opsonic activity of neonatal sera occurred only when C5 was added; (3) 5-day-old stored, ACD bank plasma was markedly deficient in re-constituting opsonic activity of neonatal serum. Fresh (<24 hrs) ACD plasma, however, effected significant reconstitution. The deficiency of 5-day-old plasma in opsonic reconstitution of neonatal sera was *completely corrected* by the addition of C5 containing mouse serum, or by purified human C5, but *not* by C5 deficient mouse serum.

These studies demonstrate that the opsonic deficiency of neonatal serum involves a functional deficiency of C5 and that restoration of opsonic activity can be brought about by infusion of *fresh* plasma, which contains functionally active C5. A rationale is, therefore, presented for the use of fresh plasma in therapy of neonatal septicemia.

Immunological abnormalities in Job's syndrome. HENRY F. PABST, BEULAH HOLMES, PAUL G. QUIE, HENRY GEWURZ, GLENN RODEY, and ROBERT A. GOOD. *Variety Club Heart Hospital, Univ. of Minnesota, Minneapolis, Minn.*

A 9-year-old girl was investigated with Job's syndrome to establish the underlying pathogenesis. Recurrent large but "cold" staphylococcal abscesses in skin, kidney and abdomen were unaccompanied by fever, pain and signs of acute inflammation. Normal parameters of the immunological investigation were: cellular, delayed hypersensitivity type of immunity as demonstrated by: 1) skin test response to staphylococcal protein A, SKSD, Candida and challenge with 2,4-DNFB; 2) transformation of lymphocytes with phytohemagglutinin and with staphylococci; 3) skin homograft rejection in 10 days; immunoglobulin levels other than IgE; complement component levels and function; heat stable and labile opsonin activity; in vitro phagocytosis by polymorphonuclear leukocytes of several types of staphylococci including the patient's (P.S.); respiratory enzyme activity of these cells during phagocytosis; in vitro chemotaxis of her leukocytes as generated by P.S. in the Boyden chamber; endogenous pyrogen production by her granulocytes in presence of P.S. The striking abnormalities were: 1) marked scarcity of neutrophilic granulocytes in staphylococcal abscesses; 2) heavy eosinophilic infiltration of the surrounding tissue, 3) basophilic granulocyte accumulation in inflammatory cycle studies using P.S., and 4) extremely elevated serum IgE level. It is concluded that in vivo chemotaxis for neutrophilic granulocytes is defective in this syndrome.

Acrodermatitis enteropathica with dysgammaglobulinemia. O. RENNERT, R. JULIUS, M. SCHULKIND, and T. SPRINKLE. *Univ. Fla., Coll. Med., Gainesville, Fla.*

In 1942 Danbolt and Closs described the association of diarrhea, eczematoid rash and alopecia. These physical findings constitute the triad essential for the diagnosis of this autosomal recessive disease. The demonstration of the efficacy of Diodoquin therapy in this otherwise fatal disease was by Dallaha and Lorincz in 1953. Reports since then indicated partial success utilizing this agent, breast milk or a combination of the two. The major cause of death has been overwhelming infection. This sequellous has been ascribed to the marasmic status of the children. The case described is an 8-month-old boy who demonstrated the classic triad of this syndrome in association with total absence of humoral IgA and IgG, and normal levels of IgM. Autopsy revealed sparse lymphoid elements and supported the diagnosis of dysgammaglobulinemia. Arachidonic acid was detectable at extremely low levels in serum. Metabolism of tryptophan was normal. The association of acrodermatitis and dysgammaglobulinemia may represent the occurrence of two distinct disease entities or suggest a pathogenetic relationship. Our experience with this patient supports the view that halogen-substituted-8-hydroxyquinolins specifically affect the skin manifestations in this syndrome but may be ineffective against the malabsorptive component. Both these features were well controlled by therapy with Diodoquin and breast milk.

Altered reactivity to respiratory syncytial virus: Antibody response to RSV antigens and studies of the pathogenesis of atypical RSV illness in recipients of inactivated vaccine. JERRY J. ELLER, VINCENT A. FULGINITI, ARTHUR A. ROBINSON, HITOSHI NAGAHAMA, JAMES SHIRA, and DANIEL C. PLUNKET. *U.S. Army Med. Res. and Nutrition Lab., and Univ. of Colo. Med. Ctr., Denver, Colo.*

The vaccine, in contrast to natural infection, failed to produce significant serum IgA antibody. Kinetic experiments revealed no defect in the quality of IgG antibody produced by the vaccine. Arthus and precipitating antibodies were not demonstrable in post-vaccine sera. The mean percent blastoid formation and uptake of radiouridine were greater in vaccinees than in controls in vitro lymphocyte stimulation tests. A delayed dermal hypersensitivity reaction could be demonstrated in guinea pigs and African Green monkeys after multiple injections of adjuvanted RSV vaccine. Immediate wheal and flare reactions were not detected. A positive delayed skin test was still present in the monkeys 12 months after immunization. An African Green monkey previously immunized developed a temperature elevation above 106° and rales in the lungs, but no wheezing, lasting about 48 hours, beginning 9 days after intranasal challenge with live 11th MK passage RSV. The vaccine was shown to contain a disproportionate amount of soluble, CF antigens compared to surface, viral antigens. Evidence indicates that the vaccine overstimulated delayed hypersensitivity and IgE in young atopic children. Enhanced delayed hypersensitivity may account for the high fever, rash and some pulmonary infiltration, and the IgE-mediated response for the marked wheezing seen in atypical illness.

A new test of delayed hypersensitivity to measles virus *in vitro*. RICHARD J. LABOWSKIE, ROBERT EDELMAN, MARY C. BIUNDO, and JOSEPH A. BELLANTI. *Georgetown Univ. Med. Ctr., Washington, D. C.*

The purpose of these studies was to develop an in vitro method for the demonstration of delayed hypersensitivity to measles virus. Using cell lines chronically infected with measles virus, a lymphocyte-target cell interaction was studied, using morphology or Cr^{51} release as an end point. Preliminary morphologic studies employing control and chronically infected HeLa cells indicated a greater cytotoxic effect with lymphocytes from children previously immunized with live measles vaccine than in unimmunized controls. All subsequent studies employed two human fibroblast lines, one infected (WI-M1) and one normal (WI-38). The WI-M1 carries measles antigen at the cell surface in steady state replication. Modifying the cytotoxic method of Holm and Perlmann, lymphocytes purified by glass bead adsorption were added to Cr^{51} labelled target cells in a ratio of 100:1. The release of Cr^{51} in excess of background was interpreted as a measure of lymphocytotoxic factor. The percentage release of Cr^{51} from WI-M1

and WI-38 cells was determined in a group of 8 seropositive adults with no history of clinical measles. The results showed that lymphocytes from the adults with measles effected as much as a 13% increase in Cr^{51} release from WI-M1 as compared to WI-38 cells. The lymphocytes from the two individuals with negative histories showed a much diminished release. These results indicate that the measurement of lymphocytotoxic response may be a useful in vitro method for studying delayed hypersensitivity to measles virus.

Absence of serum immunoglobulin E in newborns: Heterogeneity in time of synthesis in infants. MICHAEL BAZARAL, H. ALICE ORGEL, and ROBERT N. HAMBURGER. *Univ. of Calif., San Diego Sch. of Med., Ped. Immunol. and Allergy Div., La Jolla, Calif.*

Immunoglobulin E (IgE) in serum was measured by an improved quantitative test (an assay with competitive inhibition of the binding of I^{125} Sha-IgE to bromacetylcellulose-anti-ND-IgE).

Group	Number	Median ng/ml	Mean ng/ml	Range ng/ml IgE
Postpartum mothers	35	119	205.5	19.4–810
Newborns (cord)	33	<1	2.3	<1–5.4
6 week infants	23	1.9	5.5	<1–31.6
6 month infants	17	37	88.6	4.1–458

In 31 maternal-infant pairs we confirm the absence of transplacental passage of IgE. Cord serum levels reported here are significantly lower than those from other laboratories; in our study half of the newborns had less than 1 ng/ml of serum IgE.

No synthesis of IgE was apparent in the serum of one-third (8) of the 6-week-old infants, whereas the mean of the remainder of this group was 8.3 ng/ml.

All 6-month infants had measurable IgE levels. Those 3 with clinical allergy had the highest serum IgE levels (60, 68 & 458 ng/ml).

In the adult group there is a suggestive fit to the Hardy-Weinberg distribution, consistent with simple Mendelian heredity of basal IgE levels.

A zone common to IgG globulins in the Fd region. WALTER L. HENLEY, and SIRJE OKAS (Intr. by Horace L. Hodes). *Mount Sinai Sch. of Med. of the City Univ. of N. Y., New York, N. Y.*

The carboxy terminal portion of Fd of human IgG has been shown to be antigenically similar in all IgG globulins studied. An antibody was made in rabbits against a polypeptide from a myeloma globulin comprising this zone. This antibody was shown to give a reaction of identity with the four subclasses of IgG and other IgG myeloma globulins by precipitation after immunodiffusion. At the same time an antibody made in rabbits against a polypeptide comprising most of Fc as well as commercial anti-IgG showed these IgG globulins to be similarly related. No precipitation with either antibody occurred when several pure alpha and mu chains or either the kappa or the lambda light chains were used as antigens. There was no interaction between the antibody to the Fd and the antibody to the Fc polypeptides. A region in the carboxy half of Fd of IgG antigenically related, and paralleling the constant part of the light chains has therefore been demonstrated by serologic means. This additional constant zone in IgG had been postulated by other investigators.

Secretory defense system (SDS) in health and disease. E. R. STIEHM, A. MILLER, P. M. ZELTZER, R. M. KATZ, and A. T. SAPSE. *Univ. of Calif., Los Angeles, Calif.*

The secretory defense system (SDS) provides antimicrobial activity to mucous surfaces. Tears were used as the representative secretion of the SDS because of a high protein content and ease in obtaining reproducible samples. Tears were obtained with crying or after stimulation with salt; serum was also obtained. The components of the SDS were evaluated in 25 normals, 9 newborns, and 25 patients with increased susceptibility to infection and included assay for: 1) immunoglobulins, 2) protein, 3) isoagglutinins (anti-A, anti-B), 4) lysozyme and 5) complement (C). In normal adults, mean IgG level was 17 mg%, IgA 11 mg%, IgM and C absent, total Ig 28 ± 7 mg%. Mean protein was 11.8 mg/ml, lysozyme 2.0 mg/ml, isoagglutinin titers 1:8. Tear IgG was correlated with serum IgG; tear IgA was not correlated with serum IgA. SDS abnormalities were noted in newborns, in patients with serum antibody deficiencies, and in 4 patients with increased susceptibility to infection and normal serum immunoglobulins. Newborn tears are low in protein, IgA, isoagglutinins, and lysozyme (mean .62 mg/ml) but have normal IgG. Other patients with SDS abnormalities had low total Ig in the tears (<15.0 mg/100 ml), low isoagglutinins, or normal or elevated tear IgM; lysozyme was normal. We conclude that: a) newborns have an SDS deficiency with low lysozyme, b) transport of serum IgG to tears may occur, and c) low tear immunoglobulins, absent tear isoagglutinins or the presence of tear IgM indicate SDS abnormality.

Prevention of immune complex disease (Serum Sickness) by antagonists of vasoactive amines. W. T. KNIKER, F. A. GUERRA, and S. E. M. RICHARDS. *Univ. of Texas Sch. of Med., San Antonio, Texas.*

Antagonists of vasocative amines prevent localization of circulating immune complexes in rabbits, thereby preventing acute or chronic serum sickness (S.S.) and causing amelioration of chronic complex-induced glomerulonephritis. The opportunity to apply these observations to the human has been afforded by a recent epidemic of diphtheria. We have studied 119 hospitalized individuals who each received 20–100,000 u of equine diphtheria antitoxin. Every patient was randomly selected to receive either placebo or one of two antagonists of histamine and serotonin, cyproheptadine (Periactin) or hydroxyzine HCl (Atarax). The oral medications were taken from the 4th through 16th day after antitoxin, in doses adequate to maintain continuous therapeutic blood levels of drug.

Data on 100 cases are complete. None of 15 placebo or 27 drug-treated children under age 10 had S.S. Six of 23 (26.1%) older placebo-treated patients developed S.S., lasting 2–5 days. Of the 29 Periactin and 6 Atarax patients over age 9, only 2 (5.7%) manifested definite S.S. Serum hemolytic complement activity was lowered in most of the cases with S.S., but was low in many individuals without S.S. in the second week after antitoxin. Studies of horse globulin elimination and serum immune complexes should clarify the pathogenetic mechanisms. These preliminary findings suggest that S.S. in humans can be prevented by antagonists of permeability factors required for the passive deposition of circulating immune complexes, and that this approach deserves evaluation in the management of chronic immune complex diseases.