ABSTRACTS

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LEUKOCYTES


Panoptic staining remains the basic method for the classification of normal and pathologic leukocytes. In leukemias in which blast cells are not identifiable by their MGG staining, cytochemical reactions for peroxidases and esterases and the PAS reaction can provide extra information concerning the series to which the cells belong and the metabolic and enzymatic disturbances in the three series of leukocytes. In 11 of 20 cases of acute and chronic myeloid leukemia, it was possible to establish the granulocytic nature of the blasts from panoptic and peroxidase staining. In 5 cases in which the cells could not be classified from their appearance after MGG staining, cytochemistry provided evidence in three instances that the cells belonged to the myeloblastic series. In the remaining 4, cytochemistry revealed PAS-positive material and peroxidases in the same pathologic cells, observations apparently at variance with the usual classification scheme for the granulocytic series. Accumulations of PAS-positive material and esterases were noted in the erythrocytic series of some cases. In 4 cases, the qualitative study of peroxidases provided new information of value in following the clinical progress of the patients.—G. M.


Blood, serum and bone marrow from 36 patients with acute or chronic leukemia or malignant lymphoma were examined for mycoplasma. Specimens were seeded into
ABSTRACTS


Human bone marrow cells, obtained by sternal puncture, were incubated with H3-thymidine and DNA was separated by Schneider’s method and its radioactivity was determined with a liquid scintillation counter. Incorporation of H3-thymidine into bone marrow cell DNA increased linearly with an increase in the number of incubated cells, up to 10^7/ml. When 5 × 10^5/ml cells were incubated, H3-thymidine incorporation proceeded linearly for 3 hours. Addition of autologous plasma to the incubation mixture caused an increase in the incorporation of H3-thymidine into DNA.—K. F.


Bone marrow cells obtained by sternal puncture from normal and leukemic patients were incubated with H3-thymidine to measure its incorporation into DNA. The moles of thymidine incorporated per immature bone marrow cell were decreased to about 1/7 of normal in acute leukemia. In peripheral immature cells of chronic myelocytic leukemia, DNA synthesis was also decreased to about 1/4 of normal. Considerations of the relationship between the de novo and salvage pathways of DNA synthesis in relation to H3-thymidine incorporation were discussed.—K. F.


In a patient of blood group O with chronic myelosis passing into the acute form, 2 populations of cells [D(Rh)+positive (CDe/cde) and D(Rh)−negative (Cde/cde)] were encountered. The number of erythrocytes having no D (Rh+) antigen was 34 percent at most. The last transfusion was given 14 months prior to serologic examination; he was then rh-negative (cde/cde). Before the disease, the Rh-genotype probably was CDe/cde. Thus, it was likely that modification of two Rh antigens, D and C, occurred in the course of the leukemia.—L. D.


Complex chromosome abnormalities were found in cultures of peripheral blood leukocytes from heavily exposed survivors who were over 30 years of age at the time of exposure. The aberrations were present in a greater number of subjects and cells when compared to controls. Translocations and pericentric inversions were common, in contrast to younger survivors in whom “unstable” abnormalities were previously reported. In 4 heavily irradiated subjects, possible clones of translocations were noted. Preliminary evaluation of data suggested that the frequency of complex abnormalities increased linearly with the dose sustained.—A. L. B.


An increase in methionine biosynthesis was found in the livers of AKR mice inoculated with L 14 AKR leukemia and in the livers of C57 Black mice inoculated with LaH VUF beta leukemia. This increase corresponded to the development of the disease and was dependent on the presence of NADP.—L. D.

Lipid composition was compared in normal human lymphocytes and granulocytes separated by glass-bead columns and leukocytes of patients with acute and chronic leukemias. Some significant differences were found in total lipid content, phospholipids and cholesterol, not only between different normal cell types, but also between normal mature leukocytes and leukemic cells of the same morphologic series. These findings may reflect differences either in relative content of intracellular organelles or in quantity and composition of the plasma membrane.

—E. R. J.


Electron microscopic autoradiography revealed two patterns of H3-thymidine incorporation in human lymphocytes transformed “in vitro”; these may reflect different stages of DNA synthesis. Incorporated H3-uridine was heavily concentrated in nucleolus, randomly distributed in extra-nucleolar nucleoplasm, and appeared in organelle-free, polysome-rich regions of the cytoplasm within 30 minutes. Labeling patterns were similar following phytohemagglutinin and pokeweed stimulation.—G. M.


The findings in 60 healthy subjects and in 141 patients with diseases of the liver and biliary tract were reported. Low values were observed in infectious hepatitis and “silent” cholelithiasis. Moderately elevated values were observed in compensated cirrhosis. High values were found in obstructive jaundice, biliary colic and decompensated cirrhosis. The possibilities of using this method for differential diagnosis were pointed out.

—L. D.


Polymorphs of uremic patients showed morphologic differences from normal by phase contrast microscopy. Serum-independent phagocytosis was slightly depressed, but sensitivity to the phagocytosis-inhibitory activity of bacterial endotoxin was much increased. Serum-dependent phagocytosis by uremic polymorphs and the complement content of uremic serum were normal, as was the effect of ultrafiltrates of uremic serum on polymorph phagocytosis. The difference in polymorph sensitivity to bacterial endotoxin may account for the increased sensitivity to acute infections in uremia.

—A. L. B.


A slight but significant increase in the fraction of cells synthesizing DNA was found in white blood cells cultured from 3 of 10 children with chronic tonsillitis. The ability of cells to synthesize DNA returned to control values after tonsillectomy. The possible role of autoantibodies for the auto-stimulation of white cells was discussed.

—M. K.


Clinical records of 19 patients with monoclonal gammopathy (13 myeloma, solitary plasmocytoma, 2 macroglobulinemia, 3 essential or secondary) showed a marked tendency to infectious complications in myeloma, but little or none in the others. Tuberculin reaction was positive in 7 of 9 cases with myeloma, indicating the absence of impairment in delayed hypersensitivity. Anticomplementary effect was observed in sera of 2 patients with G-myeloma. Quantitative measurements of immunoglobulin in
33 cases with monoclonal gammopathy were made by a modified Schultze and Schwick method. In view of the marked decrease in normal immunoglobulins in the immunoelectrophoretic patterns, the decrease of all three normal immunoglobulins in myeloma and/or macroglobulinemia may be explained. In general, normal immunoglobulin levels were correlated inversely with the amount of M-component. Patients with decreased normal immunoglobulin levels, however, did not always have increased infections. In an experimental transplantable mouse plasmocytoma (X-5563), the number of antibody producing cells in the spleen and tumor after injection of sheep cells was measured using Jerne’s agar plaque technic. A significant decrease in the number of plaques, both per spleen and per 10⁶ spleen cells, was observed, as compared with normal C₃H mice, and no plaques were seen in the tumor. Thus, the reduction of 19S antibody response in G-myeloma was considered to be the result of the decrease in the number of 19S antibody producing cells.

—K. F.


Electrophoretic and immunoelectrophoretic patterns of serum proteins were studied in patients with lymphatic leukemia, lymphosarcoma, Hodgkins disease and myeloid leukemia. Hypogammaglobulinemia was the most characteristic change for lymphatic leukemia. In two cases of lymphatic leukemia, marked paraproteinemia was observed.

—M. K.


In 21 patients with Hodgkins disease, serum activity of LDH, SGOT, SGPT, nonspecific cholinesterase and alkaline phosphatase were determined before and after X-ray treatment. The increase in LDH activity before treatment corresponded to the progress of the disease. During X-ray treatment, an initial decrease in LDH activity was followed by a later increase. Normal activity of both transaminases in the majority of patients increased in the final stages of treatment, especially SGPT. The activity of cholinesterase also was normal in nearly all patients before treatment, but decreased during X-ray therapy. The greatest increase in alkaline phosphatase activity was observed in patients with the abdominal form of Hodgkins disease. —M. K.


A cytogenetic study of spleen and blood cells cultured in vitro from a patient with osteomyelosclerosis was performed. Aneuploidy, hypo- and hyperploidy in spleen cells was observed. The Ph1 chromosome was not found in leukocytes of peripheral blood. This study stressed the similarity in cytogenetic changes in myeloid metaplasia to those found in neoplasms and acute leukemia, but not to those in chronic myelocytic leukemia. —M. K.

HEMOSTASIS


Splenectomy in 24 patients with cirrhosis caused, apart from a correction of hypersplenism, an improvement in blood clotting factors. This improvement was most frequent and particularly clear cut for Factor V and was independent of the cause of the cirrhosis or whether or not a spleno-renal anastomosis was made. None of the hypotheses to explain this phenomenon was adequate. The significance of hypo-accelerinemia as a test of hepatic function should be reviewed when there is marked splenomegaly. —G. M.

SCHÖNLEIN-HENOC SYNDROME WITH THE SYMPTOMS OF PURPURA FULMINANS TREATED WITH HEPARIN. S. Sobien-Kopczyńska, J. Mazur-Cybulska, H. Pola-
ABSTRACTS


A case of purpura fulminans with thrombocytopenia and fibrinogenopenia in the course of Schönlein-Henoch disease was described. Treatment with epsilon amino caproic acid, Trasylol and fibrinogen had only a moderate effect on bleeding, whereas heparin treatment was followed by complete remission.—M. K.


A temporal relationship between the onset of subarachnoid hemorrhages and menstrual bleeding was observed. The probable significance of hormonal influences on blood clotting as a cause of this phenomenon and the therapeutic implications of this assumption were discussed.—M. K.


The influence of three monoaminooxidase (MAO) inhibitors, Tersarid, Niamid and Parante, on the adhesiveness of platelets to glass was studied in patients with oblitative atherosclerosis of the lower extremities. These MAO inhibitors decreased platelet adhesiveness, while histamine, adrenalin, magnesium sulfate and prednisone given in single injections had no effect on the adhesiveness index. In vitro, adrenalin alone or with Niamid did not induce any changes. Premedication with Niamid diminished the decrease in platelet count induced regularly in patients by i.v. adrenalin injection. MAO inhibitors appeared to diminish platelet adhesiveness by two mechanisms: (1) acting on platelets themselves, and (2) protecting the vascular endothelium. Their action may be mediated by inhibition of MAO activity.—M. K.


In seven cases of idiopathic thrombocytopenia treated with steroids, storage of lipids in histiocytes of the spleen was observed. The lipids, characterized as phospholipids, probably originated from disintegrating thrombocytes. The possibility of enzymatic transformation of the lipids following their phagocytosis by histiocytes was considered.—L. D.


A method was devised for the study in vitro of the inhibitory activity of fibrinogen degradation products on the fibrinogen-fibrin conversion initiated by thrombin. The appearance of this activity in plasma seemed to be a very useful indicator of clotting disturbances in shock.—M. K.


Using two different preparations of kininogens, the authors were able to distinguish qualitatively two different kinin-forming systems in plasma. One was activated by plasmin, the other by the contact factor.—M K.


Following administration of a single dose of heparin (150 U. per kg.) to rabbits, an increase in oxidative phosphorylation was found within 90 minutes. The mean values of the P/O ratios were increased by an average of 30 percent. A state of mild hypocoagulability was established. Heparin exerted a positive effect on oxidative phosphorylation. It did not inhibit the mitochondrial enzyme system; the increased oxygen consumption corresponded to increased ATP formation necessary for contractability of the myocardium.—L. D.

When ferritin from different organs was subjected to electrophoretic analysis, 3 "iso-ferritins" were observed. The marrow, which contains ferritin in erythroblasts and in reticulum cells, showed two different ferritins, one with the mobility of reticulocyte ferritin and one with that of spleen ferritin. Liver, spleen and reticulocytes showed single ferritin compounds; a relatively slow compound in the spleen and bone marrow, a relatively fast ferritin in reticulocytes and bone marrow. Liver ferritin had intermediate migration. Although electrophoretically dissimilar, the ferritins could all be precipitated by antihuman liver ferritin, showing similar antigenic determinants.—R. O. W.


In 42 patients with pernicious anemia and 60 control subjects with various diseases, the immunofluorescence test was used. Anti-
bodies were detected in 95.2 percent of patients with pernicious anemia and in 23.5 percent of the control cases.—L. D.

The Renal Erythropoietic Factor (REF).


The properties of the renal erythropoietic factor (REF)-serum reaction, in which ESF was generated in vitro, were described. The amount of serum substrate converted to ESF in a given time was proportional to the REF concentration, when the serum level was kept relatively high and constant. Reaction rate also was directly dependent on serum concentration. The production of ESF as a function of time of incubation of serum with serum conformed to a first-order reaction. The data supported the contention that REF was an enzyme which acted on a substrate present in normal serum to produce ESF.—H. H. F.


During the rejection period of a renal transplant, the patient’s hematocrit increased to 60 percent and remained at this level. Urinary erythropoietin was increased. Occlusion and narrowing of the small renal arteries may have induced renal hypoxia with resultant increased erythropoietin secretion. Erythrocytosis may be an unfavorable sign in patients with renal transplants.—A. L. B.


The experiences with 26 cases of polycythemia vera, 7 treated only with $^{32}$P and 9 only with busulfan were described. Clinical and hematologic responses occurred between the first and second month. The remissions with $^{32}$P lasted from a minimum of 3 to a maximum of 38 months, while those with busulfan lasted from 3 to 28 months. During $^{32}$P therapy some complications occurred: two patients developed thrombocytopenic purpura, one arterial thrombosis and one was found to have acute leukemia after the 7th dose. With busulfan, no complications were observed. The superiority of busulfan for the treatment of polycythemia vera was emphasized with the ease of administration and the absence of proved leukemogenic effects.—M. J.


A study of 134 unrelated French families with 465 children was used to test the inheritance of acid phosphatase types as recognized by starch gel electrophoresis of hemolysates. No exception was found to the three allele rule established by Hopkins. The gene frequencies in Paris were: $p_A$ 0.3214, $p_B$ 0.6386 and $p_C$ 0.0400. An example of the rare homozygous type C was found in the offspring of a AC $\times$ BC family. Concentrated red cell hemolysates provided an opportunity to observe two additional fast zones. The a-zone was present in all phenotypes A, AB and AC and the b-zone was present in all phenotypes B, AB and BC.—C. M.


G-6-PD. GSH and acetylcholine esterase values in red cells were investigated in 55 healthy subjects and in 130 patients with anemias of diverse origins. The diagnostic and differential diagnostic importance of these enzyme activities was limited. G-6-PD activity may be used for the diagnosis of pernicious and megaloblastic anemias where treatment was already started and where morphologic criteria fail. In untreated forms, activity was raised; following satisfactory treatment, it falls. Acetylcholine esterase activity was raised significantly in post-
hemorrhagic anemias. In all kinds of anemia, GSH concentrations were lowered, irrespective of the etiology.—L. D.


A case of congenital methemoglobinemia was attributed to deficiency of the methemoglobin reductase which is coupled with NADPH. Methemoglobinemia and cyanosis subsided after intravenous administration of methylene blue and could be controlled partially by oral administration of methylene blue and ascorbic acid. Uniform distribution of methemoglobin was noted throughout the whole population of erythrocytes.—M. K.


In the erythrocytes of children suffering from paramyeloblastic leukemia, lactate production, aldolase and phosphofructokinase activities were markedly increased. Anaerobic glycolysis was increased in comparison to aerobic glycolysis. These changes may be regarded as an effect of the immature erythrocyte population. In micromyeloblastic leukemias, the increase in lactate production was much less pronounced. Aldolase activity was lower in children treated with cortisone than in untreated children.—M. K.


Hemoglobin F levels and electrophoretic and immunoelectrophoretic patterns were studied in hemolysates from 20 patients with various types of congenital heart failure. The percentage of hemoglobin F corresponded to age. Electrophoretic and immunoelectrophoretic patterns did not differ from those of the controls.—M. K.


Testosterone inhibited the formation of sickle cells in marrow culture from a subject with HbAS, while testosterone, progesterone and nor-androstenolone reversed sickling in wet preparations. Intramuscular injections of testosterone to patients with HbAS and HbSS, and injections of progesterone to a patient with HbSC, inhibited the sickling phenomenon. Osmotic fragility was unchanged and, in the one case tested, red cell survival was not prolonged. The authors suggested that these steroids act on the cell membranes, rather than preventing the formation of HbS crystals and that they may be of value in the treatment of crises.—A. L. B.


This report described some of the processes involved in the final stages of the biosynthesis of hemoglobin. Addition of human β chains, but not α chains, to a cell-free hemoglobin-synthesizing system derived from rabbit reticulocytes inhibited the release of newly synthesized rabbit β chains into solution. Furthermore, excess free α chains appeared to be synthesized in the cell-free system in the absence of any added hemoglobin chains. The authors suggested that the presence of free α chains may regulate the release of β chains from the polyribosome in the late stages of hemoglobin synthesis. (Abstracter’s comment: In view of these data, one wonders how β chains are released to form β-tetramers in Hb H disease.)—T. F. N.


Allogenic marrow transfusions (40) were administered to 11 patients with primary and 11 with secondary bone marrow hypoplasia. There were 0.6 to $7.54 \times 10^8$ nucle-
ABSTRACTS

557

TREATMENT OF SYMPTOMATIC PORPHYRIA

Four patients with symptomatic porphyria were treated by repeated venesection and 3 others served as controls. All continued to take alcohol during the study. There was a significant decrease in the urinary coproporphyrin and uroporphyrin levels in 3 of the 4 treated patients, while no major changes were noted in control subjects.—L. D.

MISCELLANEOUS


A simple method for simultaneous determination of red cell and plasma volume by means of C151 and I125 recently devised by Brosević et al. (J. Lab. Clin. Med. 68:142, 1966) was used. Discrimination of the isotopes was achieved by differential absorption in a 1 mm. thick brass filter. In 12 female and 10 male patients with no evidence of hematologic abnormality, the mean value for plasma volume was similar to values reported in the literature, but the mean value for red cell volume was lower. The mean value for body/venous hematocrit ratio was similar to values reported in the literature for normal subjects.—T. H. B.


Serum and tissue acid α-naphthylphosphatase isozymes were studied in normals and in patients with various diseases. Isozyme patterns were found in the slow α5-globulin region (B fractions) and in the post albumin and transferrin regions (A fractions). B fractions were always found in normal and in pathologic sera. A fractions were seen mainly in sera of patients with lymphoma, carcinoma of the prostate and monocytic leukemia. Gaucher’s disease patients showed the B fractions with an augmentation of the bands. In 7 of 11 patients with carcinoma of the prostate, B and A fractions were found; B fractions were always faint, while the A fractions were of variable intensity. Isozymes were also separated from homogenates of various tissues. In lymphocytes, granulocytes, chronic lymphatic leukemia lymphocytes and monoblasts, slow and fast bands were found, the main band having slow mobility. Prostate and semen contained fast moving fractions only.—B. R.


Three cases of intrauterine or neonatal viral infections (Japanese B encephalitis, polio vaccine and cytomegalic inclusion body) and one case of infantile toxoplasmosis with immature antibody-forming systems were observed. Comment was made about the question of the peculiar vulnerability of the neonate to these viral or protozoan agents.—K. F.


Adult mice composed of two different genetic types of cells can be produced by combining the early blastomeres of the two different strains in vitro. The composite cellular sphere reforms a blastocyst which can then be transferred to the uterus of an “incubator” mother. Such animals produced by aggregated eggs are called allophenic
mice. By combining the egg cells of mice with different coat colors, allopgenic mice are produced with mixed coat colors. Detailed analysis of the distribution of these coat colors indicates that a clone of melanocytes descends mitotically from a single cell.—I. G.


The isolation and properties of a group of new somatic hybrid cell lines obtained by crossing human diploid fibroblasts with mouse fibroblasts were described. The original mouse cell line was deficient in thymidine kinase. The resultant hybrid cell line had almost the entire mouse genome and a greatly reduced number of human chromosomes. Mixed hemagglutination studies demonstrated that these hybrid cell lines contained human antigens on their surfaces.

The presence in these cells of human genes that this chromosome contained the thymidine kinase gene. This approach may, therefore, allow the chromosome localization of other human genes. (Abstractor's comment: The technics employed in these studies could certainly be applied fruitfully to problems of hematologic interest.)—I. G.


Macrophages were incubated with T2 bacteriophages. RNA was extracted from the macrophages and was tested for its ability to stimulate antibody production in spleen fragments cultured in vitro. An immunogenic RNA with a sedimentation constant of 4–6S was obtained. This RNA was associated with protein and the immunologic activity of this fraction was eliminated by treatment with pronase. The authors concluded that they had isolated an RNA protein complex that was involved in the process of formation of specific antibody.—I. G.


Serum was taken from mice 6 to 9 days after immunization with sheep red cells. When this serum was injected into mice on the 1st to 4th day after immunization with sheep red cells, it caused a depression of % of the cells making 19S antibody on the 5th day and % of those making 7S antibody on the 14th day.—G. M.


A new genetic system related to γG was described: the ISf. The system independent of the Gm and Inv systems, probably controls the formation of the heavy chains of γG of the type 2b (We). In Caucasians, the phenotypic expression of the gene ISf (1) varied as a function of age. The phenotype ISf (1) was found in 25 percent of infants, in 40 percent of adults and 60 percent of subjects over 70.—G. M.


The sera of four untreated patients with primary immunoglobulin deficiencies, not of Bruton type, appeared to contain predominately type L immunoglobulin molecules. In two, the abnormality in the ratio of type K to type L molecules was confined to IgM globulins. In one, a young woman with so-called primary "acquired" agammaglobulinemia, IgM levels were transiently normal and only type L IgM molecules were detected. In two other instances, the predominance of type L to type K molecules was confined to IgG globulins and, in one of
ABSTRACTS

559


Significantly higher titers of ABO isoagglutinins were found in patients with VH when compared with the control group. This difference was not observed when sera were studied after precipitation of inhibitors. Attempts to reactivate sera deprived of inhibitors by means of homologous inhibitor fractions were unsuccessful.—M. K.


A comparative study of the histologic findings in the bones and marrows (femur, tibia, humerus, radius, 3rd and 4th lumbar and tail vertebrae) of germfree and conventional rats of the Fisher strain was conducted with 103 rats, 33 in the former and 70 in the latter group. Hematopoietic activity was more reduced in germfree rats than in conventional rats throughout the breeding period, and the granulocytes were especially few in number among the myeloid cells. No difference was noted between the two groups in fatty marrow distribution in the tibia, but transformation to fatty marrow was noted earlier in germfree rats than in conventional rats. Differences in the epiphyseal cartilage and metaphysis at the proximal end of the tibia were found. The epiphyseal cartilage was less thick and lance-shaped trabeculae, osteoblasts and osteoclasts in the metaphysis were fewer in number in germfree rats.—K. F.


In 20 patients with the nodular form of acquired toxoplasmosis, histologic, clinical, serologic and epidemiologic examinations...
were made. The titers of specific antibodies were 1:2048 to 1:260,000 in the Sabin-Feldman reaction and 1:128 to 1:260,000 in the complement fixation and indirect fluorescence reaction. In two women, the condition was confirmed by isolation of Toxoplasma gondii from lymph nodes. In 15 patients, contact with rabbits was traced; rabbits are the most frequent and most probable source of infection.—L. D.


Oxyphenylbutazone was administered to 8 hospitalized patients in daily doses of 400–800 mg. for 8–24 days. The following were studied: acetylcholinesterase, ceruloplasmin, SCOT, SGPT, LDH and the isoenzymes, alkaline phosphatase, haptoglobin, total protein and the electrophoretic fractions, mucoprotein, copper, iron, transferrin, uric acid, urea, euglobulin fibrinolysis, fibrinolysin and thromboelastography. The drug had no definite quantitative or qualitative effect, at the administered dosage level, on the various blood constituents. Quantitative changes remained within the limits of normal variation.—M. J.


A patient with acute intermittent porphyria was treated by extracorporeal dialysis when there was a severe disturbance of the central nervous system. Porphyrins and their precursors could not be demonstrated to pass into the dialyzing fluid, but hemodialysis was immediately followed by a large increase in their urinary excretion. Despite a striking association between dialysis and the beginning of clinical improvement, the applicability of hemodialysis for the treatment of porphyria remains to be evaluated.—M. K.

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**NEWS AND VIEWS**

**Blood Club — Correction**

The announcement in the January issue erroneously listed the date for the Blood Club meeting as May 5, 1968 instead of May 4, 1968.

The annual meeting of the Blood Club will be held Saturday evening, May 4, 1968, at Haddon Hall in Atlantic City. This is an informal organization and all scientists attending meetings in Atlantic City at that time are invited to come to this session.

The topic of the meeting is “Drug-Induced Blood Dyscrasias: Pathogenesis and Treatment.” Speakers and presentations are:

- **Adel Yunis,** University of Miami Medical School: “Drug-Induced Bone Marrow Depression.”
- **Paul Carson,** University of Chicago Medical School: “Metabolic Aspects of Drug-Induced Hemolysis.”
- **James Jandl,** Boston City Hospital: “Drug-Induced Immunohemolytic Disease.”
- **N. Raphael Shulman,** National Institutes of Health: “Drug-Induced Thrombocytopenia.”

Dr. William Dameshek will open the discussion period.