confidence, intrauterine death before 34 weeks gestation; 30 of these 84 fetuses were not transfused and 18 were liveborn (gest. age 34 weeks, SD 1.9,) of whom 9 (30 %) survived. We transfused 54 infants in utero (IUT) on 96 occasions. Of these, 25 had marked ascites at the time of transfusion: 13 died in utero, within 48 h of the procedure; 11 were born alive (gest. age 32.2 weeks, SD 2.1), were hydropic and died of the respiratory distress syndrome (RDS) in the neonatal period; 1 (4 %) was not hydropic at birth and survived. 29 did not have ascites at the time of transfusion: 13 died in utero, 12 within 48 h of the procedure; 6 were borne alive (gest. age 33 weeks; SD 1.3) and were hydropic, of whom 4 survived and 2 died with RDS; 10 were born alive (gest. age 34.6 weeks, SD 1.6) without hydrops, 1 died with RDS and 9 survived (45 %). We conclude that serial spectrophotometric analysis of amniotic fluid is required to adequately establish the need for IUT since single or paired analyses may be misleading, and that an intrauterine transfusion, particularly in an infant with ascites or performed earlier than 26 weeks gestation carriers a high mortality. (Supported by USPHS Grant HE-06285) (APS)

61 *Quantitative Aspects of Sensitivity in Allergic Children.* CHARLES D. MAY, JANE CHENG* and MARGARET LYMAN*, New York Univ. School of Medicine, New York, N.Y.

Procedures were devised for quantitative chemical assay of histamine released by antigens from leukocytes separated from a 10-ml sample of blood. Nine concentrations of antigen can be utilized in each examination to find the amount required for maximum release of histamine or dose response. Studies have been conducted with a variety of antigens for comparison with clinical manifestations and wheal and flare dermal reactions to the antigens. Also the procedures have been employed to measure the capacity of the sera of sensitive persons to inhibit histamine release with specific antigens (presumably by antibodies) and to follow fluctuations in this capacity and in the sensitivity of leukocytes during injection therapy with antigenic extracts. Data have been accumulated from study of over 100 children, including 30 receiving injection therapy. Histamine is released from leukocytes of sensitive subjects by antigens specifically, in agreement with wheal and flare dermal reactions, and the leukocytes of normal non-allergic individuals are unaffected. Sera of normal persons enhance histamine release but the sera of allergic children inhibit histamine release by the antigens specifically involved. During injection therapy the sensitivity of leukocytes to release of histamine by antigen and the capacity of the patient's serum to inhibit histamine release may vary independently. The net effects are ascertained by determining the amounts of antigen required for release of 50 % of the total histamine in the cells in the presence of the subject's serum in contrast to normal serum. This comparison affords an objective index of any influence of injection therapy on sensitivity, and an objective means of grouping patients by immunochemical response before undertaking clinical appraisals. (APS)

62 *Hereditary Splenic Hypoplasia.* SHERWIN V. KEVY*, MELVIN TEFFT*, GORDON VAWTER* and FRED S. ROSEN, Children's Hosp. Med. Ctr. and Harvard Med. Sch., Boston, Mass.

The one boy and two of three girls in a consanguineous kindred have exhibited undue susceptibility to invasive infections with *Hemophilus influenzae* and pneumococci. One of the affected siblings died of overwhelming *H. influenzae* type B sepsis and was found at autopsy to have a minute spleen. No other anatomic abnormalities were present. The two affected live siblings were each shown to have no demonstrable splenic tissue by scintillation scanning of the abdomen following intravenous injection of colloidal Au^{198}. Normal splenic tissue was demonstrable in both parents by this technique. Examination of the peripheral blood of affected offspring revealed the presence of Heinz and Howell-Jolly bodies. The antibody response to subcutaneous injection of tetanus and diphtheria toxoids and typhoid bacilli was normal. Their red cell survival and response to intravenous particulate antigens are under investigation and the results will be reported. (SPR)

63 *Sex Linked Recessive Hereditary Thrombocytopenia with Immune Globulin Abnormalities. A Form of Wiskott-Aldrich Syndrome?* LUIS CANALES and ALVIN M. MAUER, Dept. of Pediat., Univ. of Cincinnati, Ohio

A family was studied in whom hereditary sex-linked recessive thrombocytopenia was associated with immunologic abnormalities suggestive of relationship to Wiskott-Aldrich syndrome. Twenty-one male and 10 female members of 4 generations were included and 7 thrombocytopenic males found in a sex-linked recessive pattern of inheritance. Platelet counts in affected males ranged from 8,000 to 57,000/mm^3. Bleeding symptoms were mild except in one where recurrent epistaxis led to splenectomy at age 17 years. There was no history of eczema or increased susceptibility to infection. In 5 affected members studied isohemagglutinins were either absent or significantly decreased in titer. On immunoglobulin quantitation, increased levels of IgA were found in 4 of 5. IgM and IgG levels were normal in all. In one affected male, lymphocyte response to phytohemagglutinin was tested and found normal. All unaffected members, including carrier females, had normal platelet counts, isohemagglutinins and immunoglobulins. The absence of significant clinical history of infection or eczema may not preclude the diagnosis of Wiskott-Aldrich syndrome. The finding of detectable isohemagglutinin levels in 2 and normal IgA levels in one affected males indicates variability of severity within the family. All patients suspected of having sex-linked recessive thrombocytopenia should be studied for coexistent immunoglobulin defect. (SPR)

64 *Serum α-Fetoprotein Synthesis in the Human and Rat Fetus and its Inhibition in the Rat.* DAVID GITLIN and MARY BOESMAN*, Univ. of Pittsburgh Sch. of Med., Pittsburgh, Pa.

The serum of the human conceptus contains α-fetoprotein, a protein not found in the serum of the pregnant woman. Concentrations of α-fetoprotein may be low in infants born after premature spontaeous labor, suggesting that fetal synthesis of the protein in these instances is inhibited some days or weeks prior to the actual onset of labor. In the present study, selected tissues from human embryos of 6 to 9 weeks' gestation and from rat fetuses of 15 days' gestation were incubated with C^{14}-amino acids. Immunoelectrophoresis of the culture fluid followed by autoradiography revealed that α-fotoprotein was synthesized in human liver, rat liver and rat yolk sac, but not in any of the other tissues examined; human yolk sac was not studied. Serum

α-fetoprotein concentrations in the rat normally declined abruptly after birth to approximately half of the prenatal level by 2 to 3 days of age, in accord with the loss of fetal membranes at delivery; the α-fetoprotein level then remained relatively constant until the rat was 6 to 8 days of age, after which synthesis of the protein was increasingly suppressed. Marked suppression of α-fetoprotein synthesis in the rat could be induced in the first week of life either by cortisone or by sham operations; epinephrine, corticosterone, testosterone, progesterone and estradiol had no observable effect on synthesis. Participation of the adrenal in the suppression noted to follow surgery was indicated by the observation that adrenalectomy did not inhibit α-fetoprotein synthesis. Subcutaneous injection of cortisone into the pregnant rat suppressed α-fetoprotein synthesis in the fetus *in utero* as did sham operations on the pregnant rat. (APS)

65 *Cord Blood Gamma M as a Screening Test for Congenital Viral Infections.* JOHN L. SEVER and HEINZ W. BERENDES*, NIH, Bethesda, Md.

Elevated levels of gamma M have been found in newborns with a number of congenital infections including syphillis, toxoplasmosis, rubella, and cytomegalic inclusion disease (CID). The frequency of this finding in normal and infected children was studied with specimens from the Collaborative Perinatal Research Study. Cord sera from 1000 children at 10 collaborating institutions were tested. 29 had elevated gamma M; 14 of these children had abnormalities including unexplained jaundice with hyperbilirubinemia; mental and motor retardation; hepatosplenomegaly; skeletal malformations; cataracts and strabismus with nystagmus; failure to thrive; and other significant findings. One of these children had congenital toxoplasmosis. Tests of children with congenital infections showed high cord blood gamma M for rubella (6 of 9), CID (2 of 3), toxoplasmosis (2) and generalized herpes (1). Maternal infections also were associated with high gamma M in the cord of children for rubella in the first trimester (9 of 37,6 of these were abnormal), and serological evidence for maternal toxoplasmosis (4 of 5,1 child abnormal). Other maternal infections during pregnancy did not result in significant elevation of cord gamma M including varicella (6), mumps (14) and rubeola (17). There was no elevation of gamma M in children with erythroblastosis (6), congenital leukemia (3) and mongolism (19 of 20). One mongoloid child had high gamma M and bronchial pneumonia and peritonitis. Only 1 of 36 children with congenital heart disease had high gamma M, and this child had congenital rubella. The simple gel diffusion determination of gamma M in cord blood and in the newborn should be useful as an initial screening test when considering congenital viral infections. (SPR)

66 *Immunologic Consequences of Congenital Rubella.* LOUIS Z. COOPER*, STEBBINS B. CHANDOR*, ALBERT B. OCKERSE*, DONALD FEINSTEIN* and SAUL KRUGMAN, New York Univ. Sch. of Med., New York, N.Y.

The immunologic consequences of maternal rubella have been correlated with the clinical and virologic data accumulated on 350 children followed since the 1964 epidemic. Mothers and their infants with rubella-associated defects have had persistence of rubella serum neutralizing and hemagglutination-inhibition antibodies. Antibody titers among these children have remained at levels $\geq$ to those in their mothers. In contrast, most children who are clinically normal, despite maternal rubella, have not produced rubella antibody. This relationship of fetal infection to congenital defects and persistent antibody production is supported by a study of 3 sets of twins; 5 of the children have anomalies and antibody, 1 child is normal and has no antibody. Alterations in serum immunoglobulin levels most commonly elevations of IgM and in one instance production of a small molecular weight (approximately 7S) IgM, and a decreased incidence of positive skin reactions to oidiomycin indicate that congenital rubella produces a spectrum of immunologic abnormalities similar to that which it produces in other organs. (SPR)

67 *Cells of Human Colostrum: In Vitro Studies.* CLIFTON W. SMITH* and ARMOUND S. GOLDMAN*, Univ. Tex. Med. Br., Galveston, Tex. (introduced Warren F. Dodge).

The types and behavior of human colostral cells both *in vivo* and *in vitro* were studied. Samples obtained from thirty individuals consistently revealed neutrophils, lymphocytes and macrophages. The relative frequency of these cells varied with time following delivery. The most abundant cells were macrophages.

Cultures in Leighton tubes without phytohemagglutinin (PHA) revealed many macrophages and vacuolated cells resembling colostral corpuscles. These two cell types could not be clearly separated morphologically. Both types adhered to glass surfaces; however, only those typical-appearing macrophages showed ameboid motion. Cell cultures with PHA uniformly displayed all stages of lymphoblastic transformation. Synthesis of deoxyribonucleic acid by these lymphoblasts was evidenced by radioautography of cells previously exposed to thymidine-H^3. It is concluded that living lymphocytes and macrophages are constituents of normal human colostrum. Studies of the immunologic functions of these cells will be described. (Supported by NIH Grant 5 RO1 HD 00735-03) (SPR)

68 *Specific Local Antibody Defect in Chronic Mucocutaneous Candidiasis.* RICHARD A. CHILGREN*, RICHARD HONG and PAUL G. QUIE, Univ. of Minn. Sch. of Med., Minneapolis, Minn.

Immunological defense mechanisms were studied in 3 patients with chronic mucocutaneous candidiasis of at least 9 years duration. None had systemic candidiasis or increased susceptibility to other infections.

Agglutination titers of standardized suspensions of heat-killed *Candida albicans* were measured in concentrated parotid duct saliva samples. Two patients' samples contained no agglutinating antibodies and one had a titer of only 1:4, in spite of gross oral infection. In contrast, parotid fluid from 6 patients who had recovered from *C. albicans* oral infection had titers ranging from 1:16 to 1:400. Despite the absence of agglutinating antibodies to *C. albicans*, isohemagglutinins and sheep cell agglutinins were present, and a normal immunoglobulin pattern was found (IgA present in normal amounts, IgG and IgM not detected).

The patients' sera, however, contained levels of agglutinating antibody ranging from 1:64 to 1:256 and had normal amounts of immunoglobulins. These findings are consistent with the known lack of correlation between local and circulating antibody levels and further suggest a specific deficiency in local antibody response to Candida.