727 LYMPHOCYTE SUBPOPULATIONS FOLLOWING ORAL NUTRITIONAL STIMULI. Elena R.Reece, Wai H.Kan, A.H.Eisen (Intr.by Keith N.Drummond) McGill University, Montreal Children's Hospital, Dept. of Pediatrics, Montreal, P.Q.

Shifts in human lymphocyte subpopulations have been observed after exercise, following injection of steroids or epinephrine & diurnally. The present study evaluates the effect of a nutritional stimulus on peripheral blood lymphocytes. Six fasting normal subjects were given a 'milkshake' supplying one-third of the estimated daily caloric requirement, with defined amounts of carbohydrate, fat and protein. Heparinized blood samples were analysed for WBC & differential counts, percentages of E rosettes, Fc rosettes, C_3 receptors and surface immunoglobulin (SmIG) prior to and at 30', 60' and 120' after the stimulus. Lymphocyte subpopulation analysis results are shown below, expressed as total/mm^3.

	E	Fc	C_3	SmIG
0'	1689 ± 180	334 ± 135	395 ± 275	262 ± 293
30'	1508 ± 720	198 ± 139	235 ± 195	151 ± 90
60'	1839 ± 675	236 ± 88	226 ± 165	116 ± 98
120'	1762 ± 510	192 ± 208	262 ± 78	107 ± 89

WBC and differential counts were not significantly altered, nor were numbers of E and Fc rosetting cells. There were sustained decreases in cells with C_3 receptors and SmIG after the oral stimulus, during the time period studied. These changes did not occur in fasting individuals. There was no correlation with glucose levels. These changes may represent an alteration in lymphocyte recirculation induced by intestinal antigenic stimulation or post prandial hormonal alteration.

728 T CELL LEVELS IN PATIENTS ON DIALYSIS AND IN THE FIRST MONTH POSTTRANSPLANT. Christel H. Uittenbogaart, Brenda Robinson, Mohammad H. Malekzadeh, Alfred J. Pennisi, Robert B. Ettenger and Richard N. Fine. Univ. So. Calif. Sch. Med. and Childrens Hospital of Los Angeles.

T cell levels are reported to be decreased in patients on dialysis and in the posttransplant (Tx) period. We have used the sheep erythrocyte rosette forming test (RFC) to measure the total number (TRFC) and percentage of RFC (%RFC) in 30 normal adult controls, 16 dialysis patients and 9 patients in the first month Tx. The %RFC (63±6.9) and total RFC (1273±563) of the dialysis patients was not significantly different from that of the normal individuals (60.8±6.4 and 1466±369 respectively). Although the %RFC and the TRFC of 11 bilaterally nephrectomized patients (61.1±7.3 and 1062±249) was lower than 5 non nephrectomized patients (66.9±4.9 and 1753±789), this difference was not significant ($P=<0.1$). Following transplantation %RFC and TRFC were monitored daily for 2 weeks and thrice weekly for 2 weeks in 9 recipients, 4 of whom received ATG. The TRFC in both ATG (170± 24) and non ATG (668±232) recipients were significantly different from the dialysis patients ($P=<0.001$ and $P=<0.005$ respectively), whereas only the %RFC in the ATG recipients (20.8±7.6) differed from the dialysis patients ($P=<0.001$). There was a significant difference in the %RFC and TRFC when comparing the ATG and non ATG recipients ($P=<0.001$ and $P=<0.005$ respectively). We conclude that TRFC and %RFC levels of children undergoing dialysis are not abnormal and that ATG significantly lowers %RFC and TRFC during the first month Tx, whereas routine immunosuppression only lowers the TRFC but to a significantly less degree than ATG.

729 ALLERGEN-INDUCED DEPRESSION OF NEUTROPHIL CHEMOTAXIS IN ATOPIC INDIVIDUALS. Jerry L. Rubin and Harry R. Hill. University of Utah, Departments of Pediatrics and Pathology, Salt Lake City, Utah.

In previous studies, we have shown that neutrophil (PMN) chemotaxis is depressed in patients with allergic disease, hyperimmunoglobulinemia E and recurrent infections. Although a number of these patients have now been described, little is known about the mechanism of defective PMN function in such individuals. The present studies were carried out to define the relationship between defective PMN chemotaxis and allergic hypersensitivity. PMN chemotaxis was assessed in individuals with sensitivity, as documented by skin test reactivity and radioallergosorbent testing, to ragweed extract. In each patient, chemotaxis was measured before and after in vitro exposure of their leukocytes to ragweed. A total of 18 individuals in 3 groups have been studied. These include 7 patients with allergic symptomatology and recurrent infections who were sensitive to ragweed; 3 patients with a prior history of ragweed sensitivity who had undergone successful desensitization; and 8 non-allergic controls. Following in vitro exposure of the leukocytes of the 7 symptomatic patients to ragweed, a profound depression (54 ±16%) in chemotactic activity was observed. In contrast, the controls and the three desensitized patients showed no depression of PMN chemotaxis. These data suggest that defective PMN function in allergic patients results from an interaction, either directly or indirectly, of antigen with sensitized leukocytes. Specific immunotherapy may have an effect to prevent the chemotactic abnormality in these patients.

730 ISOLATION OF HUMAN LYMPHOCYTE MITOGENIC FACTOR. William D. Rutenberg, Usama al-Khalidi, Ezio Merler, Fred S. Rosen. Children's Hosp. Med. Ctr., Harvard Medical School, Boston, Ma. 02115.

Stimulation of sensitized human peripheral T lymphocytes with tetanus toxoid release lymphocyte mitogenic factor (LMF). LMF induces DNA and antibody synthesis in allogenic and autologous B lymphocytes. Initial studies showed that the biologically active fraction was precipitated by 40-60% ammonium sulfate and 33-50% ethanol. It sedimented in cesium chloride with a density of 1.250 . To purify the activity, 1000ml of T cell supernate obtained from cells of a single donor were concentrated twenty fold by Amicon ultrafiltration on a xm-50 membrane. Concentrated supernate was chromatographed on Sephadex G-200. The biological activity eluted post albumin. It was electrophoresed on an LKB isoelectrofocusing column. A major peak of proliferative activity was found at pH=6.7±0.1. A second minor peak of activity was found at pH=7.2±0.1. In one instance, when the major peak was assayed for its ability to initiate de novo synthesis of IgG by tonsillar B lymphocytes, it was found to cause a twofold increase of precipitable ^{14}C activity over control.

The data suggest that stimulation of human peripheral blood T lymphocytes by antigen results in production of two factors that can induce DNA synthesis in autologous or allogenic B lymphocytes. It appears that both of these factors are of molecular weight greater than 50,000. At least one of the factors increases IgG synthesis in B cells derived from human tonsils, while the other was present in concentrations too low to study.

731 EFFECT OF RBC TRANSFUSIONS ON ADENOSINE DEAMINASE(ADA) DEFICIENT SEVERE COMBINED IMMUNODEFICIENCY(SCID). F.C. Schmalstieg, R.M. Goldblum, G.C. Mills, L.T. May and A.S. Goldman. Depts. Pediatrics & Human Biological Chem. and Genetics, The University of Texas Med. Branch, Galveston, Tx.

Previous work suggests that the immunological defect in ADA deficient SCID is mediated by increased lymphocyte nucleotides including ATP and cAMP. We attempted to improve this immunological deficit in a 10-month-old affected male by supplying the missing enzyme activity with RBC and plasma transfusions from normal donors. The child received 14 RBC and 4 plasma transfusions over a 14 month period. A 2-fold increase in blood lymphocytes occurred 10-12 days after transfusion ($P<0.05$), whereas the number of other leukocytes did not change. Incorporation of ^3H-thymidine by phytohemagglutinin stimulated and unstimulated lymphocytes reached a maximum at 12-15 days (2-fold increase, $P<0.05$). Serum immunoglobulin concentrations increased to normal after 6 months of therapy, but specific antibodies and delayed hypersensitivity were undetected. Urinary adenine decreased after each transfusion and inversely correlated with ADA activity. After the initial decrease in lymphocyte ATP (9671 ⟶ 4527 nm/10^9 cells, $P<0.05$), the level increased rapidly during the following week. This could not be prevented by further transfusion during this period.

While certain immunologic functions may be improved by infusion of enzyme containing blood products into some ADA deficient patients, therapy in our patient produced only transient changes in purine metabolism and minimal immunologic reconstitution.

732 CHRONIC NEUTROPENIA WITH LEUKOAGGLUTININS AND B- AND T-CELL IMMUNODEFICIENCY. Jeffrey I. Schulman, Ingomar D. Mutz, William T. Shearer, Dept. of Pediatrics, Washington University School of Medicine, St. Louis Children's Hospital, St. Louis, Missouri.

A 21 month old female was admitted to hospital because of recurrent skin and upper respiratory infections and chronic neutropenia of 3 months duration. Family history was unremarkable and past history was negative for any known causes of neutropenia. Physical examination revealed multiple skin abscesses and marked hepatosplenomegaly. Absolute granulocyte count varied between 150 and 500/µl; segmented neutrophils were absent in the bone marrow. RBC and platelet count were normal.

Immunological evaluation revealed normal C3, C4 and total hemolytic complement. Serum immunoglobulins demonstrated absent IgA, low IgG (170 and 120 mg/dl) and elevated IgM (190 and 740 mg/dl) at 21 and 27 months, respectively. Isohemagglutinins were absent (blood type O, Rh positive). Despite previous immunization, polio antibody titers were <1:4 for all types, but an antibody response followed antigenic challenge with diphtheria-tetanus antigens. There was no response to skin tests with SKSD and monilial antigens. E-rosette forming lymphocytes were diminished (36% vs 60% control) and PHA-stimulation was minimal (1 to 2-fold vs 11 to 24). Staining for immunoglobulin bearing B-cells was variable: IgG-15% and 51%, IgA-13% and 1%, IgM-7% and 8%, at 21 and 27 months, respectively. Serum leukoagglutinins were present with 5 panels of control cells.

This case represents the first report of neutropenia with B- and T-cell deficiency and circulating leukoagglutinins.