NIA, NIH and The Johns Hopkins Hospital, Dept. of Pediatrics, Baltimore, MD

57 patients with suspected or proven immunodeficiency disorders were evaluated. Clinical diagnoses using WHO criteria included common variable immunodeficiency (6), DiGeorge Syndrome (6), X-linked hypogammaglobulinemia (5), IgA deficiency (5), ataxia-telangiectasia (4), mucocutaneous candidiasis (4), transient hypogammaglobulinemia (4), chronic granulomatous disease (3), severe combined immunodeficiency (2), and miscellaneous disease states (18). Immunological evaluation included CBC and differential, lymphocyte subset analysis with monoclonal antibodies, in vitro responses to mitogens, in vitro immunoglobulin production, serum immunoglobulin profiles and serological titers to tetanus toxoid, pneumococcal polysaccharide antigen, and EBV. Despite homogenous clinical findings in each group, laboratory results showed marked variability. For example, in patients clinically diagnosed as DiGeorge Syndrome, representation of OKT3+ lymphocytes ranged from 3-73%, OKT4+ 3-64%, OKT8+ 3-33% and sIg+ 10-56%. Four children with recurrent infections, but fitting no clinically defined immune deficiency disorder, and six first degree relatives of immunodeficiency patients performed normally in all the above assays (supplemented where appropriate with in vitro studies of PMN function. While laboratory studies complement the clinical findings and may exclude certain immunodeficiency disorders, they should not be used as the primary basis for diagnosis.

†1011 **DECREASED NATURAL AND ANTIBODY DEPENDENT CELLULAR CYTOTOXICITY IS ASSOCIATED WITH DECREASED PRODUCTION OF NATURAL KILLER CYTOTOXIC FACTORS AND INTERFERON IN NEONATES.** **Madhavan P. N. Nair, Stanley A. Schwartz and Mangaladevi Menon, The University of Michigan, Departments of Pediatrics, Epidemiology and Obstetrics and Gynecology, Ann Arbor, Michigan.**

Cord blood lymphocytes (CBL) were compared with adult peripheral blood lymphocytes (aPBL) for their: 1) natural killer (NK) and antibody dependent cellular cytotoxic (ADCC) activities, 2) target binding capacity, 3) ability to induce soluble natural killer cytotoxic factor (NKCF), 4) interferon (IFNα) and interleukin 2 (IL2) induced augmentation of NK activity and 5) capacity to produce IFN against tumor targets in vitro. For the NK assay, K562 cells were used as targets whereas in the ADCC assay, antibody coated SB cells were used in a 4 hr ^{51}Cr release assay. CBL depleted of adherent cells and Percoll separated NK enriched subpopulations demonstrated significantly lower NK and ADCC activities compared to aPBL. However the target binding ability of CBL was comparable to aPBL. CBL produced significantly lower levels of NKCF in response to K562 tumor targets compared with aPBL. Although the NK activity of CBL was not stimulated by either IFN or IL2 to the same levels shown by aPBL, the percent enhancement of cytotoxicity of CBL by IFN and IL2 was greater than aPBL. The ability of CBL to produce IFN in vitro against K562 target cells was significantly lower than aPBL. Our results suggest that decreased NK and ADCC activities and NKCF production by CBL may be associated with diminished IFN production, thereby predisposing neonates to an increased susceptibility to infection.

●1012 SOLUBLE INTERLEUKIN-2 RECEPTORS (IL-2R) ARE PRODUCED BY ACTIVATED CORD BLOOD CELLS IN VITRO. David L. Nelson, Carole C. Kurman, Bernard Boutin, and Laurence A. Rubin. NCI, NIH, Bethesda, MD 20205.

The interaction of the lymphokine IL-2 with its cellular receptor (IL-2R) plays a central role in the maturation and immunoregulation of the immune response. Using monoclonal antibodies to the human IL-2R, we have developed a quantitative assay to measure soluble IL-2R. To study the maturation of IL-2R expression, cord blood mononuclear cells (CBMC) were cultured in vitro under various conditions and the IL-2R in cell-free culture supernatants and in detergent solubilized cell extracts were measured. Cultures were stimulated with PHA or the monoclonal antibody OKT3 reacting with the T-cell antigen-receptor complex. Soluble IL-2R were first detected in culture supernatants 48 hours following activation with either stimulus and the amount of receptor had increased roughly 10-fold by day 7 of culture. Supernatants of cells stimulated with PHA consistently contained 2-5 times more soluble IL-2R by day 7 than those stimulated with OKT3. The culture supernatants and solublized cell extracts of activated CBMC contained amounts of IL-2R comparable to similarly activated adult MNC. When stimulated with pokeweed mitogen, adult MNC secreted both IL-2R and IgM while CBMC secreted only IL-2R suggesting differential maturation and/or immunoregulation of the two responses. However cord blood cells are immunocompetent for IL-2R production in vitro. Soluble IL-2R may have an immunoregulatory role and abnormal levels of soluble IL-2R may also accompany cellular activation in vivo.

1013 PREVALENCE OF ANTI-SSA AND OTHER ANTINUCLEAR ANTIBODIES (FANA) IN HEALTHY PREGNANT WOMEN: RISK MARKERS FOR CONGENITAL HEART BLOCK. Paulina Navon, Bernhard H. Singsen, Dept. of Child Health, Univ. of Missouri, Columbia.

Isolated congenital complete heart block (CCHB) is associated with SSA (Ro) antibodies (abs) from mothers with or without symptoms of rheumatic disease (RD). The frequency of SSA abs in pregnancy is not known. Also, obstetric care rarely includes an RD history. The purpose of this prospective study was to measure the prevalence of FANA and SSA abs in normal pregnancy, and to determine if maternal SSA abs, or RD history, define a group at risk to bear infants with CCHB. Sera from 190 pregnant women, collected by trimester, and after delivery, were tested by immunofluorescence (mouse kidney and Hep-2 cell substrates), and for anti-Sm, RNP, SSA, SSB, Scl-70, and PM-1 abs by immunodiffusion. 139 women were interviewed for personal or family RD histories, obstetric complications, and fetal outcome. 12/190 women had FANA on mouse kidney and 28 on Hep-2 cells; together, 34/190 sera had FANA ($\geq$1:20);(15/34 1:80). In the 1st and 2nd trimesters, 17/105 sera had FANA, while the 3rd trimester exhibited 17/85 with FANA. Only 2/190 sera had SSA abs; mothers and infants were asymptomatic. Interview revealed RD in 6 mothers. RD family histories were found in 10/26 women with FANA, but only in 10/113 without FANA. There was no difference in the complication rate from prior pregnancies, in women with and without FANA. In summary, FANA is frequent in pregnancy, but is not associated with personal or familial occurrence of RD, or obstetric complications. The rarity of anti-SSA (2/190) in normal pregnancy contrasts with its specific association for infants with CCHB.

1014 CHRONIC ACTIVE EPSTEIN-BARR VIRUS (CAEBV) INFECTION AND IgE-MEDIATED ALLERGY. George B. Olson, Moien Kanan, Geoffrey Gersek, James F. Jones. University of Arizona, Department of Microbiology and Immunology, Tucson, AZ and National Jewish Hospital/National Asthma Center, Denver, CO.

At least 70% of patients with CAEBV have symptomatic IgE-mediated allergic diseases (Ann Intern Med, 102:1, 1985). As the initial inquiry into the basis for this relationship, we used multivariant discrimination analyses to examine the 11 following variables in 46 EBV-seropositive allergic individuals, 11 of whom had CAEBV: anti-viral capsid antigen (VCA) and anti-early (EA) titers, serum IgE, percent in vitro lymphocyte response to 7 aeroallergens, mean stimulation indices to allergens, spontaneous H^3TdR into resting lymphocytes, percentages of T and B cells, total IgE+ cells and IgE+ B and T cells. The results show a clear separation between CAEBV patients and the others with or without inclusion of the anti-EBV titers (p=.001). B and T cell numbers were not important in this separation. If only IgE levels and mean stimulation indices were compared, CAEBV patients and the most allergic others had high allergy related values. Three groups (mild and moderate allergy and CAEBV) could be generated, however, using all 11 variables (p=.0001). When these groups were compared, the CAEBV group had significantly higher values (p=.0315 to p=.0001) in all variables except T and B cells and IgE+ T and B cells. Correlation coefficients derived by comparing results of all variables in all patients indicated 2 sets of 5 and 6 independent variables which may represent biological trends. Thus, statistical differences between CAEBV patients and allergic controls using important test-independent variables of immune function suggest that IgE-mediated allergy may contribute to expression of CAEBV.