979 ANTIBODIES TO COW'S MILK PROTEIN IN NEWBORN INFANTS M.C. Harris, G.B. Kolski, D.E.Campbell, M. Marcus, C. Deuber, (spon. S.D.Douglas) Univ. of Pa. Sch. of Med., Dept. of Peds, Children's Hosp. of Phila., Phila., Pa.

Although many infants with clinical manifestations of milk allergy demonstrate antibodies (AB) against cow's milk protein (CMP), the development of the immune response to CMP in normal infants is not known. We have determined the IgG and IgE AB response to CMPs (B-lactoglobulin, α-lactalbumin, and κ-casein) using a modified ELISA procedure with human serum albumin as a negative control. Sera were screened at dilutions of 1:5 for IgE and 1:1000 for IgG antibodies. Sera were obtained during the first 24 hrs and at either 4 wks (11 infants) or 8 wks (13 infants) postnatal age from healthy term infants (n = 24) (BW 3342 $\pm$ 438g)(M $\pm$ SD). 13/24 infants received bottle (BO) feedings, 8 both breast (BR) and BO, and 3 were exclusively BR fed. Of the infants screened at 4 wks, 4/11 demonstrated a rise in IgG and IgE CMP AB (p=NS), while at 8 wks, 11/13 had significantly increased CMP AB responses ($p < .0001$). Among the 15 AB+ infants, 13 had an increase in both IgG and IgE titers, 1 had only an IgG and 1 an IgE response. There was no evident relationship between feeding practice (BR, BO, BR/BO) and the development of CMP AB, although 2/3 infants exclusively BR fed were AB negative. Thus, a significant number of infants exposed to CMP develop IgG and IgE antibody responses by 2 months postnatal age. The formation of AB may be a manifestation of a normal immune response to CMP rather than an early indicator of allergy in newborn infants.

† 980 CYTOMEGALOVIRUS (CMV) SPECIFIC CYTOTOXIC CELL-MEDIATED IMMUNITY (CMI) DURING PREGNANCY. Christopher J. Harrison and Martin G. Myers, University of Cincinnati, Children's Hosp. Med. Ctr., Department of Pediatrics, Cincinnati.

Maternal cytotoxic CMI functions may modify vertical CMV transmission and/or disease manifestations but are ill defined. We performed ^{51}Cr release cytotoxicity assays for CMV specific natural killer (NK), antibody dependent cell-mediated cytotoxicity (ADCC), and MHC-restricted CMV specific cytotoxic (MRCC) activities in uninfected and CMV infected inbred strain 2 guinea pigs during pregnancy. Animals were infected with 10^7 $TCID_{50}$ tissue culture attenuated CMV during the first trimester (median gestation day 27).

CMV infected nonpregnant controls had augmented NK activity at two weeks (49.2 $\pm$ 11.7%) returning to baseline (22.9 $\pm$ 2.3) at 8 weeks, and had peak MRCC at six weeks (14.4 $\pm$ 5.5%). In contrast, NK augmentation in CMV infected pregnant (CIP) was delayed until two weeks postpartem (37.0 $\pm$ 2.5%). Uninfected pregnant (UP) animals had depressed NK activity during the second trimester, third trimester and two weeks postpartem (11.1 $\pm$ 1.5, 7.0 $\pm$ 1.1 and 9.9 $\pm$ 3.1%) compared to CIP (24.5 $\pm$ 7.2, 23.6 $\pm$ 7.1 and 27.9 $\pm$ 5.3%) ($P < .05$) and uninfected nonpregnant animals (UNP) (20.9 $\pm$ 4.8) ($P < .05$). Neither UNP nor UP animals expressed CMV specific MRCC or ADCC. CIP acquired CMV specific MRCC (11.0 $\pm$ 2.3, 4.0 $\pm$ 1.5, and 10.9 $\pm$ 2.3%). ADCC was not detected in plasma of CIP animals until two weeks postpartem (10.3 $\pm$ 4.2%).

Infection, pregnancy, and infection during pregnancy alter CMI to CMV. This model should allow investigation of the roles of each CMI function in the pathogenesis of congenital CMV infection.

981 THE EFFECT OF UNILATERAL TESTICULAR TORSION ON THE CONTRALATERAL TESTICLE IN PREPUBERTAL CHINESE HAMSTERS John A. Henderson; Paul Smey; Marc S. Cohen; Charles P. Davis; Andrew F. Payer, Terry A. Parkening, Michael M. Warren, University of Texas Medical Branch, Galveston, Texas, Department of Surgery, Division of Pediatric Urology, and Departments of Anatomy and Microbiology.

Histologic and direct immunologic effects of testicular torsion on the contralateral testicle were investigated in prepubertal Chinese hamsters. Four study groups were established. I) Left orchiectomy only, II) sham surgery (scrotal incision) III) 720° left testicular torsion with left orchiectomy 24 hours later, IV) 720° torsion of left testicle with detorsion after 24 hours. Biopsies of the contralateral testicle were performed at one week, one month, and six months after the indicated procedure. Testicular tissue was examined for immunofluorescent activity using fluorescent labeled goat anti-hamster IgG and compared to positive controls. Fluorescence was graded neg, tr, 1 - 4+, depending on the degree of fluorescence of the basement membrane, interstitium, and individual germinal cells. Control orchiectomy specimens, Groups I and II showed some variability in immunofluorescence between negative and 1+. Group III specimens showed 7/41 (17%) negative, 23/41 (56% tr, 11/41 (27%) 1+ and 1/41 (2%) 3+. Group IV specimens revealed 2/18 (11%) negative, 12/18 (67%) tr, and 4/18 (22%) 1+. Immunologic appearance did not appear related to time after torsion, or differ between control and experimental animals. Representative histologic specimens demonstrated no tubular damage.

982 CRYOPRECIPITATES, IMMUNE COMPLEXES, AND COMPLEMENT LEVELS IN KAWASAKI SYNDROME. Betsy C. Herold, A. Todd Davis, Stanford T. Shulman, Carlos M. Arroyave. Northwestern University Medical School, Children's Memorial Hospital, Department of Pediatrics, Chicago.

Cryoprecipitates have been postulated to play a role in the pathogenesis of several autoimmune diseases. To investigate the presence of cryoprecipitates in Kawasaki syndrome (KS), we studied sera from ten children with KS for the presence of cryoprecipitates, concentration of C3, C4, and Factor B, and soluble immune complexes by the Ciq binding assay. Cryoprecipitates were present in seven of ten children. The protein concentration of the cryoprecipitate was 82.5 $\pm$ 19.9 ug/ml. The immunoglobulins within the cryoprecipitate consisted primarily of IgG and IgM; no complement components could be detected. In addition, soluble immune complexes were detected in the serum of all ten children studied at a concentration of 130.9 $\pm$ 16.1 ug/ml. Despite the presence of soluble immune complexes and cryoglobulins, there was no relationship between immune complexes and complement levels. In limited serial studies, the concentration of protein within the cryoprecipitates diminished in parallel with clinical improvement.

We conclude: 1) cryoprecipitates were frequently found in the serum of children with KS; 2) the immunoglobulin within the cryoprecipitates was predominantly IgG and IgM; 3) the concentration of the cryoprecipitates tends to parallel the clinical activity, and 4) soluble immune complexes were present in all children with KS.

983 IMMUNOLOGIC STUDIES IN PEDIATRIC RECIPIENTS OF HEPATIC ALLOGRAFTS. Henry G. Herrod and James W. Williams, University of Tennessee Center for the Health Sciences, Department of Pediatrics and Surgery, Memphis.

15 of 40 hepatic allograft recipients for whom immunologic data was available were 18 yrs or younger. Four of these patients have expired, none with evidence of significant graft rejection. At the time of transplantation (Tx) these patients had a significantly decreased proportion of OKT3+ cells compared to normal subjects ($p<0.01$). There was no significant difference in lymphocyte subset proportions between patients with primary biliary atresia (6 pts) and those with non A non B hepatitis (6 pts). Four weeks post Tx (pTx), when most patients were receiving relatively low doses of glucocorticoid ($\leq$0.5 mg/kg/d) and oral cyclosporine (Cyc) (15 mg/kg/d), the proportion of OKT4+ cells had declined from 37.5 $\pm$ 10.3% to 30.4 $\pm$ 10.2%. By 52 weeks it had risen to 35.5$\pm$13.4%. By contrast adult T4+ cells dropped from 37.9% pre Tx to 29.1% at 4 wks and 26.4% at 52 weeks pTx. In vitro studies demonstrated a nadir in IgM and IgG synthesis at 4 weeks pTx (pre: IgM 409$\pm$273 ng/ml; IgG 361$\pm$653 ng/ml vs 4 wk: IgM 0$\pm$0 ng/ml $p < 0.01$; IgG 48$\pm$95 ng/ml $p < 0.01$). Three patients followed serially for 52 weeks had a return of Ig synthesis (pre: IgM 265$\pm$264 ng/ml; IgG 485$\pm$742 vs 1 yr pTx: IgM 273$\pm$55 ng/ml; IgG 1227$\pm$1787). These studies indicate that children who receive hepatic allografts and who are maintained primarily on Cyc immunosuppression appear to be less likely to have a prolonged depression of T4+ cells than adults. Furthermore, children demonstrate improved immune function by 12 mos post transplant.

● 984 HEMOPHILUS INFLUENZAE OPSONINS OF INTRAVENOUS IMMUNOGLOBULINS. Seth V. Hetherington (Spon. by Martha L. Lepow), Albany Medical College, Department of Pediatrics, Albany, NY.

Delivery of antibody to immunoglobulin G deficient patients is most efficient when given intravenously. However, Cohn fraction II must be processed further to prevent spontaneous complement activation by IgG aggregates. Multiple lots of three different IgGs prepared for intravenous use (IVIgG) were tested for antibody titers and opsonic activity for Hemophilus influenzae type b (HiB) to assess whether production processes reduced opsonic activity. Anti-HiB IgG titers were measured by an enzyme-linked immunosorbent assay (ELISA) using whole bacteria as antigen. Opsonic activity was measured as the relative peak neutrophil chemiluminescence (CL) elicited by HiB opsonized with each IVIgG tested. All data was normalized to the results of heated serum from a normal adult with high opsonic activity for HiB.

Production method	n=	HiB titer	Chemiluminescence
Reduction/alkylation	7	0.55$\pm$0.10	0.24$\pm$0.14
pH 4 stabilization	4	0.61$\pm$0.11	0.54$\pm$0.15
Ion-exchange chromatography	8	0.63$\pm$0.07	1.00$\pm$0.28

None of the differences in HiB titer were statistically significant. However, the peak neutrophil CL achieved varied according to the IVIgG used for opsonization ($p < 0.05$ for all pairs by the Neuman-Keul's t-test). While not altering antibody content, some methods of preparation of IgG to permit intravenous use may decrease opsonic activity.