978 DEFECTIVE ADHERENCE-MEDIATED POLYMORPHONUCLEAR LEUKOCYTE (PMN) ANTIBODY-DEPENDENT CELLULAR CYTOTOXICITY (ADCC) IN PATIENTS WITH PMN SURFACE GLYCOPROTEIN 138 (GP 138) DEFICIENCY. Steve Kohl, Donald C. Anderson, Frank S. Schmalsteig. Prog Infec Dis and Depts of Pediatrics, Univ Texas Med Sch, Houston, Galveston, and Baylor Col. of Med.

Four unrelated patients with GP 138 deficiency, marked leukocyte adherence defects, and normal IgG Fc receptors (PMN-EA rosettes = 84±6%) were studied for the ability to mediate PMN and Mononuclear cell (MC) ADCC and MC natural killer cytotoxicity (NKC) in a 51Cr assay to herpes simplex virus-infected Chang liver cells. At multiple effector to target cell ratios (E:T), patients' PMN-ADCC was absent (E:T 100:1, 4.3±1.2) and significantly lower than that of adults (27.9±8.1, $p<.025$), infants (15.3±4.2, $p<.005$) or cord blood (34.7±6.5, $p<.001$). Patients' MC-NKC (E:T 30:1, 10.0±4.3, controls 39.6±9.4, $p<.05$) and MC-ADCC (E:T 30:1, 27.6±11.4, controls 45.2±7.6) were markedly lower than controls but variable. A single cell agarose conjugation assay demonstrated that anti-HSV IgG increased the percentage of normal PMN conjugation (from 1.5±0.5 to 4.5±0.8, $p<.01$) but had no effect on conjugation of patients' PMN (1.2±0.2 to 1.0±0.2). Low MC cytotoxicity was due to lytic defects. This model demonstrates for the first time that PMN-ADCC is dependent on an adherence-mediating leukocyte surface glycoprotein GP138 to mediate target binding in addition to intact IgG Fc receptors.

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● 979 DEFECTIVE TARGET CELL ADHESION AND IgG Fc RECEPTOR (FcR)EXPRESSION ASSOCIATED WITH LOW NEONATAL ANTIBODY-DEPENDENT CELLULAR CYTOTOXICITY (ADCC) TO HERPES SIMPLEX VIRUS (HSV). Steve Kohl, Lian S Loo, Bernard Gonik, Univ Tex Med School, Dept of Pediatrics, Obstetrics and Gynecology, and Program in Infectious Diseases, Houston.

Neonates (n=7) had low mononuclear cell (MC)-ADCC (29.5 ± 7.1) compared to adults (53.8 ± 7.5, $p = .02$) in a 51 Cr release assay against HSV-infected Chang liver cells. Their polymorphonuclear leukocyte (PMN) - ADCC (43.1 ± 9.9) was similar to that of adults (36.3 ± 3.1). In a single cell agarose conjugation assay, specific IgG significantly increased adult MC conjugates (from 1.9 ± 0.3 in the absence of IgG to 4.2 ± 0.8%, p=.03). IgG had no effect on cord blood MC conjugates (2.1 ± 0.6 to 2.7 ± 0.7). In contrast, IgG significantly increased both adult PMN (1.1 ± 0.3 to 2.6 ± 0.4, $p = .003$) and cord PMN (1.3 ± 0.2 to 3.3 ± 0.7, $p<.05$) conjugation. Expression of high affinity IgG FcR assayed by EA rosetting revealed significant differences (p=.005) between adult MC FcR (7.1 ± 0.5%) compared to cord FcR (4.7 ± 0.4). There was no difference in PMN FcR expression. In addition while human alpha interferon increased cord MC adhesion in the presence of IgG (4.5 ± 0.7%), and FcR expression (9.4 ± 0.9%), it had no effect on MC ADCC (30.6 ± 5.7%). Thus, defective FcR expression and target cell adhesion may partly explain low cord ADCC. Cord blood cells also have an interferon insensitive lytic or recycle as well as adherence defect.

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980 LYMPHOCYTE POPULATION AND FUNCTION IN PERTUSSIS. Edward Kong, Senih M. Fikrig, Rajendra N. Pahwa and Kenneth Bromberg. State University of New York, Downstate Medical Center and Memorial Sloan-Kettering Cancer Ctr.

Lymphocytosis is frequently associated with clinical pertussis. Lymphocyte population in 10 children with bacteriologically proven pertussis was studied. The total number of lymphocytes, T and B cells, mitogen response to common lectins - PHA, Con-A, PWM, - immunoglobulins - IgG, IgM, IgA - as well as subgroup of T cells - OKT_3, OKT_4, OKT_8, OKT_{11} - were determined and compared to the normal population. No statistically significant difference between the two groups were found.

● 981 SYSTEMIC AND MUCOSAL CELL MEDIATED CYTOTOXIC IMMUNE RESPONSES TO RESPIRATORY SYNCYTIAL VIRUS (RSV). Takugi Kumagai, David T. Wong, and Pearay L. Ogra, Dept. Peds., State Univ. N.Y. and Children's Hospital, Buffalo, N.Y.

The development of natural killer cell and other cellular antibody independent cytotoxic (CTX) responses to RSV were studied in the splenic and pulmonary mononuclear effector cells obtained from groups of six week old cotton rats after subcutaneous (S/C) or intranasal (I/N) immunization with live virulent or inactivated RSV. Virus induced CTX activity was determined by employing radiolabeled chromium release assay, using RSV-infected cotton rat fibroblast (CRF) or HEp-2 cell cultures as specific targets. No RSV induced CTX activity was observed after S/C immunization with live virus or after I/N inoculation of inactivated virus. On the other hand, significant activity was observed after I/N inoculation of live RSV. Peak responses appeared on Day 4 in the pulmonary cells and on Day 7 in the spleen. The CTX activity declined to baseline levels 10 and 15 days after immunization in the pulmonary and splenic cells respectively. Although CTX activity could be demonstrated both with CRF or HEp-2 cells as the targets, the activity was 30-40% higher with HEp-2 cell targets. These observations demonstrate appearance of natural killer cells as well as other cytotoxic effector cells after in vivo infection with RSV. It is suggested that viral replication at the mucosal site is essential for induction of such activity during RSV infection. The appearance of such cellular reactivity may be important in viral elimination during human infection.

● 982 ROLE OF SERUM IgA, IgG2(G2) and IgG4(G4) IN SUSCEPTIBILITY TO INFECTION. Eui J. Lee and Douglas C. Heiner, UCLA School of Medicine, Harbor-UCLA Medical Center, Dept. of Pediatrics, Torrance, CA.

Oxelius et al reported that combined deficiency of IgA, G2 and G4 is associated with recurrent respiratory tract infections, whereas IgA deficiency without IgG subclass deficiency is asymptomatic. They suspect G2 deficiency results in defective responses to polysaccharides, increasing susceptibility to infection. Studies in our laboratory indicated that isolated deficiency of G4 results in similar susceptibility to infection. To investigate IgA-G2-G4 interrelationships, we measured serum G2 and G4 in 59 subjects who had a primary diagnosis of IgA deficiency. We found G2 decreased (<.5 mg/ml) in 41, very low (<.1 mg/ml) in 17, normal in 9 and elevated (>5 mg/ml) in 9. G4 was decreased (<.06 mg/ml) in 33, very low (<.01 mg/ml) in 15 and high (>0.8 mg/ml) in 1. Thus IgA deficiency commonly is associated with disturbed synthesis or catabolism of G2 and/or G4. In 9 of 17 with severely depressed G2, G4 was also severely depressed. Similarly, 9 of 15 with severely depressed G4 also had very low G2. One patient had IgA deficiency and frequent infections without either G2 or G4 deficiency. One with hyper IgE syndrome had depressed G2 and very high G4. Forty-four G4 deficient patients in whom IgA levels were unknown were also studied. These had a high incidence (64%) of G2 deficiency, 30% severe. It is apparent that determination of IgG subclasses, particularly G2 and G4, is important in the evaluation of patients with recurrent infection, especially if levels of IgA are low or when levels of all major immunoglobulin classes are normal.

† 983 **1,25-DIHYDROXYVITAMIN D_3 (1,25(OH)$_2D_3$) SUPPRESSES THE IN VITRO PROLIFERATION AND IMMUNOGLOBULIN PRODUCTION BY NORMAL HUMAN PERIPHERAL BLOOD CELLS.** Jacques M. Lemire, John S. Adams, Rebecca Sakai, Richard N. Fine and Stanley C. Jordan. UCLA Sch. of Med., Dept. of Pediatrics, Div. Ped. Nephrology; and USC Sch. of Med., Dept. of Medicine, Los Angeles.

A specific, high-affinity intracellular receptor for 1,25(OH)$_2D_3$ has recently been identified in peripheral monocytes and activated T and B lymphocytes from normal human subjects. However, a functional role for the 1,25(OH)$_2D_3$ receptor in these cells has yet to be identified, and led us to evaluate the effects of 1,25(OH)$_2D_3$ on lymphocyte activation. Peripheral blood mononuclear cells were isolated from four normal adult volunteers suspended in medium RMPI-1640 containing 10% FBS and activated with pokeweed mitogen or Candida albicans in the presence or absence of 10^{-7} to 10^{-10}M 1,25(OH)$_2D_3$. DNA synthesis was assessed by [^{3}H]-thymidine incorporation on day 5 of culture, and immunoglobulin production was determined by enzyme-linked immunoabsorbent assay (ELISA) on day 12. 1,25(OH)$_2D_3$ inhibited DNA and immunoglobulin synthesis in cells from all four subjects in a dose-dependent fashion with maximal inhibition seen at 10^{-8}M 1,25(OH)$_2D_3$. The specificity of the effect for 1,25 was confirmed by incubation of additional cultures with 25-OH-D_3 and 24,25(OH)$_2D_3$ (10^{-7} to 10^{-10}M). Only 10^{-7}M 24,25(OH)$_2D_3$ had a significant effect on immunoglobulin production. These data suggest a potential role for 1,25(OH)$_2D_3$ in modulation of the human immune response.