ERYTHROCYTES


A study of the influence of pH on the electrophoretic mobility of human red cells and platelets permitted demonstration of an isoelectric point for each cell type when its charge was nil. This point was found to be 4.5 in the case of the platelets and about 4 in the case of the red cells. However, it was impossible by means of such an experiment to determine the origin of the charge and a more quantitative study should be carried out.—G. M.


The authors estimated routinely glutathione reductase and 13 glycolytic enzymes in red cell hemolysates of 100 patients with various types of blood diseases. In 23 cases of acute leukemia, they observed seven cases of pyruvate kinase deficiency, two with phosphofructokinase deficiency, two with diphosphoglycerate mutase deficiency and one with glutathione reductase deficiency. In 38 cases of refractory or sideroblastic anemia, there were observed 25 cases of deficiency of pyruvate kinase, five of phosphofructokinase, five of diphosphoglycerate mutase, and two of glutathione reductase. In 11 cases of true medullary aplasia were noted two cases of phosphofructokinase deficiency and one of diphosphoglycerate mutase deficiency. Among 12 cases of myelo-
fibrosis were found two cases of phosphohexose isomerase deficiency, one of phosphofructokinase, two of glyceraldehyde phosphate dehydrogenase, two of diaphosphoglycerate mutase and one of glutathione reductase deficiency. In six cases of polycythemia vera, phosphohexose isomerase levels were definitely below normal and in two cases they were very low. In two cases there was a 3-phosphoglycerate mutase deficiency and in one case a phosphofructokinase deficiency. In contrast with the low levels of these enzymes, the others were normal or increased in most cases with blood diseases whatever the type. By its frequency, intensity and relative specificity in acute leukemia and resistant anemia, an acquired pyruvate kinase deficiency was the most important finding in this study. The mechanism of the various changes is discussed.

G. M.


A case of megaloblastic anemia with a leukocyte count below 1000 and thrombocytopenia is described in a 19-year-old white female. The severe pancytopenia appeared to be caused by a nutritional deficiency of vitamin B12 due to a lacto-vegetarian diet of about 15 years duration. After the administration of parenteral vitamin B12 there was an excellent hematologic response. The literature of this subject is reviewed.

M. C. V.


Folic acid was administered in doses of 15 mg. daily in order to study its effect on serum vitamin-B12 levels. Thirteen of the 14 volunteers, six males and seven females, experienced untoward symptoms within 1 month, consisting of gastrointestinal symptoms, sleep disturbances, vivid dreaming, malaise and excitability. The symptoms were sufficiently marked to cause abandonment of the experiment. Abstractor's comment: These effects were unexpected and the experiment had not been designed as a double-blind trial. The authors do not state if the subjects were known to each other but they were questioned concerning side effects and in the event these were mainly subjective. Nevertheless folic acid has hitherto been regarded as a relatively harmless substance and further controlled study of its possible toxicity is urgently required.—A. L. B.


Intrinsic factor from human and hog sources was labeled with 51CrCl3 following partial purification by ion-exchange column chromatography and gel filtration. The labeled product was found to retain both in vitro and in vivo characteristics of intrinsic factor. When administered concomitantly with radioactive vitamin B12 there was no evidence of absorption of the labeled intrinsic factor as measured by assay of urinary, fecal and plasma radioactivity although the radioactive vitamin B12 was absorbed normally. These observations make it seem likely that the intrinsic factor molecule does not enter the circulation from the intestine during the process of vitamin B12 absorption.—F. A. K.


Hypersegmentation of the granulocytes has long been known to occur in some persons with chronic renal failure. The present study considers whether this is a manifestation of folate deficiency. Serum folate concentrations were initially reported in 1963 to be subnormal in four of six uremic patients undergoing dialysis. (Trans. Am. Soc. Artificial Int. Organs 9:51, 1963); subsequently, Hampers et al. reported a high prevalence of subnormal concentrations, often associated with megaloblastic changes.
in the bone marrow, both in uremic subjects and in those undergoing dialysis (New Eng. J. Med. 278:551, 1967). On the other hand, serum folate values were reduced in only four of 15 such subjects evaluated in a more recent investigation (New Eng. J. Med. 279:970, 1968). In the present study, serum folate levels were subnormal in only three, but hypersegmentation was noted in 14 of 19 patients with severe renal failure. The lobe count returned to normal following supplementation with folic acid and the authors considered this evidence of a causal relationship. The calculated loss of folate during 12 hours of hemodialysis averaged 52 g and the authors concluded that this loss, plus reduced folate intake due to boiling of foods, often results in mild folate depletion.—F. A. K.


Serum vitamin concentrations were observed in nine obese subjects (weighing 237 to 537 lbs.) who underwent a 16-week fasting period. Serum folate values fell in all nine subjects becoming subnormal after six-eight weeks of fasting. In contrast, serum vitamin B<sub>12</sub> levels remained unchanged throughout the study period.—F. A. K.


Cow’s milk is known to contain a protein which binds PGA and certain other folate derivatives (Amer. J. Clin. Nutr. 20:1, 1967; 21:289, 1968; 22:156, 1969). In the present study the availability to man of cow’s milk folate (assayed with Lactobacillus casei) was assessed in two infants who presented with a megaloblastic anemia due to nutritional folate deficiency. The subjects responded to a milk diet that provided 15 and 35 μg of folate activity per day, respectively. Megaloblastosis recurred when they were subsequently placed on a milk diet rendered devoid of folate by boiling and adsorption with activated charcoal. A hematologic response was then once again obtained with the administration of crystalline PGA in daily doses of 15 and 35 μg, respectively. These observations indicate that the folate activity available in cow’s milk approximates that present in crystalline folic acid in a 1:1 ratio.—F. A. K.


Rabbit transferrin labeled with 125I was incubated with rabbit reticulocyte-rich red cell suspension at 4°C and 37°C. Sections were examined by electron microscope autoradiography. Grains, localizing the labeled transferrin, were seen intracellularly and in association with the cell membrane. Intracellular grains were seen in greater number after incubation at 37°C. The experiments suggested that during the process of transferrin and iron uptake by reticulocytes the transferrin molecules actually pass into the cells and are not exclusively localized to the cell membrane receptors.—A. L. B.


Ferrokinetic patterns were investigated in 10 patients with primary acquired sideroblastic (siderochrestic) anemia. Based on 59Fe surface count patterns, the authors conclude that a progressive change from an initial mild impairment of hemoglobin synthesis to a final stage of complete erythropoietic failure appears to be present in these patients. This progressive change of the disease with increased transfusion requirements is associated with an increased iron...
content in the stores. Calculations were made of chelatable labile iron stores by using $^{59}$Fe as a store marker and desferrioxamine for chelation of the labeled stores. The total iron store was calculated from the transfusion requirements. From these two figures the labile iron store value was estimated as a percentage. Abstractor's comment: It is difficult to draw conclusions on organ functions from $^{59}$Fe surface count patterns in patients with iron loading. The conclusion that complete marrow failure in these patients exists when the marrow iron ($^{59}$Fe) uptake is markedly reduced, therefore, appears dubious. In severe iron loading this does not prove that there is a nearly total cessation of effective erythropoiesis in the bone marrow. Furthermore, in iron loading a certain amount of body iron is daily excreted in the digestive tract. On the other hand, the hyperplastic erythropoiesis in the bone marrow will stimulate intestinal iron absorption. Due to these different factors, it is difficult to estimate with accuracy the iron stores from the number of transfusions received.—M. C. V.


The globin chains of peripheral red cell suspensions containing reticulocytes from patients with $\beta$-thalassemia major and non-thalassemic hemolytic anemia were labeled with radioactive leucine. After incubation overnight at 37°C, there was a decrease in radioactivity attributable to $\alpha$-chains in the red cells from thalassemic patients but not in those from the other patients. The authors suggest that there is a preferential loss of $\alpha$ chains from intact thalassemic red cells during overnight incubation and that this may be brought about by enzymatic proteolysis.—A. L. B.


The relative rate of synthesis of the alpha and beta chains of hemoglobin was measured in both the reticulocytes and bone marrow erythroid cells obtained from two patients with heterozygous high $A_2$ beta-thalassemia. In both of these patients, the relative rate of beta chain synthesis was markedly reduced in the reticulocytes, but the ratio of beta to alpha chain synthesis approached unity when the younger nucleated red cells were studied. The author concludes that these results are compatible with an increased instability and rapid rate of decay of beta chain-messenger RNA in the late stages of erythroid maturation in heterozygous beta thalassemia. Abstractor's comment: We have observed different results in bone marrow cell suspensions from patients with heterozygous beta-thalassemia, which only points, once again to the marked biochemical heterogeneity of the beta thalassemia variants.—T. F. N.


The red cell mass and the plasma volume were measured in 65 patients with splenomegaly due to miscellaneous causes. Slow mixing of $^{51}$Cr-labeled red cells was often present due to the existence of a pool of slowly exchanging red cells in the enlarged spleen. Often the red cell mass was normal despite the fact that anemia was present. In such cases anemia is due to sequestration of red cells in a splenic pool and dilution of red cell mass in an expanded plasma volume. Demonstration of a splenic pool, an expanded plasma volume and evidence of intrasplenic hemolysis are indications for splenectomy in patients with splenomegaly. The ultimate prognosis in these patients following splenectomy is, of course, dependent on the primary disease.—M. C. V.

Further Details of Third Recorded Case of Redwater (Babesiosis) in Man.
A powerful inhibitor of Friend leukemia virus has been isolated from the supernatant of JLSV5 tissue cultures chronically infected with Rauscher virus. This inhibitor was recovered from the supernatant after precipitation with polyethylene glycol. It was not detectable in the supernatants of an uninfected murine cell line or a rat cell line producing murine sarcoma virus in vitro. The inhibitor is capable of giving virtually complete protection to mice against Friend virus for 3 weeks, when it is injected simultaneously with or 4 days before the virus. A single injection is effective. The inhibitor is different to interferon and it does not induce interferon production. Its nature remains to be determined; its production could explain the large number of Friend virus particles required to induce leukemia in mice.—G. M.

CHRONIC ERYTHROMONOCYTIC LEUKEMIA.

G. O. Brown, Jr. St. Louis University School of Medicine, St. Louis, Missouri.


Three cases are presented which demonstrate an association between refractory sideroblastic anemia and chronic monocytic leukemia. The cases are characterized from the point of view of the anemia by ineffective erythropoiesis, a hyperplastic erythroid bone marrow showing megaloblastoid changes and numerous ringed sideroblasts and hypochromic microcytic red cells. The white cell changes in the peripheral blood are an absolute monocytosis with mature, but somewhat atypical, monocytes and in the bone marrow a slow but progressive increase in monocytic cells. Serum muramidase levels are increased. The course is prolonged and relatively benign except for the anemia. These cases seem to be at the benign end of a spectrum of neoplastic diseases involving the monocytic and erythroidic series simultaneously. More malignant cases are characterized by more severe anemia, granulocytopenia and thrombocytopenia as a prodromal phase of a terminal acute blastic leukemia. The most malignant form is that in which acute erythroblastic and monocytic proliferation occur as the presenting and terminal event.—J. E. U.

THE PASSIVE IMMUNOTHERAPY OF MURINE...
ABSTRACTS


It has been demonstrated that the simultaneous injection of an antigen and its corresponding antibody considerably diminishes the immunization. The phenomenon has been used to raise antibodies directed almost exclusively against the transplantation antigens of the Charlotte Friend leukemia in C57Bl/6 mice, rats and rabbits, the immunization. The phenomenon has responding antibody considerably diminishes rabbits. Under these conditions, the quan-
tity of antibody directed against the normal DBA/2 cells prepared in C57B1/6 mice, rats or rabbits. Friend virus induced leukemic cells were injected to C57B1/6 mice, rats or rabbits. Under these conditions, the quantity of antibody directed against the normal cells was practically eliminated in mice and was greatly diminished in rats and rabbits. The production of antibodies against the tumor associated antigens of the Charlotte Friend leukemia was increased in mice and rabbits. The therapeutic importance of these antisera is discussed.—G. M.


Antibodies and IgM plasma cells are decreased with cytosine arabinoside and L-asparaginase. In six patients with acute lymphoblastic leukemia in relapse were treated with cytosine arabinoside followed by L-asparaginase. In six patients marrow blast cells were reduced with cytosine arabinoside and complete remission was then obtained with L-asparaginase. In two patients, marrow blast cells rose on cytosine arabinoside but remission was then obtained with L-asparaginase. One patient failed to respond to either drug. Cytosine arabinoside caused neutropenia and thrombocytopenia but these were reversed during L-asparaginase treatment. The findings illustrate the usefulness of L-asparaginase in the treatment of leukemia patients with severely hypoplastic bone marrow and it is possible that this


In vitro thymidine labeling indices of lymphoblasts in a patient with lymphoblastic leukemia decreased from about 30 to about 5 per cent during 24 hours of 300 mg. prednisone treatment. Methotrexate doubled labeling indices in myeloblastic leukemia. Abstractor’s comment: It does this also to mitotic indices in normal blasts.—P. G. B.


Nine children with acute lymphoblastic leukemia in relapse were treated with cytosine arabinoside followed by L-asparaginase. In six patients marrow blast cells were reduced with cytosine arabinoside and complete remission was then obtained with L-asparaginase. In two patients, marrow blast cells rose on cytosine arabinoside but remission was then obtained with L-asparaginase. One patient failed to respond to either drug. Cytosine arabinoside caused neutropenia and thrombocytopenia but these were reversed during L-asparaginase treatment. The findings illustrate the usefulness of L-asparaginase in the treatment of leukemia patients with severely hypoplastic bone marrow and it is possible that this
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Five of 15 patients with acute lymphoblastic leukemia had complete remission and four had partial remission after treatment with L-asparaginase. Reduction of marrow blast cells took much longer than reduction of peripheral blood blast cells. In acute myeloid leukemia treatment with L-asparaginase caused a pronounced but short-lived fall of circulating blast cells. In six patients with lymphosarcoma, two had good partial remission, two deteriorated and two developed unusual side effects. Toxic effects were noted, with *Escherichia coli* L-asparaginase from two sources and consisted of nausea, vomiting, and slightly abnormal liver function tests. Patients hypersensitive to *E. coli* L-asparaginase tolerated that produced from *Erwina carotovora*. These two forms of enzyme appeared to be antigenically different. The problem of resistance may be reduced by combined therapy with other drugs.—A. L. B.

**Hemostasis**


A method is described for testing the availability of platelet acid phosphatases, using ADP, adrenaline and collagen as inducers. In siliconized test tubes, at 37°C and with constant magnetic stirring, 1–35 ml of PRP and 0–15 ml of the respective inducer was incubated for 0, 1, 3, 5 and 15 minutes, at which times 0.2 ml of the incubation mixture was added to 1 ml of para-nitrophenol phosphate, pretreated at 37°C. These tubes were then incubated for 30 minutes at 37°C after which the reaction was stopped abruptly by adding 4 ml of 0.05 M sodium hydroxide. The resulting color was measured with a Zeiss PMQ–2 photometer at a wavelength of 407 mμ. The results were expressed as μMole/ml./hour of liberated P-nitrophenol, using a para-nitrophenol calibration curve. In cases of Glanzmann's thrombasthenia, isolated prolonged bleeding time, as well as in some cases of thrombocytopenia and chronic myeloid leukemia, the availability of platelet acid phosphatase was found to be definitely diminished or absent. The method described seems to be valuable in the clinical investigation of platelet diseases.—G. M.

**Assessment of Platelet Production with T57Se Selenomethionine.** D. G. Penington. From University of Melbourne Department of Medicine, St. Vincents Hospital, Victoria, Australia. Brit. Med.J. 4: 782–784, 1969.

T57Se-selenomethionine was injected intravenously into mice and incorporation into platelets was measured. During the thrombocytosis following antibody induced thrombocytopenia, incorporation of the label increased. The T57Se-selenomethionine appeared to label platelets during their formation in megakaryocytes. Although no clinical studies are reported, the author suggests that the method could be developed to study thrombopoiesis in disorders of platelet production.—A. L. B.


Dog thyroid glands were perfused in vitro with heparinized autologous platelet-rich (PRP) or platelet-poor (PPP) plasma. After 5-hour perfusion with PPP there was significantly lower vascular resistance and greater fluid accumulation than in glands perfused with PRP. After perfusion with PPP there was decreased integrity of the microvasculature as evidenced by the oc-
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currence of purpura, edema and capsular hemorrhage after reanastomosis to the carotid artery. There was also greater trapping of radioactively labeled red cells and albumin after perfusion with PPP compared to that in PRP-perfused and unperfused glands. This also suggested that vascular integrity was better preserved with platelets in the perfusate. After perfusion with PPP, electron microscopy showed greater degenerative endothelial changes than after perfusion with PRP. 

Abstractor's comment: The table demonstrating this is however difficult to interpret. The authors emphasize however that some normal endothelium was seen in “platelet-poor glands” and, conversely, some abnormal endothelium was seen in “platelet-rich glands.” The authors conclude that platelets play some part in maintaining the integrity of the microvasculature during in vitro perfusion. Although this work provides no evidence as to how the platelets may protect endothelium, the experimental model could possibly be adapted for studying this aspect of platelet function in normal blood and in that of patients with platelet disorders.—A. L. B.


Different activators and modifiers of intravascular coagulation in accidents involving burns are discussed. The decrease in platelet and plasma coagulation factors, as well as the effect of heparin upon experimental animals and man, support the hypothesis that intravascular coagulation plays a role in the cause of burns. In the treatment of intravascular coagulation it is important to recognize that “runaway coagulation” is not the only symptom of intravascular coagulation. The normal defense mechanisms have also broken down. For treatment of intravascular coagulation in accidental burns the drug of choice is heparin. Drugs inducing vasodilatation could also be of value in treatment of the intravascular coagulation by diminishing the pathological changes in the microcirculation. 

Abstractor’s comment: As part of “reaction to injury,” possibly through release of tissue thromboplastin or due to thrombocytopenic states, intravascular coagulation is receiving increasing attention. Coagulation factors are consumed, and bleeding may result.—P. G. R.

IMMUNOHEMATOLOGY


Incubation of human group O or group B blood cells with α-N-acetylgalactosaminyl transferase and UDP-N-acetylgalactosamine converted them in group A and AB reacting cells respectively. Their H reactivity simultaneously decreased. The results suggested that the transferase is able to confer blood group specificity on glycolipid red cell H antigen as well, as has previously been described on glycoprotein blood group substance.—A. L. B.


Nine of 28 rabbits immunized with human group OI red cells preincubated with Mycoplasma pneumoniae developed a fourfold or greater rise of cold agglutinin titer. This was unassociated in time and titer with the development of specific antibody to M. pneumoniae. These serological findings resemble those in clinical human M. pneumoniae infections. Untreated human OI cells, M. pneumoniae alone and rabbits own erythrocytes treated with M. pneumoniae did not stimulate the production of cold agglutinins. The authors suggest that the reaction product of I antigen with M. pneumoniae rather than M. pneumoniae alone may be responsible for the cold agglutinin rises observed in man.—A. L. B.
THE NOMENCLATURE AND GENETICS OF THE
AG (xy) BETALIPOPROTEIN SYSTEM.
A. S. Wiener. From the Department of
Forensic Medicine, New York University
School of Medicine and the Serological
Laboratory of the Office of the Chief
Medical Examiner of New York City.

In the early stages of investigation of a
serological system, symbols which are really
codes and spell out protocols of reactions
are necessary to avoid misunderstanding.
Later on, when precise information and
understanding regarding the serology and
genetics have been acquired, true scientific
symbols ( terse mnemonics ) can be devised,
which because of the facility of their use,
economize on mental effort and promote
further progress in the field. The Ag (xy)
system of beta-lipoproteins is one of those
which has attained the ripe stage that makes
it ready for the introduction of a
scientific nomenclature. Such a scientific no-
menclature as well as coded symbols for
Ag (xy) system are proposed here, and
applied to the analysis of population genet-
ics of the Ag types.—S. R. H.

ANTIGEN-BINDING LYMPHOCYTES IN HUMAN
BLOOD. J. M. Dwyer and I. R. Mackay.
From Walter and Eliza Hall Institute of
Medical Research, Victoria 3050, Aus-

An elegant technique is described to dem-
onstrate specific antigen-binding lympho-
cytes in peripheral blood. 125I-labeled
flagellin was used as antigen and binding to
lymphocytes was demonstrated autoradio-
graphically. The reaction was not due to
cytophilic antibody and was blocked by anti-
ersa to human IgM and light chains. Antigen-
binding lymphocytes increased in number in
patients after immunization with flagellin,
the increase preceding by several days the
peak titer of circulating anti-flagellin anti-
body. The early cellular response was char-
terized by labeled blast-like cells, but at
14 days, at the peak of the circulating anti-
body response, the labeled cells resembled
small lymphocytes. In one cyclophosph-
amide-treated patient there was no increase
in labeled cells or circulating antibody re-
sponse after immunization with flagellin.
Abstracter’s comment: This technique seems
to be potentially useful for the study of
intestinal immune responses wherever anti-
gens can be appropriately labeled.—A. L. B.

AUTO-ANTIBODY TO HUMAN LEUKAEMIC
CELL MEMBRANE AS DETECTED BY IMMUNE
ADHERENCE. T. O. Yoshida and K. Imai.
Laboratory of Viral Oncology,
Research Institute and Department of
Internal Medicine, Aichi Cancer Center,

Thirty cases of patients with leukemia
were studied for evidence of naturally oc-
curring immunologic responses to their own
leukemic cells with an immune adherence
hemagglutination technique (IAHA) which
was designed to detect fresh serum auto-
antibodies to the membrane surface anti-
gens of the leukemic cells. In the patients
prior to admission to the hospital the auto-
antibodies to the cell membranes were
found in eight of 12 cases with acute
myeloblastic leukemia (AML), two of 2
cases with acute monocytic leukemia
(AMoL), two of three cases with acute
lymphoblastic leukemia (ALL), eight of
11 cases with chronic myelogenous leu-
kemia (CML), and in two of two cases
with chronic lymphocytic leukemia (CLL).
Autoantibody levels against autochthonous
leukemic cells and allogeneic leukemic cells
were followed during the clinical course of
the patient, and attempts to investigate
common antigenicity on the membrane sur-
face of leukemic cells were carried out in
only 15 cases. In the majority of cases it
was noted that autoantibody levels at the
stage of exacerbation had a low titer or
were undetectable, and at the stage of re-
mission they had a high titer. Autoantibody
positive sera of nontreated patients showed
cross reactivity to allogeneic leukemic cells.
By contrast, normal healthy control sera
did not show the specific reaction. These
findings suggest a possibility that leukemic
patients are able to produce humoral anti-
bodies against membrane-specific antigens
of autochthonous leukemic cells, and that
there is common specific antigenicity on the
membrane surface of leukemic cells.—G. M.

IMMUNOGLOBULIN DETERMINANTS ON THE
SURFACE OF HUMAN LYMPHOCYTES. R. R.
A. Coombs, A. Feinstein and Anne B.
ABSTRACTS


The mixed antiglobulin reaction was used to demonstrate immunoglobulin determinants on the surface of stored human lymphocytes. The lymphocytes were incubated with selected antiglobulin reagents, washed and then incubated with erythrocytes coated with the corresponding immunoglobulins. Lymphocytes with the immunoglobulin determinants were revealed by rosette formation with the indicator red cells. 2–5 per cent of peripheral lymphocytes had a Fe is-determinants, 0–3 per cent had Fe y-determinants, but Fe a-determinants were detected on less than 1 per cent of cells. L chain determinants, more than k, were found on up to 5 per cent of lymphocytes. The results contrasted with the very much higher percentage of rabbit peripheral lymphocytes which had previously been found to display surface immunoglobulin determinants.

Abstractor's comment: This technique would appear to be a valuable tool for the detection of specific antibody determinants on the surface of lymphocytes and according to the authors can be extended to reveal "buried" immunoglobulin determinants.—A. L. B.


Serum protein electrophoresis was performed in 678 patients with lymphoma. No monoclonal peaks of IgM specificity were found in sera from 345 patients with nodular lymphoma or Hodgkin’s disease. Of the remaining 333 patients with diffuse lymphoma, 1.5 per cent had an IgG peak, suggesting a coincidental relationship of IgG peaks to lymphoma. IgM peaks occurred in 3.6 per cent patients with diffuse lymphoma, a prevalence about 60 times more frequent than that in normal subjects. Such peaks were more frequent in older patients, suggesting an increased incidence of lymphomas producing monoclonal macroglobulins with advancing age. There was a close correlation between lymphoma mass and the level of the IgM peak in individual patients.—J. E. U.


Injections of antisera to lymphoid tissues of C3H/HeJ mice significantly increased the incidence of (a) lymphoma in normally resistant C3H/HeJ adult mice injected four times with Gross leukemia virus and (b) growth of allogeneic lymphomas in C3H/HeJ and AKR mice when compared to similarly treated animals injected with normal rabbit serum. The same antilymphoid cell sera were able to suppress sheep red blood cell hemagglutinin responses in parallel sets of mice. Immunosuppressive drugs, 6-mercaptopurine (100 mg./Kg. of diet) and azathioprine (100, 150, or 200 mg./Kg. of diets or 150 mg./Kg. mouse injected intraperitonally), did not increase the incidence of lymphoma in C3H/HeJ adult mice receiving multiple injections of Gross leukemia virus or depress the hemagglutinin response to sheep red blood cells. There was a tendency towards prolongation of latent periods of spontaneous lymphoma in AKR mice and virus-induced lymphoma in C3H/HeJ adult mice injected with C3H/HeJ antithymocytic serum prior to development of lymphoma. Incidence and latent period of virus-accelerated lymphoma in AKR mice was not altered by administration of the antithymocytic serum during the latent period of lymphomagenesis.—J. E. U.


Recent successful bone marrow treatment of patients with immune deficiency diseases has revitalized interest in human marrow transplantation and in one of its important aspects, the circulation of hemopoietic stem cells. Laboratory experiments in the last 10 years or so have yielded good evidence that such stem cells circulate in the blood not only under conditions of disease but also in the normal animal. Radiation chimeras were
most useful in the development of this phase of experimental hematology which showed that stem cells for erythrocytes, granulocytes, platelets, lymphocytes, and mast cells are found in blood and peritoneal fluid. Clinically white blood cell transfusions have been used to control infection in patients with suppressed immunocompetence. Several procedures, including cell separation and use of drugs to suppress homograft reactions, are currently being tried to improve the efficacy of such transfusions and to permit possible future use of circulating blood stem cells in cancer immunotherapy.

—G. M.

MISCELLANEOUS


Stochastic renewal as is inherent in the notion of stem cell reproduction leads to a finite probability for the extinction of a colony grown from one stem cell and to a distribution of the stem cell contents of colonies even if grown under identical circumstances; both the extinction probability, which is an important characteristic of any attempt of stem cell quantitation from a clone assay, and the distribution of the stem cell contents, are determined by the self-renewal probability of an individual stem cell, which in turn can be and has been measured from that distribution.—G. M.


Patients suffering from lymphopenic hypogammaglobulinemia now can be treated successfully by transplantation of bone marrow from HL-A identical siblings, especially if they are in good clinical condition at the time of the transplant. The authors have summarized the cases of patients treated by this method and discussed the conditions necessary for a successful outcome.—G. M.

ERRATUM: In Autoradiography of Diffusible Compounds in Human Nonnucleated Erythrocytes: Studies with Tritiated Glucose and Adenine by Greenwalt et al. (Blood 35: No. 5, May, 624-636), Table 1, last line, $P < 0.1$ should read $P > 0.1$; page 631, second paragraph, seventh line, 98, 20 and 11 per cent should read 88, 23 and 11 per cent.