ERYTHROCYTES


By incubating peripheral blood and bone marrow samples from nine homozygous beta thalassemic subjects with labeled amino acids, the authors have confirmed the excess in synthesis of alpha chains relative to beta and gamma chains. With more prolonged incubation, however, alpha chain radioactivity diminishes in the cytoplasm and increases in separated red cell stroma. Normal cells showed no such tendency to accumulate alpha chains in their membranes. These data are in agreement with the hypothesis proposed by Fessas (Blood 21:21, 1963) that excess alpha chains precipitate in beta thalassemic red blood cells, attaching then to the red cell membrane.—H. S. J.

THE EFFECT OF AMPHOTERICIN B ON THE


This paper reports the effect of Amphotericin B on water and nonelectrolyte permeability through thin lipid membranes formed from sheep red blood cells dissolved in decane. The antibiotic markedly increased both permeabilities, but only if cholesterol was included in the membrane. The quantitative data were compatible with the hypothesis that the interactions of Amphotericin B with membrane-bound cholesterol result in the formation of "pores" whose equivalent radii are in the range 7-10.5 Å. Abstractor's note: The increased permeability to cations of intact red cells treated with Amphotericin has been shown to be cholesterol dependent also. The abstractor has shown that "spur" red cells from patients with severe cirrhosis are cholesterol-loaded and concomitantly hypersusceptible to the antibiotic (J. Clin. Invest. 47:87a, 1968).—H. S. J.

Incubation of normal human erythrocytes with Primaquine results in internalization of the cell membrane and the formation of intracellular vacuoles lined by plasma membrane. These changes are reminiscent of those observed in other types of cells during pinocytosis. The reduction in cell surface which accompanies such internalization of the plasma membrane would generate microspherocytes, whose altered rheology might predispose the cell to premature hemolysis in vivo. Abstractor’s note: The described mechanism of “internal fragmentation” seems an important new way, added to external fragmentation, in which microspherocytes might be generated in vivo.—H. S. J.


Erythrocyte mosaicism occurs in females heterozygous for glucose-6-phosphate dehydrogenase deficiency. In blood from G6PD deficient female children with acute plasmodium falciparum malaria, the parasite rate was 2 to 80 times higher in normal than in deficient erythrocytes, using the methemoglobin dilution technic following nitrite and methylene blue exposure to detect deficient and normal red cells. This important paper indicates the probable mechanism whereby the gene for G6PD deficiency confers selective advantage against malaria to heterozygous females, thus selecting out G6PD-deficient populations in areas with endemic falciparum malaria.—H. S. J.


The authors review nearly all of the known mutant hemoglobins, relating the position of the amino acid alteration change to functional abnormalities in the hemoglobin molecule. They conclude that the hemoglobin molecule is insensitive to replacements of most amino acid residues on its surface, but extremely sensitive to even quite small alterations of internal nonpolar contacts, especially those near the hemes. Such mutations are involved in hemoglobin instability leading to precipitation as seen in the congenital Heinz body hemolytic anemias, or to heme oxidation as in the congenital methemoglobinemias. Replacements of amino acids at contact points between alpha and beta subunits affect respiratory function, generally altering the oxygen affinity of the hemoglobin molecule; examples include hemoglobin Yakama (increased oxygen affinity) and hemoglobin Kansas (decreased oxygen affinity), and hemoglobin Philly (increased dissociation of globin tetramers into monomers). Abstractor’s note: The tendency of unstable hemoglobins associated with congenital Heinz body hemolytic anemia to have mutations near the heme group of beta chains has recently been emphasized. These hemoglobins have been shown to have a tendency to lose these heme groups which when freed are excreted as pigmented “dipyroles” in the urine of these patients. The heme-deficient beta chains precipitate at body temperature into typical Heinz bodies, leaving heme-replete alpha chains soluble in the hemolysates (Winterhalter and Jacob, J. Clin. Invest. 48:89a, 1969).—H. S. J.


Four pedigrees are given in which one or more members had a high F gene interacting either with thalassemia or Hb S trait. Although the propositi were anemic, they were not severely ill and pursued normal lives. Such cases must be distinguished from homozygotes for beta thalassemia whose prognosis is much worse.—F. W. G.

Experimental Studies on Erythropoietic Kinetics Under Hemopoietic Stimula-

A 57 year old nonalcoholic female who had a chronic excessive ingestion of a compound containing aspirin, salicylamide and caffeine, presented on three separate occasions with a severe megaloblastic anemia. Serum concentrations of folate and vitamin B12, urinary excretion of FIGLu, and vitamin B12 absorption were all consistently normal and therapeutic trials with folic acid, vitamin B12 and pyridoxine were all unsuccessful. Blood and urine salicylate concentrations were elevated and she experienced a spontaneous hematologic response when the analgesic medication was withdrawn. The authors propose a causal relationship between this drug and the development of megaloblastic anemia in the subject described.—F. A. K.


Colchicine decreased the absorption of vitamin B12 tested by urinary and fecal excretion, in normal subjects. The effect was greatest when colchicine was introduced directly into the ileum. Gastric mucosa and intrinsic factor activity were undiminished and colchicine did not prevent vitamin B12 binding to intrinsic factor or binding of this combination to guinea pig ileal mucosa. The authors conclude that colchicine induces reversible B12 malabsorption by altering ileal function.—F. A. K.


Comparison of urinary excretion of folate after ingestion of pteroylmonoglutamic acid and various sources of dietary polyglutamate folate in a normal subject, suggested total absorption of dietary folate from certain foodstuffs, such as liver and spinach, but incomplete absorption of folate from certain vegetables. Abstractor’s comment: Although test doses of polyglutamate folate are absorbed only to about one-third of the extent of equimolar doses of monoglutamate folate (Brit. Med. J. 2:546, 1968), the above study suggests that more complete absorption of dietary polyglutamate forms occurs under normal physiologic circumstances.—F. A. K.

A previously undescribed binder of vitamin B₁₂ was detected in the plasma of 8 subjects with polycythemia in relapse. This binder could be separated from the two previously recognized plasma B₁₂ transport proteins, transcobalamin I and II. It had an α₂ to β mobility at pH 8.6, did not carry endogenous B₁₂, shared antibody reactions with transcobalamin I, and had a molecular size of 120,000. The nature and function of this binder are unknown.—F. A. K.

ABSORPTION TESTS WITH NATURAL FOLATE MATERIAL IN CONTROLS AND IN GASTRECTOMIZED PATIENTS. T. Markkanen. From the Dept. of Medicine and the Dept. of Medical Microbiology of the University of Turku, Finland. Amer. J. Clin. Nutr. 5: 473-481, 1968.

About 60 Gm. ground calf liver (containing 8.5 μg. folate/Gm.) were given to gastrectomized subjects and controls, and serum folates (followed 6 times during 6 hours) rose in all controls (peak 1-2 hours), but only in 5% of the gastrectomized. Of the gastrectomized given 15 mg. folate orally before the test, 9/10 increased the serum folates after the oral liver. Abstractor's comment: Gastrectomized patients seem to absorb (even conjugated) folate well, like free iron and calcium, which are also absorbed in the duodenum and proximal jejunum. The author's conclusion that diet may explain low folates is probably correct; maldigestion may contribute.—P. G. R.

STUDIES OF EXPERIMENTAL HEMOCHROMATOSIS. R. A. MacDonald, H. Endo and G. S. Pechet. From the Dept. of Pathology, University of Colorado Medical Center and the Veterans Administration Hospital, Denver, Colo. Arch. Path. (Chicago) 85:366, 1968.

Rats fed diet deficient in choline, folic acid, methionine, etc. stored extra iron in the liver, spleen, and other organs. This storage was prevented in the pancreas and heart by folic acid or choline, but not in liver and spleen. Transferrin saturation increased in deficient rats (37 to 49 per cent), and was complete when iron was also given. Sideroblasts increased. Iron absorption rose within seven days, and supplementing of diet did not prevent these changes. Bone marrow cell suspensions increased their uptake of iron.—P. G. R.


A study was undertaken on the effect of chronic exposure to small doses of ionizing radiation on the frequency incidence of residual nuclear fragments in the peripheral erythrocytes of employees with professional radiation exposure. Feulgen's cytochemical method was used, 100,000 cells evaluated and the result interpreted as positive if at least one nuclear fragment was reliably found. In 173 controls and 717 exposed persons it was possible to show a correlation between the increased incidence of positive findings and duration of exposure in years. No correlation with the age of the examinees could be established.—L. D.


The authors investigated the number of normoblasts in bone marrow containing Howell-Jolly bodies. They compared a group of miners working underground, mining radioactive raw materials and a group not exposed to this hazard. Both groups differ mutually. The control group had an average 5.3 ± 2.2 cells with Howell-Jolly bodies per 5000 normoblasts. This is 1.06 per cent of the total number of normoblasts. The group of miners had 9.3 ± 3.8 cells with Howell-Jolly bodies per 5000 normoblasts. This is 1.86 per cent of the total number of normoblasts.—L. D.

LEUKOCYTES

ON THE ROLE OF THE LEUKOCYTE IN COAGULATION IN CHRONIC LYMPHADENOSIS. B. I. Kuznik, E. L. Kuzmenko and G. P. Alaukov. From the Department of Physiology, Chitinsky Medical Institute, and the Coagulation Laboratory, Leningrad Institute of Hematology and Blood Trans-
Suspensions of leukocytes were made from the blood of ten patients with chronic lymphocytic leukemia having no hemorrhagic manifestations; each patient had over 200,000 leukocytes per cu. mm. (90 per cent lymphocytes) and platelet levels between 100,000 and 140,000 per cu. mm. Suspensions were made from dextran sedimented oxalated blood; in addition, a saline extract of lysed leukocytes and a suspension of residual cell membranes were prepared. Coagulation tests were made on various plasmas to which these materials had been added. Plasma recalcification time was shortened by all three, particularly by the membrane suspension; coagulation time was delayed by intact leukocytes and by the extract; no effect upon prothrombin time was noted. It is postulated that leukemic lymphocytes contain a thromboplastic factor located chiefly in the cell membrane. Other tests showed the leukocytes to have an active antithrombin effect.—J. V.


During the acute phase of the disease 12 children with acute leukemia were immunized with live leukocytes obtained from the blood and bone marrow of other acute leukemia patients. These patients were acutely ill with toxic phenomena, enlarged lymph nodes, hepatosplenomegaly and severe hemorrhagic manifestations. Improvement in both the clinical condition and hematologic picture was observed in eight patients with complete clinical and hematologic remission in three. All but one of these improved cases were subsequently given conventional antileukemic therapy; the remaining patient, who achieved a complete remission has continued with immunizations without other antileukemic therapy and is still in remission at four months since treatment started.—J. V.


In 32 leukemia patients, 21 acute, 6 chronic lymphocytic and 5 chronic granulocytic leukemia, changes in the levels of serum Vitamin B\textsubscript{12} coenzymes (cyano-, methyl-, hydroxy- and desoxoyadenosilcobalamines) were observed before and during treatment of their diseases. Total Vitamin B-12 concentration is increased in chronic granulocytic, and normal in chronic lymphocytic leukemias but the distribution pattern of the various coenzymes is abnormal. In acute leukemia two groups were recognized—those with normal or reduced total serum Vitamin B-12 and those with elevated levels, the latter having an unfavorable prognosis. A distinct correlation between clinico-morphologic status of the patient and serum B-12 levels was noted and, in some cases, B-12 levels and the blast count of blood and bone marrow were related. The ratio of the various coenzymes is not uniform in acute leukemia and resistance to cytostatic therapy was observed in those patients showing a preponderance of methyl- and hydroxy-cobalamines.—J. V.


In this study 221 patients with chronic granulocytic leukemia were treated with varying doses of various antileukemic agents. Five groups received Myelosan in 2, 4, 6, 8, or 10 mgm. daily doses and the remaining four groups received regular uniform doses of myelobromal, dopan, ure-

Of 26 patients with macroglobulinemic reticulosis, an unusual course of the disease was seen in 3 cases. Symptoms, typical at the onset of the disease, regressed under the effect of leukevan. Following clinical and hematological remission accompanied by disappearance of macroglobulins from the blood and lasting 16, 10 and 2 months, all 3 patients developed a picture of tumor reticulosis with various localization of the tumors, profound leukopenia and lymphopenia. The paraproteins (particularly macroglobulins) were not revealed in the blood. The patients died with progressive development of the tumor process and the progress of generalized intoxication.—J. K.


Following previous studies on normals (Lancet, 2, 1220, 1966) which showed a regular oscillatory rhythm of the leukocyte count with a periodicity of 14-23 days and suggested the existence of a negative feedback control of leukopoiesis, the author investigated neutrophil, platelet and reticuloocyte counts in two patients with P.V. Over a total of four months, one patient showed a neutrophil cycle with a period of 15 days and a platelet cycle of 27 days. The other had a reticuloocyte cycle of 17 days. The findings suggest that normal control of hemopoiesis is at least partly retained in P.V.—F. W. G.


Neutrophil alkaline phosphatase (NAP) activity is increased during pregnancy. This study confirms the clinical impression that oral contraceptive hormones may increase NAP. Eighty-four healthy female subjects receiving any one of four commonly prescribed oral contraceptive hormone preparations demonstrated a mean increase of approximately three times values determined in 61 control subjects. Peak levels were noted during the final week of the menstrual cycle. The NAP returned to normal during the first week of the subsequent menstrual cycle. Oral administration of either of the constituents of a selected oral contraceptive (mestranol, 0.1 mg., or norethindrone, 2 mg. daily) for 20 consecutive days also significantly increased NAP over control levels. The diagnostic usefulness of the NAP reaction in clinical medicine may be minimized as more of the general female population use oral contraceptive hormones.—J. E. U.


The kinetics of neutrophils, especially generation time in the immature stages of neutrophils, efflux rates of each compartment and life span of mature neutrophils were studied in six patients given 3H-thymidine in vivo. The generation time was measured by the halving time of the average grain count of labeled cells or by DNA synthesis time and per cent of initially labeled cells. The generation time of myeloblasts in a patient with infection of the urinary tract was 12 to 23 hours compared with 22 to 30 hours in one without infection. In patients without infection, the generation times of promyelocytes and of myelocytes were 31 and 38 hours, respectively. On the other hand, the generation times in those with infection were 33 and 50 hours, respectively.
In patients with infection, the efflux rate from the compartments of myeloblasts and promyelocytes was higher than in those without infection. The generation time observed in leukemic blasts from acute leukemia, and in myeloblasts, promyelocytes and myelocytes from chronic myelogenous leukemia was longer than in corresponding cells from normal persons. Both efflux rate and labeled per cent were very low in leukemic cells compared with the normal. These phenomena are probably due to maturation disturbance which in leukemia results in increased numbers of cells in each compartment. The emergence time of labeled metamyelocytes was about 3 hours among the examined cases including 2 normals, 2 with chronic myelogenous leukemia and 2 with acute leukemia. Similar observations were also made on band forms. The life span of neutrophils in the peripheral blood was almost equal in each case ranging from 1.5 to 2.5 days. This result was most likely due to the presence of small numbers of normal cells mixed with the leukemic cells. It was proved that maturity of the segmented cells was parallel to their number of segmented lobes since the higher the number of segmented lobes, the longer was the emergence time of labeled cells.—K. F.

**Significance of Cytochemical Methods for the Diagnosis and Classification of Immature Leukemias of Myeloid Origin.** F. Heränský, V. Lodrová, V. Pánnorová. From the Research Laboratory of Pathophysiology of Blood and Liver Diseases; Charles University, Prague, Czechoslovakia. Neoplasma (Bratisl.) 15: 203–209, 1968.

The significance of sudanophilia and of its types after mercury salts pretreatment as well as that of the reactions for nonspecific esterase and chloracetate esterase in the diagnosis and finer classification of immature myeloid leukemias was evaluated. The presence of sudanophilia proves with certainty the myeloid origin of leukemic cells and aids subdivision into its types: paramyeloblastic, parapromyelocytic and myelomonocytic subgroups. In the absence of sudanophilia the strong positivity of nonspecific esterase with a weak reaction for chloracetate esterase is helpful in the diagnosis of very immature myelomonocytic leukemia.

The strong activity of chloracetate esterase remains the main characteristic of the neutrophilic series even in leukemic cells. The possible weakening of this and other cytochemical characteristics must be taken, however, in consideration in some leukemic cell lines.—L. D.

**HEMOSTASIS**


Serotonin-creatinine sulfate and serotonin adipinate were used to treat 35 patients with hemorrhagic syndromes associated with hypoplastic or aplastic anemia. These were given in courses of intramuscular or intravenous injections and the syndrome was arrested in 10 patients as early as two days and as late as 30 days after treatment had begun. No changes in the platelet levels, plasma recalcification times, fibrinogen levels or fibrinolytic activity of the patients' blood were noted. In 11 patients side effects such as urticaria, nausea, abdominal and muscular pains were recorded—F. V.


A group of hemophiliacs (29 Hemophilia A and 1 Hemophilia B) varying in age from 12 to 69 years, were given physical exercises including some to improve the mobility of affected joints. There was improvement in general health and in the coagulation status. Coagulation time was reduced, on an average, by 20 per cent, AHF activity increased by 5–10 per cent, but prothrombin consumption was unchanged. The thromboelastograph showed a temporary return of constants to normal indicating some formation of thromboplastin. This effect may be related to the mechanism of hypercoagulability.
ABSTRACTS

promoted by adrenaline and other catecholamines.—J. V.


In vitro platelet adhesiveness was measured by the Hellem method (modified) in 15 P.V. and 19 control patients. Adhesiveness was significantly increased in the P.V. group. When a correction for hematocrit was introduced, the adhesiveness became "normal." It is proposed that in P.V., platelet adhesiveness is inherently normal, but that it becomes increased by factors associated with a raised hematocrit. It remains to be established: a) that in vitro platelet adhesiveness reflects in vivo adhesiveness in P.V. b) that increased adhesiveness is a factor in the increased tendency to thromboembolism prevalent in P.V.—F. W. G.


Four of 11 normal males, when investigated for 3–5 months, showed a regular oscillation of the platelet count with a period of 21–35 days. This may indicate the control of thrombocytopoiesis by means of a negative feedback circuit containing a time delay, akin to the mechanism believed by the author to control granulopoiesis.—F. W. G.


The authors discuss the physico-chemical nature of acid phosphatases of platelet origin. They draw attention to parallel changes in the “availability” of platelet factor 3 and the masked activity of acid phosphatases during washing of isolated platelet suspensions or due to the action of ADP on citrated plasma with a high platelet content.—L. D.

**IMMUNOHEMATOLOGY**


Rapid expansion of reporting and analysis of patients with primary immunologic deficiencies has accentuated the need for an acceptable, workable, and flexible classification of these disorders. Faced with this need at a recent WHO Conference focusing on genetic controls in immunologic processes, the authors found it possible to agree to major criteria upon which such a classification might be based. A useful start was made for consideration of a universally acceptable nosology of immunologic deficiencies by an appropriate international body.—J. E. U.


Immunologic investigations were carried out in eleven patients with the Wiskott-Aldrich syndrome. Delayed hypersensitivity responses were absent when tested with five skin-test antigens and dinitrochlorobenzene sensitization, despite the fact that the patients had mean circulating lymphocyte levels of 2300 per cu. mm. and normal in vitro lymphocyte transformation to phytohemagglutinin. IgG levels were normal, IgA and IgD levels were elevated, and IgM levels were diminished. Turnover studies with 131I-IgM demonstrated that the low IgM serum concentration was due to decreased synthesis. Natural antibodies to blood-group antigens and five serotypes of Escherichia Coli were strikingly diminished. In addition, antibody responses to polysaccharide antigens were almost completely absent. Antibody responses were also significantly impaired to a variety of bacterial, protein, and viral antigens. However, when antibodies were produced, they were of both 19S and 7S types. Wiskott-Aldrich patients appear to have a broad immunologic defect involving both humoral and cellular immune responses.
Such a broad defect associated with the presence of functional lymphocytes and adequate immunoglobulin levels suggests a disorder of antigen processing or recognition, that is, a disorder of the afferent limb of immunity.—J. E. U.


The authors study time of appearance and structural and metabolic characteristics of reactive lymphoid cells appearing in the peripheral blood following immunization with bacterial and viral antigens. Similar changes were invoked during primary and secondary responses, and with the various antigens employed. At 5–7 days following immunization, lymphoid cells of increased size and degree of basophilia were observed, and mild degrees of plasmacytosis were noted. Increased thymidine incorporation, increased uridine incorporation, and increased incidence of mitosis were observed. Tritiated leucine incorporation was increased in the basophilic cells. Ultrastructurally, increased amounts of polysomes and/or rough endoplasmic reticulum were observed in the reactive cells as compared with normal lymphocytes. Patients with advanced malignant disease showed no significant difference in response from normal subjects. Basophilic cells with morphologic and metabolic properties similar to those described were found in the peripheral blood of patients with a variety of bacterial and viral infections.—P. F.


The authors showed that an early (within ten minutes) action of PHA on lymphocytes is stimulation of selective incorporation of $^32$P into phosphatidyl inositol. The degree of incorporation increase was almost proportional to PHA dosage over a wide range. The stimulation was not dependent upon protein synthesis, and appeared to be best explained as the result of stimulation of both synthesis and breakdown of phosphatidyl inositol in a selective compartment. The authors point out a possible analogy in the lymphocyte response to PHA and response of pancreatic cells to acetylcholine, in which acceleration of $^32$P incorporation into phospholipids is associated with intracellular transmembranal transport stimulation. They also suggest that PHA might facilitate removal of $\gamma$ globulin in the lymphocyte which might be restrictive for expression of genetic information required in replication.—P. F.


Using specific antibodies labelled with peroxidase or alkaline phosphatase, the authors were able to localize immune globulins on a cellular level in spleen cells of hyperimmune rabbits. They emphasize that reproducibility of results is dependent upon utilization of highly purified enzyme preparations, the use of pure antibodies specifically isolated on immunoadsorbents, and by the use of glutaraldehyde to provide cross-linkage of antibodies with enzymes. Using these techniques, immune globulins were localized in cells of the lymphocytic and plasmacytic series. Differences in sensitivity to fixatives between the immune globulins of lymphoblasts and those of plasma cells might be related to qualitative differences in these two immune globulin populations. In plasma cells immune globulins were demonstrated within dilated cisternae, the perinuclear space and the Golgi apparatus, while associated ribosomal staining was variable (probably in relation to properties of the fixatives). In lymphoblasts, generalized cytoplasmic staining was observed and there was no localization in ergastoplasm. The authors suggest that lymphoblasts may simply form antibody in the cytoplasm and discharge it at the cell surface. The possibility that developing ergastoplasm might prove necessary for cells exceeding certain critical size and surface to volume ratios is also suggested.—P. F.

Pokeweed mitogen (PWM) differs from phytohemagglutinin (PHA) in chemical composition and effects on lymphocyte cyto-differentiation. The authors have previously suggested that redistribution of acid hydrolases might represent an important early effect of PHA on lymphocyte lysosomes. In this study, they demonstrate that similar (but quantitatively less) alteration in the subcellular distribution of lysosomal enzymes is invoked by PWM. They conclude that similar mechanisms are involved in the action of the two mitogens. The precise role of lysosomal hydrolases in the mediation of lymphocyte blastogenesis remains uncertain.

—P. F.


A new type of pathologic immunoglobulin was found in the serum, urine, and saliva of a young Arab patient with abdominal lymphoma and diffuse lymphoplasmacytic infiltration of the small intestine. This protein is devoid of light chains and closely related to the alpha polypeptide chains of the \( \gamma_{\text{AL}}(\text{Le}) \) subclass of immunoglobulin A. It is characterized by electrophoretic heterogeneity, tendency toward polymerization, and a high carbohydrate content. No intracellular synthesis of light chain was detected.

—J. E. U.


The course of Felty’s syndrome in 27 patients was reviewed. From a clinical and serologic standpoint this syndrome represents the most severe end of the spectrum of rheumatoid disease. Lowest leukocyte counts ranged 500–2900/cu. mm; with neutrophils 0–2380; lowest hematocrit, 19–38 per cent. Platelet count was below 100,000/cu. mm. in 6. Coombs’ test was positive in 4. Marrow showed myeloid metaplasia in 13, which in 7 was accompanied by “maturation arrest.” Although splenectomy was usually followed by a satisfactory hematologic response, recurrence of infection was not necessarily prevented.—J. E. U.


Betke-Kleihauer acid elution tests were done on the blood of 2000 Rh(D)-negative women who had delivered Rh(D)-positive fetuses. Parity was not related to number of fetal cells in maternal blood, so that there is no increased risk of sensitization after first pregnancy; maternal age, multiple birth, induction and method of expulsion of placenta did not increase number of fetal cells, but both cesarean section and forceps delivery did. Fetal cells were found in some women after abortions. ABO incompatibility decreased incidence and number of fetal red cells. Abstractor’s comment: Until all Rh(D)-negative women can be protected against sensitization, it is desirable to give preferential treatment to high-risk groups. The Betke-Kleihauer test appears to present one means of identifying individuals who are at increased risk.—F. W. C.


In 52 patients suffering from various malignant tumors, thrombocytes were examined for the AB group antigens by means of the absorption test. In 5 patients (9.6 per cent), a substantial reduction of the A-activity was found. Two patients belonged to the \( A_1 \) group, 3 patients to \( A_2 \) group. In erythrocytes no serological modification of the A-group was found. The A-antigen deficiency in the patients was of a transient nature.—L. D.