HEMOSTASIS


The author has investigated the field of fibrinolysis by means of a modified and simplified 1131-clot method, originally described by Alkaersig (J. Clin. Invest. 38:1086, 1959). Only very slight lysis of the 1131-clots was demonstrated during thrombolytic therapy with "fibrinolysin" ("Thrombolysin," Merck Sharp & Dohme), even when strikingly short euglobulin lysis times were found, suggesting poor thrombolytic activity of "fibrinolysin." It was shown that lysis of 1131-clots in plasma containing an increased amount of blood activator was independent of the plasminogen content of the clot. Evidence is presented that fibrinolysis occurs only after adsorption of plasminogen together with activator from the surrounding plasma onto the surface of the fibrin clot. Contrary to streptokinase, the addition of urokinase to plasma produced little or almost no fibrinogenolysis, but showed marked fibrinolytic activity even against plasminogen-poor clots. This suggests that urokinase may be a more effective thrombolytic drug than streptokinase. Furthermore, the 1131-clot lysis method revealed for normal human plasma, besides the well-known anti-streptokinase, a marked anti-urokinase and antitissue-activator activity. Interestingly, an increase of blood activator produced little decrease in the anti-urokinase activity which indicates that the blood activator and urokinase are not identical substances. Method and part of the findings described by the author in his thesis are published elsewhere (Thromb. diath. haemorrh. 8:315, 322, 1962).—E. A. L.


In man therapeutic fibrinolysis releases vaso-active polypeptides. These substances, similar to bradykinin, facilitate collateral circulation and thereby benefit the vascular obstruction. The efficiency of fibrinolytic treatment depends both on the removal of fibrin by plasmin and on vasodilatation.—G. M.


The authors report a case of canine hemophilia in a beagle, with establishment of a colony by breeding the propositus with one of his daughters. The disease resembles mild hemophilia in the human.—C. R. M.

The authors discuss the variables involved in this test, but feel that in spite of the most careful standardization the test (by itself) offers no more protection from unexpected post-operative bleeding than bleeding or clotting times. This conclusion is based on positive tests in a hemophilia carrier and in people with Hageman trait, and on negatives found with thrombopathia thrombocytopenia and von Willebrand’s disease.—C. R. M.


Daily oral administration of up to 160 mg. of 5-hydroxytryptamine for 18 days caused an increase in platelet serotonin of 2½ to 6 times of the normal. When oral administration was discontinued, platelet serotonin decreased with an average half-life of 3 days.—I. C.


Morphologic and cytochemical studies of bone marrow megakaryocytes in normal individuals, in chronic idiopathic thrombocytopenic purpura, in acute and secondary thrombocytopenic purpura and in some other blood disorders gave the following results: 1. In normal individuals (10 adult males and 10 adult females) the frequency of the megakaryocytes in bone marrow aspirates was 0.4 ± 0.3 p. The percent of total nucleated cells. 2. Mature forms always predominated over the young forms and naked nuclei. In the 20 individuals studied there were 40 ± 11 percent of young forms and 20 ± 14 percent of naked nuclei. 3. In chronic and acute thrombocytopenic purpura the percentage of megakaryocytes was higher than in the normal individuals. In 36 cases of chronic thrombocytopenic purpura studied, this was 0.7 ± 0.4 percent and in the acute form (12 cases) 0.8 ± 0.4 percent. Some cases of chronic thrombocytopenic purpura (10 cases) were associated, in contrast, with a diminution of these cells (hypomegakaryocytosis): 0.1 ± 0.1 percent. In every case of chronic or acute thrombocytopenic purpura there was predominance of young megakaryocytes. 4. Cytochemical study of megakaryocytes by the Hotchkiss-McMannus method led the authors to classify these cells into three categories: megakaryocytes without PAS-positive granules, megakaryocytes with coarse PAS-positive granules and megakaryocytes with fine PAS-positive granules. In chronic idiopathic thrombocytopenic purpura (14 cases out 17), an increase of cells containing coarse PAS-positive granules was regularly observed. 5. The megakaryocytic index and cytochemical properties returned to normal with remission. 6. In bone marrows from deficiency anemias, Cooley’s anemia and in a few cases of leukemia, Hodgkin’s disease, and in three cases of erythropoietic prophyria, there was an increase of cells without PAS-positive granules.—M. J.


In studies on the transport of various kinds of particles across the walls of blood vessels, rats were injected intravenously with thorotrast, a preparation of thoriun dioxide particles suspended in aqueous dextrin. Thorotrast damaged mast cells and produced increased vascular permeability. The reaction was produced by the suspending medium and not by the particles of thorium dioxide. The vascular injury was presumably mediated by 5-hydroxytryptamine and histamine released from damaged mast cells because it was prevented by combined treatment with anti-histamine and anti-5-hydroxytryptamine drugs.—O. P. J.

LEUKOCYTES


Normal Swiss mice inoculated intracerebrally with lymphocytic choriomeningitis virus showed a 100 percent mortality within 8 days after virus challenge. Neonatally thymectomized mice seemed
to be completely protected from the lethal effects of the virus, apparently because the lethal effects of LCM virus infection result from a reaction of the virus, apparently because the lethal effects of LCM virus infection were completely protected from the lethal effects due to the virus infection. The suggested interpretation is that the thymic tissue in the chamber produced a specific diffusible product enabling lymphocytes in the thymectomized host to respond to the new antigenic stimulus of the inoculated LCM virus.

—T. E. B.


The authors describe 6 patients with a variant form of congenital and possibly hereditary agammaglobulinemia characterized by a rudimentary thymus and by very small numbers of lymphocytes in other lymphoid structures. The six patients were all dead by 2 years of age, usually showed onset of infections within the first 3 months of life, and were not obviously helped by γ-globulin therapy. These pathologic and clinical findings are contrasted with those in patients with the more usual form of congenital agammaglobulinemia. Persistent peripheral blood lymphopenia seemed to be a useful clue to the recognition of the variant form of congenital agammaglobulinemia. It is suggested that small lymphocytes make a significant contribution to resistance to infection, a contribution which can not be replaced by γ-globulin therapy alone.—T. E. B.


A serum antibody capable of destroying a solid homograft has rarely been found. The authors report passive transfer of homograft immunity by injection of the supernatant obtained from tissue-sensitized lymphoid cells disrupted by sonic vibration. The effective substance destroyed specific skin homografts within 6 days but did not reject non-specific skin grafts in this time. On disc electrophoresis, DEAE column chromatography, and ammonium sulfate precipitation, the effective "soluble substance" behaved like a γ-globulin. The "soluble substance" was considered to be a transplantation antibody.—T. E. B.


Rabbits were immunized with leukocytes, and the leukocyte antiserum was added to leukocyte cultures as a phytophagemagglutinin-like mitogenic agent. Antisera at 80 per cent concentration induced at least 10 per cent mitoses, 20 per cent were "toxic," and deformed, lysed and agglutinated cells. The authors consider this as a possible causative factor in leukemia.—P. G. R.


Cell lines were established from leukocytes stored in homologous serum for 2 weeks at 4 C. It is suggested that viable cells capable of culture in series may be present in some sera used for tissue culture media and may thereby lead to misinterpretation of experimental data. Heating nutrient serum for 15 minutes at 56 C will destroy any leukocytes present.—T. E. B.


The author describes a technic which uses more stable reagents and gives a more brilliant reaction product and more pronounced difference between the leukocytes of healthy adults and those of patients with chronic granulocytic leukemia.—C. R. M.

ESTIMATION OF PHASES OF THE LIFE CYCLE OF LEUKEMIC CELLS FROM LABELING IN HUMAN
ABSTRACTS


Using methods they have previously applied to normal granulocyte precursors, the authors conclude that in the four cases studied there is nothing to support the concept that acute leukemia entails rapid proliferation. In blast cell leukemia the generation time is about the same as that of normal neutrophil precursors (48 hours).—C. R. M.


It is known that treatment can modify or even abolish the autopsy findings of leukemia, but the authors demonstrate that these effects can occur without any radiation or anti-leukemic therapy. They present five well-documented cases, three of acute lymphocytic and two of acute myelogenous leukemia. In none of these could an autopsy diagnosis have been made; a diagnosis of “marrow aplasia” or “leukemoid reaction” would probably have been made by most pathologists. This is a most important paper in terms of understanding the range of variation of patterns in acute leukemia. One incidental benefit will be to reduce the points of conflict between the conscientious hematologist and skeptical pathologist.—C. R. M.


The authors describe the clinical and biochemical findings in a 53-year-old patient with Waldenström’s macroglobulinaemia whose serum did not (yet?) display the typical macroglobulin gradient in the ultracentrifuge. In the bone marrow, all cytological criteria of the disease were found. Agar electrophoresis of the serum proteins revealed a PAS-positive extra component which immunoelectrophoretically displayed \( \beta_2 \) M antigenicity. Ultracentrifugation of the isolated extra component demonstrated its macroglobulin character. A brother of the patient had died of osteolytic multiple myeloma.—E. A. L.


The authors confirm a previous report by Kamp of increased numbers of abnormal circulating lymphocytes in the blood of patients with schizophrenia. The most striking abnormalities in such lymphocytes were the presence of fine nuclear chromatin and of a visible nucleus. In a blind study of coded pairs of slides from 50 schizophrenic patients and 50 blood bank donors, 49 pairs were correctly diagnosed. The lymphocyte abnormalities bore no obvious relationship to treatment being received by the schizophrenic patients.—T. E. B.


This counter differs from the Coulter counter in that it records flashes of light in a dark-field system. In the authors’ hands it gave a similar though somewhat better coefficient of variation than that obtained with the Coulter. This discrepancy is not explained, and only 50 counts are reported by each technic (though many more have apparently been done). A count takes less than 30 seconds; red cell counting is apparently less satisfactory.—C. R. M.

ERYTHROCYTES


The authors describe a direct visual spectrophotometric method by which hematin in plasma can be estimated in the presence of hemoglobin and bilirubin. Hematin added to plasma shows the same properties as hematin found in pathologic specimens. Hematin was found to migrate with albumin and also in the \( \alpha_2:\beta \) zone.—C. R. M.

ULTRACENTRIFUGAL FRACTIONATION OF HUMAN ERYTHROCYTES WITH RESPECT TO CELL AGE. L. Garby and M. Hjelm. From the University Hospital, Uppsala, Sweden. Blut 9:284, 1963.
In vivo-labeled Fe⁶⁹ erythrocytes were ultracentrifuged for 2 hours at 35,000 rpm, frozen, cut, and their hemoglobin and radioactivity measured. As in previous studies, young cells (up to 10 days) were well separated, but not older ones.—P. G. R.


In these studies, the author's standardized osmotic fragility test (Acta med. scandinav. 173: 683, 1963) was used. Osmotic fragility decreases at an almost constant rate during the first 24 hours, but the shape of the curve and the width of the normal range is unchanged after 24 hours' incubation. The rate of decrease in osmotic fragility is temperature-dependent. Increment hemolysis curves demonstrate that an abrupt change of osmotic fragility occurs after 24 hours of incubation. This change can be delayed by adding glucose. Moreover, red cell fragility after incubation will vary with alterations of pH within physiologic limits, and with the hematocrit. The various factors which influence osmotic fragility after incubation are discussed in terms of their effects on glucose metabolism of the red cells.—S. A. K.


In a standardized osmotic fragility test system, variation of pH from 8.7 to 8.1 produced changes in the percentage of hemolysis from 0-90 per cent. A pH-fragility test of human red cells is described in detail and normal values are presented. The test has not yet been applied in pathologic conditions.—S. A. K.


Of 624 full-term male Negro infants, 11 per cent were found to have the erythrocyte enzyme deficiency on the basis of a dye decolorization test performed within 10 hours of birth. All infants received 1 mg. vitamin K₁ intramuscularly immediately after birth and infants considered to be predisposed to develop hyperbilirubinemia were excluded from further study. No difference in the extent of bilirubinemia during the first 82 hours of life in 30 subjects with the erythrocyte enzyme deficiency was noted when compared with the bilirubinemia in 30 male Negro infants without the enzyme deficiency.—E. R. J.


A careful study of 30 primaquine-sensitive and 60 normal full-term Negro infants who received either no vitamin K, 2.5 to 7.5 mg. of menadione tetrasodium diphosphate (Synkavit) or 1.0 to 18.75 mg. of vitamin K₁ (Konakion) revealed: (1) higher bilirubin levels in untreated primaquine-sensitive infants on day 5 and day 8; (2) reticulocyte counts elevated in many primaquine-sensitive infants, regardless of vitamin K therapy; (3) vitamin K₁ appeared to cause primaquine-sensitive infants to have normal bilirubin values; (4) primaquine sensitivity did not appear to be an important cause of abnormal bilirubinemia in American Negro infants. It was suggested that vitamin K₁ and the commonly used water-soluble analogues are probably safe when given in doses recommended for normal full-term infants, but that the margin of safety with the water-soluble analogues may be very narrow. Until it is shown that large doses are necessarily beneficial, it was recommended that no more than 2.0 mg. of vitamin K₁ should be given for prophylaxis of hemorrhagic disease of the newborn.—E. R. J.


The important group of hemolytic anemias that has emerged from the case previously classified as non-spherocytic is that due to deficiency of the enzyme pyruvate-kinase (PK) in the red cell. Forty-two relatives of two unrelated patients with pyruvate-kinase deficiency were examined. Twenty-five of these were found to have subnor-
ABSTRACTS

MAL PK activity of their red cells. These are assumed to be heterozygotes.—I. C.


Red cell survival was measured with Cr205 during lead or phenylhydrazine intoxication in rabbits. It was shown that adenosine-5-monophosphoric acid (AMP) in a daily dose of 50 mg per animal has a definite antihemolytic action.—G. M.


Four patients receiving dapsone for the treatment of dermatitis herpetiformis showed elevated reticulocytes and a moderate shortening of the mean red cell life span. One patient was thought to show an occasional spherocyte in the blood film.


Cryoglobulin and cold agglutinins were more frequent among children with sickle cell anemia who had had painful crises than among a small group relatively free of such episodes. It is suggested that these factors are significant in the production of the crises.—I. C.


Sickle cell disease was diagnosed in 64 infants below 1 year of age. All the infants were anemic, and 77 per cent had hemoglobin levels of 6 Gm. per cent or less. Colic and failure to thrive were often noted. Infection was present at the time of diagnosis in many of the infants. Hepatosplenomegaly and abdominal distension were the most common physical findings, and jaundice was frequently present. Dactylitis was seen in a third of the infants. There were 10 deaths, usually related to a serious infection.—J. B. S.


Of the six cases presented, in one megaloblastic anemia occurred during two pregnancies. This case may be another instance where the increased requirement for folate in pregnancy is superimposed on an increased requirement for folate due to hemolytic anemia, with the result that overt megaloblastosis develops.—V. H.


Vitamin B12 deficiency is a well-known complication of tapeworm infestation. A case of megaloblastic tapeworm anemia is reported in which the tapeworm was located high up in the jejunum. Serum folic acid and vitamin B12 were low, and FIGlu excretion was high. Folic acid, 0.2 daily, almost normalized the bone marrow and resulted in an optimal reticulocyte response. Subsequent vitamin B12 treatment, 5 µg. daily, evoked a secondary but much less prominent reticulocyte peak. Intestinal malabsorption could not be demonstrated. It is concluded that folic acid deficiency was the predominant etiologic factor and that this deficiency probably was caused by the tapeworm.

—S. A. K.


A 27-year-old female with sickle cell anemia complicated by folate deficiency megaloblastosis did not respond to oral therapy with 50 or 200 µg. of folic acid daily, as manifested by no change in bone marrow findings, serum folate, or urinary formiminoglutamate. After therapeutic trial with 1000 µg. of folic acid, the bone marrow became normoblastic, the serum folate normal, and urine formiminoglutamate fell. Clearance of intravenously administered folic acid was abnormally rapid both before and after therapy with folic acid.

"These findings suggested that the demands of an hyperactive bone marrow in patients with chronic hemolytic anemia resulted in such increased utilization of folic acid that tissue stores
of folic derivatives may become chronically deplested, and overt megaloblastic changes may result from any further decrease in the availability of the vitamin."—V. H.


It is claimed that in pregnancy, serum folic acid activity below 2.5 μg/ml was associated with a reduced urinary oestrone excretion. The significance of these observations is obscure.—I. C.


In a series of 10 patients with addisonian pernicious anemia, the mean urinary excretion of Co₆₀.B₁₂ (Schilling test) was 1.0% per cent when the dose was given alone, 2.9% per cent when given with 10 μg. L-glutamic acid and 13.1% per cent when given with hog intrinsic factor. This does not support the suggestion that glutamic acid increases the absorption of B₁₂.—I. C.


Results with Schilling tests confirmed the original data of Taylor and Schwartz, namely, that some patients with pernicious anemia who were never treated with oral hog intrinsic factor may have anti-intrinsic factor activity, hindering the intestinal absorption of vitamin B₁₂. Because absorption studies require subjects with an intrinsic factor deficiency, rather large amounts of test serum and gastric juice are needed. The finding that sera with anti-intrinsic factor activity diminished the vitamin B₁₂ binding capacity of intrinsic factor in normal gastric juice was therefore used as a parameter of anti-intrinsic factor activity in a large number of patients. One hundred pernicious anemia sera were studied for such "antibodies" to intrinsic factors; 33 sera showed such activity.—H. H. F.


Circulating anti-adrenal antibodies were found in both living siblings of three who had Addison's disease. (Subsequent to this report, anti-intrinsic factor antibody was found in the serum of sibling with concurrent pernicious anemia).—V. H.


The effects of a daily dose of 12.5 mg. vitamin B₁₂ were tested in half a group of 20 anemic infants with kwashiorokor. Mean hematologic values at the start of therapy in the whole group were as follows: Hb 9.2 gm. 100 ml., MCHC 28.7% per cent, free erythrocytic protoporphyrin 20.4 μg./100 ml., serum iron 60 μg./100 ml. and total iron-binding capacity 267 μg./100 ml. After 4 weeks' therapy, results were very similar in the two groups. There was a tendency for the serum iron to fall slightly, for the low total iron-binding capacity and free erythrocytic protoporphyrin to rise and for the low hemoglobin and MCHC values to show little change. The mean red cell utilization of a tracer dose of Fe⁵⁹ given 5 days after admission was 64 per cent in the control group and 49 per cent in the group given vitamin B₁₂.—T. H. B.


The anemia of pyridoxine-deficient swine responded rapidly and completely to administration of pyridoxine.—V. H.

THE ROLE OF FERRITIN IN IRON ABSORPTION. R. W. Charlton, P. Jacobs, J. D. Torrance and T.
ABSTRACTS


A study was carried out to determine whether ferritin was formed in the mucosal cells of the gut during the absorption of small doses of iron, and if so, to define its role in the normal absorptive process. When rats were given 10 μg. of radioiron orally, the proportion of the radioactivity attached to ferritin in the upper 20 cm. of small gut was 31 per cent after 20 minutes, 58 per cent after 30 minutes and 75 per cent after 60 minutes. This remained unchanged at 4 hours, and thereafter both iron and ferritin content of the mucosa fell. On the other hand, when the rats were first made avid for iron by venesection, the proportion of the oral dose of iron absorbed increased from 13 to 43 per cent, but little or no attachment to ferritin occurred in the mucosal cells of the small gut. When rats whose avidity for iron had been decreased by parenteral iron loading were used, 17 per cent of the dose of radioiron were absorbed but only 5 per cent were transferred to the plasma. It was assumed that the bulk of ferritin iron in the latter group was lost into the intestinal lumen, possibly due to exfoliation of the mucosal cells. Thus the attachment of absorbed iron to ferritin may serve as an important regulatory mechanism in iron absorption and presumably it prevents iron overload.—I. C.


Hydroquinone, a reducing agent without any known metabolic function, increased the absorption of iron in rats. It is suggested that this compound as well as ascorbic acid, cystine, etc., all promote iron absorption by virtue of their action as reducing agents, and that their action takes place within the intestinal cell.—I. C.


Patients with iron-deficiency anemia in pregnancy were given sufficient iron-sorbital-citric-acid complex by injection to raise their hemoglobin concentration to 10 Gm. per 100 ml. Of 60 patients treated in this way, 44 were considered to have responded well to treatment. The remaining 16 patients failed to respond satisfactorily because they were thought to have become folic-acid-deficient. The hypothesis is advanced that the folic-acid deficiency was due to the additional demand for folic acid consequent upon increased erythropoietic activity following the iron administration.—I. C.


In a group of normal full-term infants given 5 mg. elemental iron supplementation daily, slight but statistically significant increases in hemoglobin level were noted for the first 9 months when compared to a similar group of infants not given added iron.—J. B. S.


The chelating agent, diethylene triamine peptacetonic acid (DTPA), was used in a new diagnostic test to measure the degree of iron overload in patients with "idiopathic" hemochromatosis. Following intravenous injection of 1 Gm. of DTPA in 100 ml. saline, untreated patients excreted 4-16 μg. of iron in the urine during the next 5 hours; normal controls excreted less than 0.25 μg. Quantities of iron excreted in untreated hemochromatosis patients were smaller than those in untreated patients but larger than in normals, unless the iron-binding capacity (transferrin) had become unsaturated. The test thus gave some measure of the total body iron stores in hemochromatosis; it was considered a better guide to the progress of therapy than estimations of either the serum iron or transferrin.—F. W. G.

Five infants are described with severe anemia, thrombocytopenia and marked splenomegaly which developed during or shortly after a relatively mild infection. The anemia is apparently the result of mild hemolysis and bone marrow depression, and splenomegaly is an expression of extramedullary hematopoiesis, proved in one case by splenic puncture. The etiology is as yet unknown. Steroids were beneficial in aiding complete recovery.—B. R.


Case report: The patient previously had reactions to other drugs, but only potassium perchlorate had been given when fatal pancytopenia developed.—S. A. K.


Results of the calculation of plasma iron-turnover are often unsatisfactory because of a substantial return of radioiron from marrow to plasma. This factor was overcome by injecting 100 mg. doses of non-radioactive iron dextran at varying intervals after the radioiron. Erythrocyte life span was then found to be within the normal range in five normal subjects; re-utilization of radioiron became insignificant, and the calculation of plasma iron turnover gave more satisfactory results.—I. C.


This paper repeats old studies on oxygen tension in bone marrow (Berke et al.: Proc. Soc. 69:316, 1948) and fortunately comes to the same conclusions. The bone marrow oxygen tension was found to be above the normal mean of 41 mm. Hg. both in hyperplastic bone marrows and in hypoplastic bone marrows, suggesting that arterial perfusion exceeded the metabolic demand for oxygen. In pulmonary insufficiency with low arterial oxygen saturation, the bone marrow oxygen tension was found to be only slightly reduced. Since the oxygen extraction was not changed, it was concluded that the arterial perfusion also was unchanged and that the preservation of near normal values was related to the steep dissociation curve. The marrow carbon dioxide tensions were only slightly higher than the arterial tensions. —A. J. E.


The authors have carried out hematologic studies of 180 patients with chronic lung disease (18 of whom were studied in great detail) and have provided much information on the effect of tissue hypoxia on blood production. The data emphasize the fact that a true polycythemia with increased red cell mass is an unusual finding in patients with chronic pulmonary disease despite severe arterial oxygen unsaturation. Ferrokinetic data confirmed the lack of a polycythemic response and red cell survival studies suggested a slight decrease in the life span. Although the erythrokinetic studies did not show a pattern characteristic of infection, it was concluded that it seems most likely that the constant presence of chronic inflammation combined with recurrent acute infections in the lung plays some part in preventing an appropriate erythropoietic response to hypoxemia.—A. J. E.


A woman with a large uterine tumor was found to have an Hb. of 18.6 Gm./100 ml. and a red cell mass of 55 ml./Kg. Her white counts and platelets were normal; no arterial gas studies were carried out. At operation an 11 pound leiomyoma was removed. This was followed by disappearance of the polycythemia, and a normal blood count 22 months after operation. A review of 800 cases of hysterectomy for uterine fibroids done at the same hospital did not reveal a second case, but none of the fibromas had been as large as in the presented case. It was speculated that the tumor was so large that it would produce mechanical interference with ventilatory functions, resulting in a chronic anoxemia. Erythropoietin assays (starved rats) carried out on serum were, however, negative. Assays on the saline extract of the tumor tissue were also negative.—A. J. E.
INCIDENCE OF RENAL LESIONS IN POLYCYTHEMIA.

Ninety-one patients known to have primary polycythemia were studied by a plain film of the urinary tract and an intravenous pyelogram. "Significant" renal lesions were present in eight patients (carcinoma two, cyst or neoplasm four, multiple cysts two), and "incidental" lesions were noted in another 11 patients (pyelonephritis four, infects two, duplex kidney + infect one, calculus one, renal artery calcification one, duplex kidney one, and small kidney one). Two other patients had a left renal deformity thought to be due to displacement by massive splenomegaly.
—I. C.

MISCELLANEOUS


H3-thymidine has been widely used for studies of bone marrow cell kinetics. After storage (39 months, -40 C., 0.26 c. mmole), only 35 per cent of activity was thymidine, and 55 per cent was thymine. C14-thymidine is much more stable.
—P. G. R.


When male mice were mated 11-15 weeks after receiving 18 µC Sr90 intraperitoneally, 8 per cent of the offspring died in utero, as compared to 6.4 per cent of control offspring. Even in the second generation, there was evidence of dominant lethality.—P. G. R.


In a previous publication (Brit. J. Haemat. 8:461, 1962) Gurney and co-workers described a method for investigation of stem cell kinetics. This method is based on the hypothesis that the effect of erythropoietin on Fe59 utilization in hypertransfused animals depends solely on the functional capacity of stem cells. The test animals here are polycythemic mice which, after exposure to radiation and actinomycin D, received standard dose of erythropoietin. The utilization of Fe59 was measured 72 hours later and was compared with that of control animals similarly injected. It was found that 87 µg of actinomycin per Kg produced the same impairment of response to the standard dose of erythropoietin as 150 r of total body irradiation. These results may not be too remarkable; however, the method offers promise as a valuable tool for future studies of stem cell kinetics.—A. J. E.


Since 1953, clinical effects of alkoxyglycerols, especially certain saturated alcohols with 16-18 C-atoms (chinyl, batyl, selachyl-alcohol) were studied. These alcohols were shown to be growth factors for rats and Lactobacillus lactis. After radiotherapy, patients given optimal doses of alkoxyglycerols had 3900 WBC and 180,000 platelets, as compared to 3200 WBC and 150,000 platelets in those not given alkoxyglycerols. In addition, there seemed to be a positive correlation between alkoxyglycerol dose and survival after radiotherapy of uterine cervix cancer.—P. G. R.


Heparinized blood or thoracic duct lymph is diluted, filtered through a Millipore filter (0.2 µm), fixed, transferred to a slide, and stained on the filter. Alternatively, a wire cloth filter was used first and, cells were transferred to a Millipore filter before fixing. All erythrocytes are removed, and most leukocytes and mononuclear cells Ninety per cent of artificially added ascites tumor cells (diameters 12-20 µ) are recovered. (Abstractor's note: What happens to smaller tumor cells?)—P. G. R.

Frozen mouse bone marrow retains its viability after 128 weeks at −196 C. although it has lost its regenerating capacity after 48 weeks at −79 C. and 4 weeks at −30 C. The number of surviving nucleated cells (N) at temperature (T) after period (t) is given by the following relationship: N = A − Kt, where A is a constant and K the coefficient of preservation. Experimentally the authors found a direct relationship between K and T.—G. M.


Five patients aged 43 to 68 are described with rapidly developing anemia, leukopenia and thrombocytopenia. 'Blast' cells were always present in the stained peripheral blood films. Marrow aspiration either failed to yield material or yielded some cells but no fragments of marrow. Marrow trephine showed infiltration with primitive reticulum cells but no magakaryocytic-like cells were prominent, and there was an increase in reticulin on impregnation. The course was rapidly downhill with death in 2 to 12 months. It is suggested that this condition represents an acute form of myelosclerosis.—I. C.


Because a technic was needed for good fixation of blood smears without the use of solvents such as methanol, the effect of heat fixation on human and rat smears was studied. Freshly prepared blood smears were placed in an oven previously stabilized at 150 C. for exactly 5 minutes. By heat fixation, alcohol-soluble compounds are preserved, but volatile substances may be lost. Heat-labile substances are likely to be modified, but smears adequate for radioautographic and certain types of cytochemical investigation are obtained. It should be pointed out that over sixty years ago, Ehrlich and Lazarus used dry heat, 110 C. or more for 2 or more minutes, in their application of intracellular chemistry to the study of blood cells.—O. P. J.


Chloroquine, a substituted quinoline, inhibited the reaction between denatured DNA and lupus erythematosus serum. The inhibition by this drug differed from that caused by nucleotides. The nucleotides, presumably inhibiting as haptens, showed a marked variation from serum to serum, reflecting the different specificities of the different antibodies. Chloroquine inhibited all lupus sera to approximately the same extent. It also blocked the reaction in a different DNA-immune system of known specificity; this system involved the rabbit antibodies to T-even coliphage DNA, specific for the glucosylated hydroxymethylcytosine of this viral DNA. Of the nucleotides, only those with the glucosylated pyrimidine could inhibit this system. It thus appeared that the drug may be inhibiting by binding to the DNA rather than to the antibodies. As it is not known whether either the L.E. factor of the anti-DNA antibodies are basic to the pathogenesis of the disease, the importance of inhibiting these reactions cannot be assessed. Still, the binding to DNA or nucleoprotein may be a mechanism of action, since it does block other biological activity of DNA, such as transformation. It is also possible that the drug could, by such binding, prevent the proliferation of immunologically competent cells which may be important in the pathogenesis of the disease.—H. H. F.


The 'normal incomplete cold antibody' was not a 7S γ-globulin because it was not eluted with other 7S globulins from a DEAE-cellulose column; it was probably not a γ-globulin because it was present in normal concentration in 10 of 11 sera from patients with hypogammaglobulinemia; it differed from other antibodies in its lability to heat; it also behaved differently from properdin in the manner in which it was absorbed by zymosan.—I. C.