ABSTRACTS

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ABSTRACT OF SPECIAL INTEREST


A 47-year-old white male with hemochromatosis manifested by hepatomegaly, diabetes, greatly elevated serum iron, completely saturated iron binding capacity and hemosiderinuria, but only a trace of marrow hemosiderin, had a serum uric acid of less than 1 mg./100 ml. Urinary xanthine and hypoxanthine excretion were 40-80 times normal. Liver xanthine oxidase was less than 10 per cent of normal. Xanthine oxidase deficiency may be the common metabolic error because this enzyme is required both for the oxidation of hypoxanthine and xanthine to uric acid, and the simultaneous reduction of ferric ferritin to ferrous ferritin, the latter a step necessary before the transport of iron from the liver.—R. O. W.

RED CELLS


As a result of previous work, a hypothesis was proposed that mercury was decreasing the rate of formation of a glucose-carrier complex, and triton X-100 through direct action on the structure of the membrane, altering the rate of diffusion of the glucose-carrier complex across the membrane. Apparently tannic acid produces new crosslinkages in the proteins in the membrane and the movement of larger molecules through the aqueous channels becomes more difficult.—O. P. J.


The recoil-free nuclear absorption resonance (Mössbauer effect) was studied in rat and human red cells and in O₂⁻, CO₂⁻, CO⁻, and N-hemoglobin. The technic measures the shift in energy resonantly absorbed due to the chemical binding of hemin-iron. Two peaks were always found, separated by 2.3 mm./sec. (Abstracter's note: In 1961, abstracter found 2 peaks in crystalline hemin and hematim as well). The only exception was CO-hemoglobin, where a single peak was found. The chemical shift was similar to that in the other forms of hemoglobin, but there was no quadrupole splitting, indicating the absence of a sizable electric field gradient. (Abstracter's note:...
The detection of CO-hemoglobin is of considerable hematological interest, for instance in measuring hemolysis or total body hemoglobin according to Sjöstrand.—P. G. R.


Crystalline hemoglobin from anadara inflata shows a heme-heme interaction coefficient of 1.7 and no Bohr effect when ethyl isocyanide is used as ligand. Although the pigment has six reactive sulfhydryl groups, PCMB does not exhibit any effect on the heme-heme interaction. Anadara hemoglobin is less stable to alkali denaturation and much more autoxidizable in the presence of sodium benzoate than horse hemoglobin. The heme groups of the former are dissociable from the protein more easily than the latter. Oxidation of anadara hemoglobin by ferricyanide results in the formation of hemichrome instead of methemoglobin. Peroxidase and oxidase activities of this hemoglobin were also studied in comparison with those of horse hemoglobin.—K. F.


Two distinct hemoglobins were chromatographically separated from red cells of Anguilla japonica. From the sedimentation and diffusion measurements, the molecular weight was determined to be 65,200 for one (named E₁) of these hemoglobins and to be 68,000 for the other (named E₂). The isoelectric point of E₁ was found to be 8.08 and of E₂ 5.96. Absorbancy maxima of the derivatives of these hemoglobins are presented. Twelve sulfhydryl groups were found in one mole of E₁, none in E₂. One mole of both hemoglobins contains four moles of protoheme. Tyrosine and tryptophan contents and fingerprint maps indicated that these hemoglobins may differ from each other in primary structure. E₁ was more resistant than E₂ to alkali-denaturation and to autoxidation in the presence of benzoate. As tested with ethyl isocyanide, E₁ exhibited the same order of the heme-heme interaction with that of horse hemoglobin, but there was much less interaction in E₂, and both hemoglobins completely lacked the Bohr effect.—K. F.


Red cells from six species of wild mice (Peromyscus) were washed 3 times in ten volumes of 0.85 per cent saline. They were hemolyzed with one volume of distilled water and were shaken with one volume of toluene for 2 minutes. The clear hemoglobin layer was withdrawn for electrophoresis or finger printing. Ionographic properties of these hemoglobins showed electrophoretically identical hemoglobin among the species. However, chromatographic properties of hemoglobin tryptic peptides indicated interspecific differences in the primary structure of hemoglobins that were electrophoretically indistinguishable.—O. P. J.


Thiol groups in human hemoglobin, in its derivatives, and in globin were studied by amperometric methods, using a rotating platinum electrode. The results indicate that the unreactive thiol groups are not homogeneous, and that two of them may be combined with heme or in close proximity to it. Such a linkage could explain, at least partly, some problems concerning the phenomenon of heme-heme interaction.—E. K.


Hemoglobin M₇wate (O₂Hb type) was obtained from the fresh hemolysate of hereditary nigremia by agar gel electrophoresis (pH 7.2) below 10 C. The solution of Hb M₇wate, purified in this way was always contaminated with a small amount of metHb M₇wate. Accordingly, an absorption curve of idealized O₂Hb M₇wate solution was traced by correcting the absorption curve of a fresh O₂Hb M₇wate solution for the contaminating metHb M₇wate. A solution of pure metHb M₇wate was obtained by electrodialysis of the purified O₂Hb M₇wate solution to which potassium ferricyanide had been added. Its hemoglobin concentration
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was measured by the alkali-hemochrome method, and its absorption curve was constructed so that its molar extinction coefficients could be calculated; they were 10.5 at 590 mµ as in metHb A, but considerably lower. These extinction coefficients were characteristic of Hb Mía>. The idealized solution of O₂Hb Mía> showed an absorption curve possessing an inflection at 610 mµ in addition to the α (576 mµ), the β (540 mµ) and the γ (408 mµ) peaks. The peak of γ band was therefore seen between the relevant peaks of metHb A (405 mµ) and O₂Hb A (415 mµ). This may be evidence for the view that the molecule of O₂Hb Mía> is composed of two different halves, O₂Hb type subunits relevant to the βΑ chains and metHb type subunits concerning the αΜΙ chain. A mathematical treatment of the absorption curve of O₂Hb Mía> in comparison with that of O₂Hb A by differential analysis, successfully revealed the true color of the αΜΙ chain. This αΜΙ chain resembled metHb A in the shape of its absorption curve except with regard to the position of its first protrusion. The color (absorption curve) of the αΜΙ chain was not changeable by any ligands (ferricyanide, hydrosulfite and cyanide). The αΜΙ chain of Hb Mía> is therefore presumed to be an abnormal subunit of hemoglobin possessing an inert heme iron which is incapable of oxygen transportation. This remarkable abnormality is thought to be directly related to the amino acid substitution in the α chain (His 87→ Tyr), because heme is normal in Hb Mía>.

—K. F.


Rat bone marrow cells suspended in a medium consisting of 60 per cent tissue culture fluid and 40 per cent rat plasma, and incubated at 37 C. in an atmosphere of 5 per cent CO₂ and 20 per cent O₂, were found to respond to erythropoietin by an increased rate of heme synthesis. An erythropoietin dose response curve was constructed similar in shape to the in vivo assay dose response curve. Marrow cells obtained from fasted rats appeared to be more sensitive to erythropoietin than cells from well fed animals.—A. J. E.


Erythropoietin was obtained from the urine of patients with paroxysmal nocturnal hemoglobinuria, acquired immune hemolytic anemia, and hypoplastic anemia. The following methods of erythropoietin excretion from the urine were employed: fractionation with ammonium sulfate, and adsorption onto diethylaminoethyl-cellulose or kaolin. Erythropoietic activity was assessed in starved rats, by erythrocyte Fe₅⁹ incorporation, and in rats with transfusion polycythemia according to the rise of reticulocytes. The greatest activity was found in preparations obtained by kaolin absorption at low temperatures, and the lowest yields from preparations obtained by salt fractionation.—J. K.


In sheep with experimentally induced anemia the amount of free amino acids in the blood serum rises significantly. During increasing polycythemia (when erythropoiesis is inhibited) the level of free amino acids in the blood serum drops gradually. These quantitative changes are different for the individual amino acids. It is probable that the amount of free amino acids in the blood serum of experimental animals is one of the additional mechanisms favoring erythropoietic hyperfunction or increasing the inhibition of hematopoiesis.—E. K.


Inbred Wistar rats, both males and females, weighing, about 160–200 Gm. were used. The lymphatic system was inhibited by injecting the rats subcutaneously with 8 doses of Dehydrocortisone trimethyl acetate in doses of 0.4 mg./100 Gm. body weight. Rats of the control groups were injected subcutaneously with 0.5 ml. of physiologic saline daily. After 8 days of treatment, polycythemia was induced by intraperitoneal injection of homologous erythrocytes. Erythropoiesis was measured on the basis of incorporation of Fe₅⁹ into red cells, bone marrow, spleen and liver, and
by counting the reticulocytes in blood and erythroblasts in bone marrow. Inhibition of the lymphatic system was determined by blood lymphocyte counts and histologic spleen examinations. In a separate group of rats the influence of the steroid on erythropoiesis was tested in the absence of polycythemia. Experimental polycythemia induced by transfusion of erythrocytes had a much weaker inhibiting action on erythropoiesis if the rats are given injections of corticosteroids before eliciting polycythemia. Since the steroids caused marked reduction of lymphopoietic activity, it was assumed that a connection exists between lymphopoiesis and the inhibition of erythropoiesis following experimental polycythemia.—E. K.

**STUDIES ON THE INHIBITORY EFFECT OF UREMIC SERUM ON ERYTHROPOIESIS. Masanobu Saito.**


Extracts of serum from nephrectomized uremic animals and uremic patients with chronic renal failure were injected into starved rats to determine effects on red cell iron incorporation and life span of peripheral reticulocytes. The injection of uremic extracts resulted in a marked decrease of iron incorporation and in shortening of reticulocyte life span. However, injection of concentrated alcohol-acetone extracts of serum from normal dogs, or uremic serum itself did not produce these changes. These results suggest that uremic serum contains some toxic metabolites which reduce the production of red cells and the life span of reticulocyte. Bleeding in colchicine-treated rats resulted in a marked but temporary decrease of reticulocyte counts, followed by greatly increased reticulocyte production in the bone marrow three days later. However, this reticulocytosis was inhibited in rats given uremic extracts, suggesting that uremic extract prolongs the generation time of erythroblasts and increases the number of abortive forms. The proliferative capacity of erythroblasts in uremic patients was studied with H3-thymidine in vitro. The percentage of labeled basophilic and polychromatic erythroblasts in the bone marrow of uremic patients with chronic renal failure averaged 32 per cent and 18 per cent, respectively, against normal values of non-anemic disorders averaging 57 per cent and 23 per cent. The decreased labeling index of erythroblasts might indicate an inhibitory effect of the uremic substances on the proliferative capacity of erythroblasts.—K. F.


Complete hematologic and erythrokinetic studies were carried out on 7 anemic and uremic patients before and after hemodialysis. The red cell mass and hemoglobin concentration did not change in the 14-day experimental period, but the BUN was reduced almost to normal. In 4 of the 7 patients the plasma iron turnover rate increased markedly, and in 3 it increased slightly. The 6-day red cell iron utilization was returned to normal in 5 cases, and improved moderately in 2. It thus appeared that either the production of erythropoietin or the action of erythropoietin was enhanced by the temporary reduction of azotemia.—A. J. E.

**SERUM IRON IN PIGEONS. J. Planas and D. Cocho.**


The results of the serum iron and the iron binding capacity were respectively as follows: males 254 ± 53 and 288 ± 52; females 225 ± 41 and 288 ± 39; females without sexual activity 189 ± 11 and 272 ± 31 and females with sexual activity 260 ± 24 and 299 ± 37. The existence of conalbumin is demonstrated in pigeon serum. It is postulated that this protein is an auxiliary element to transferrin in iron transport.—E. S.


A study of the possible influence of different anticoagulants in the determination of serum iron in several mammals and birds was performed. The methods employed were: 1) Potassium Thiocyanate; 2) α-α‘-dipyridil and 3) O-phenanthroline. The anticoagulants were heparin, sodium fluoride, sodium citrate and sodium oxalate. It was found that the ionic anticoagulants interfered markedly with the determinations. Their action can be explained by the formation of iron chelates with the citric and oxalic ions and of the complex (FeFeg)3— with the fluorides. Sodium fluoride at a dose of 10 mg./ml. caused a decrease of 20–25 per cent in the determinations with O-phenanthroline and α-α‘-dipyridil and an increase of 100 per cent with thioycanate. Sodium citrate did not interfere with the three methods as regards chicken...
plasma. The sodium oxalate in high concentrations interfered negatively with the α'-α' dipyrilid method but in low concentrations varied according to the method. It was concluded that the best anticoagulant is heparin.—E. S.


Urine from 5 of 10 patients receiving intramuscular iron-sorbitol-citric acid ("Jectofer" Astra) turned black in bottle within 24 hours after voiding because of precipitates of iron compounds. Another 4 urine turned black within 4 days. Assumed reason is bacterial contamination of urine.—P. G. R.


Radioiron absorption and retention were measured by the whole-body counter in six iron deficient women with menorrhagia. Absorption rates varied from 54-96 per cent (normal 6-25 per cent). With almost 100 per cent radioiron incorporation into red blood cells, subsequent periodic drops in Fe59 activity correlated with menses and revealed estimated monthly blood losses of 1 10-550 cc. Results were compared to the continuous drop in Fe59 activity in a patient with hereditary hemorrhagic telangiectasia and iron deficiency anemia.—R. O. W.


Two siblings with hypochromic, microcytic anemia are presented who had high serum iron, 50 per cent saturation of TIBC, massive iron in hepatic parenchymal cells but little iron in Kupffer cells and none in the marrow. Retics, WBC, platelets, hemoglobin electrophoresis were normal; there was no response to pyridoxine. Radioiron measurements showed normal plasma clearance, 45-60 per cent incorporation into red blood cells at 10 days, and increased accumulation in the liver. Cr51 red blood cell survival was normal. Patients' transferrin was normal by electrophoresis and as Fe59 carrier in normal recipients. Patients' reticuloocytes incorporated Fe59 normally. Bone marrow reticuloendothelial cells did not pick up iron even after infusion of iron saccharide.—R. O. W.


Three of five siblings (ages 11, 14 and 9) showed clinical signs of hemochromatosis. The other two siblings (6 and 5 years old) had hypersideremia without clinical symptoms. The mother showed hypersideremia and hemofuchsin deposits in the liver. One of the cases responded successfully to a trial course of desferrioxamine.—E. S.


Baby rhesus monkeys have deficient hepatic glucuronol transferase activity and undergo a short period of indirect hyperbilirubinemia analogous to that seen in newborn infants.—J. B. S.


Blood for culture was taken from the umbilical vein at the beginning and end of exchange transfusions in 80 infants. Thirteen per cent of the pre-exchange and 4 per cent of the post-exchange cultures were positive. Of the 15 infants with positive blood cultures 13 had been born in other hospitals. Proteus, Enterococcus, Staphylococcus and E. coli were the predominant organisms. The possibility that the incidence of blood culture positivity is at least in part caused by contamination from the skin and umbilical stump is discussed. No strong recommendation is made regarding routine administration of prophylactic antibiotics in exchanged infants.—J. B. S.

**TWIN-TO-TWIN TRANSFUSION SYNDROME.** A. H. Becker and H. Glass. From the Bristol Hospital,
A twin was born as the result of which one photograph, of the interfetal transfusion syndrome, B. S. an hematocrit of 81 per cent.—J. B. S.

**ABSTRACTS**


Studies were made as to the cause of death in PNH. Sepsis was found in 3 patients and thromboembolic complications in 2 patients. Prophylactic therapy with broad spectrum antibiotics, is recommended to prevent sepsis in severe cases, and coumadin anticoagulants are recommended to prevent thromboembolic complications.—J. K.

**Aplastic Anaemia Treated by Transplantation of Isologous Bone Marrow.** K. E. W. Melvin and J. N. G. Davidson. From Auckland Hospital, Auckland, New Zealand. New Zealand M. J. 63:93, 1964.

A woman, aged 66, developed pancytopenia with severe clinical symptoms following the administration of small doses of chloramphenicol. Treatment with prednisone and anabolic steroids was ineffective. Ten months later the marrow remained grossly hypoplastic and continuing purpura and chest infections made her condition desperate. At this point she was given an intravenous infusion of 6 x 10⁹ marrow cells from her identical twin. The clinical state improved rapidly, and the red and white blood counts returned to normal during the next few months. Platelets, however, remained low, in spite of a subsequent splenectomy. This patient's survival is believed to be due to the marrow transfusion.—F. W. G.


Mice with Ehrlich ascites tumor or mammary carcinoma were given Fe⁵⁹ intraperitoneally, and were killed at various times. Organ weights, radioactivity and iron were determined. Amount of blood in organs was determined by Cr⁵¹-labeling before sacrifice. Plasma iron turnover (PIT) and blood values (with Cr⁵¹-erythrocytes) were also determined. In tumor mice, liver and spleen weights, plasma volume, red cell Fe⁵⁹-uptake, Fe⁵⁹-excretion and PIT increased, whereas weights and radioactivities of other organs, hemoglobin concentrations, liver Fe⁵⁹-uptake decreased. Seven to eighteen per cent of Fe⁵⁹ was recovered in tumor. (Abstracter's comment: Mammary cancer seems to influence PIT and iron excretion more than Ehrlich ascites tumor, and the carcinoma takes up more Fe⁵⁹. Could a rapid uptake and turnover of Fe⁵⁹ in tumor explain part of results?)—P. G. R.

**LEUKOCYTES**


In 18 patients studied by Thorn's test and 17-hydroxy-corticosteroids in the urine there was no evidence that blood eosinophilia was associated with reduced adrenal glycocorticosteroid activity. None of the patients revealed any diminished adrenal secretion, and in most reserves proved to be sufficient.—E. K.


Morphological changes in mast cells with aging have been reported and aging is known to affect sulphate metabolism in mucopolysaccharides. Since it was not clear whether these results reflected a real difference in mast cell behavior or was secondary to factors linked to the whole animal body, it seemed desirable to study sulphate uptake in isolated mast cells. The results indicate that peritoneal mast cells from young rats incorporate labeled sulphate in vitro at a faster rate than mast cells from adult rats. Cells of the same size (age) behaved differently if obtained from young or adult animals.—O. P. J.

**Some Effects of Cationic Condensing Agents on Rat Thymocytes.** D. K. Myers and D. De-Wolfe-Slade. From Atomic Energy of Canada
lymphocytes are present, but there are no pri-
well developed Hassall's corpuscles. Small lympho-
primary follicles or germinal centers. Plasma cells
has a fairly
well developed lobular structure and
half the patients in this group develop rheumatoid
patients was attributable to viral hepatitis. About
non-lymphopenic group is considerably more be-
the small number of circulating lymphocytes
spleen, and other lymphoid structures contain only
nign when adequate y-globulin therapy is ad-
results. The addition of excess sodium ion to
the cell suspension delayed the development of
nuclear pyknosis and of DNA depolymerization,
but accelerated the development of dye, perme-
and the loss of intracellular potassium. The
they are not seen in any patient in either group. It
seems evident that the lymphoid hypoplasia present
in the lymphopenic infants imposes additional
hazards on this group beyond the deficiency of
y-globulin.—J. B. S.

DNA SYNTHESIS IN PHYTOHEMAGGLUTININ-STIMUL-
ATED HUMAN LEUKOCYTE CULTURES TREATED
WITH 8-MERCAPTOETHANOL. J. F. Jackson and
D. Killander. From Institute for Medical Genet-
ics, University of Uppsala, Uppsala, Sweden. Exper.

The mitosis-stimulating effect of phytohemag-
glutinin in extracts of Phaseolus vulgaris on leu-
cytes in vitro has been widely used in cytogenetic
investigations. Human leukocyte cultures treated
with 8-mercaptoethanol showed a significant in-
jcrease in polyplody, endoreduplication and chro-
mosome aberrations. Apparently the DNA content
of the interphase nuclei may increase up to 8
times that of the diploid cells (G 1). The broad
range of DNA values of polyplloid mitoses prob-
elievably reflects the variations of DNA content in-
herent in a population of human peripheral-blood
leukocytes superimposed over the variation pro-
duced by the technical methods.—O. P. J.

Mitotic Inhibition and Chromosome Damage
by Mitomycin in Human Leukocyte Cul-
tures. P. C. Navell. From School of Medicine,

The antibiotic and anti-tumor agent, mitomycin
C, markedly inhibits cell division in bacteria, as-
cites tumor cells, and mammalian cell lines in tissue
culture. When cultures of normal human leuko-
cytes, stimulated to divide by phytohemagglutinin,
were exposed to mitomycin (1 µg./ml.) for 1 hour
at various times during the culture period, chro-
mosome aberrations resulted but no mitotic in-
hibition. Mitomycin apparently acts directly on
the genetic apparatus of mitotically inactive hu-
nan leukocytes producing extensive damage which
appears as gross chromosome aberrations when
the cells were subsequently stimulated to divide.
Two compounds which inhibit mitosis through
other mechanisms, actinomycin and puromycin,
failed to produce demonstrable chromosome changes in similar experiments.—O. P. J.

The Histogenesis and Haematology of Virus-
Induced Myeloid Leukaemia in the Fowl.
B. Lagerlöf and P. Sundelin. From the Karol-
Pontén and Thorell showed that virus induced erythroleukemia starts with small intrasinusoidal bone marrow foci. The present form of leukemia started with extrasinusoidal foci, but visceral organs became infiltrated and increased as rapidly as bone marrow.—P. G. R.


Increased γ-globulin was consistently found. Sometimes, increased fibrinogen and acute phase protein patterns were also found.—P. G. R.


The authors describe two siblings who died in infancy from an infiltrative disorder which presented with fever, pallor, anorexia, weight loss and hyperplenomegaly. Hematologic studies on one of the infants revealed marked anemia, neutropenia and thrombocytopenia. Spherocytosis, reticuloctysis and indirect hyperbilirubinemia suggested a hemolytic component, and bone marrow aspiration revealed marked erythroid hyperplasia. Post-mortem examinations of the spleen revealed marked hyperplasia of the pulp cells. In the liver there was portal infiltration with lymphocytes and histiocytes. Histiocytic erythrophagocytosis and myeloid metaplasia were present in the liver, spleen, lymph nodes and bone marrow. In one infant intense histiocytic and lymphocytic infiltration of the meninges and brain was evident.

—J. B. S.


The unresponsiveness to adrenocorticoid therapy present late in the course of acute childhood leukemia is not related to an increased concentration of “corticosteroid-binding globulin.”—J. B. S.


Franzén’s method for aspiration biopsy was used, and cell suspensions were prepared from a squamous cell carcinoma and a lymphoblastic lymphoma. Cells permeable to eosin Y stain were regarded as “dead.” Percentage of “dead” cells increased during radiotherapy in clinically radioresistant carcinoma, but not in clinically radiosensitive lymphoma.—P. G. R.


On the basis of 12 cases it is suggested that in so-called transitions of hypoplastic states of hemopoiesis into acute leukemia there is not a transition of one disease into another, but a peculiar initial phase of acute leukemia: reticulosis masking hypoplastic anemia. Three stages of the disease are described; the initial stage most often with leukopenia, which is replaced by pancytopenia; the intermediate stage with dissociation between the aleukemic composition of the peripheral blood and more or less marked reticular transformation of the bone marrow; and the third, leukemic stage, which is indistinguishable from typical acute leukemia.—E. K.


Details are presented of 17 malignant tumors seen during 2 years in children aged 4 months to 12 years from New Guinea, New Britain and the Solomon Islands. Eight and possibly 9 of the tumors were lymphosarcomas, 2 of them in the jaw. No cases of childhood leukemia were found during this period. The unusual predominance of lymphosarcoma, associated with a low incidence of leukemia, was similar to the situation found by Burkitt and others in Central Africa and raises the possibility that the etiology of the tumors may be similar in the two areas.—F. W. G.

Treatment of Chronic Lymphatic Leukemia with Cyclophosphamide. P. Farreras Valenti, C. Rozman and F. Blanco. From the Universidad
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Seventeen patients with chronic lymphatic leukemia were treated with cyclophosphamide. The results were scored as excellent in 4 cases, good in 10, dubious in 2 and poor in 1. The dose administered was 200 mg. I.V. daily for 30 days, and a maintenance dose of 50–150 mg. orally or I.M. up to a total of 30 Gm. The side effects were almost negligible.—E. S.

HEMOSTASIS


The prevailing trend in modern hematology considers the megakaryocyte as an originally diploid cell in which the chromatin material has undergone successive duplications without concomitant cytoplasmic partition. The results of the present investigation of megakaryocytes obtained from adult rabbit bone marrow suggest a polyploid sequence from 2N to 64N. The author points out that the histogram and mean class values draw clear lines between the 16N, 32N and 64N classes, supporting the view of nearly simultaneous replications of chromosomal sets. This agreement certainly excludes a random manner of growth by cytoplasmic fusion of histiocytes or reticular cells.—O. P. J.


A single individual counted platelets according to Brechers and Cronkite’s phase contrast method and by Björkman’s staining method. Coefficient of variation due to counting chamber and field of vision variations was 2 per cent of mean according to Brecher et al. and 5 per cent according to Björkman. Coefficient of variation from sample to sample in same person was only 5 per cent. (Abstracter’s comment: Cronkite, stating his method is “Simply the best,” seems to be right).—P. G. R.


Fibrinogen activator was produced in an isolated kidney perfused for 2 hours with an oxygenated 50 per cent suspension of red cells. The plasminogen activator was invariably found in the perfusate collected from the renal vein, i.e., in the supernatant and the blood cells after centrifugation. It was also found in the filtrate collected from the urinary tube. The quantity of the activator in the red cell suspension passing through the renal vessels was calculated to be 10 times that in the filtrate issuing from the urinary tract.—E. K.


Intravenous administration of thrombin to rats produced both plasminogen activation and antiplasmin inactivation in the circulating blood. Thrombin perfusion of the isolated rabbit kidney with the organ innervation preserved showed that this phenomenon is caused by a reflex reaction of the physiologic anticoagulation system: antiplasmin inhibitors are secreted into the blood simultaneously with plasminogen activators. Heparin was one of the physiologic anticoagulants blocking antiplasmin.—J. K.


The author considers that the use of artificial substrates such as TAME, casein, etc. are not representative of physiologic phenomena. He proposes the concept of fibrinolytic potential and a method to measure it, based on the quantitative determinations, at periodic intervals, of fibrin in clots obtained after the recalcification of native plasma at 37 degrees. Several experiments performed with SP-54 (“Fibrocid,” Cácer, Barcelona), a sulphonic polysaccharide with slight anticoagulant action and a molecular weight of 2,000, showed that at a concentration of 12.5–25 μg./ml., fibrinolytic activity develops. A dose of 1–2 mg./Kg. gave satisfactory results in man and animals.—E. S.

This is a clinical study of the fibrinolytic activity of a sulphonal polysaccharide, SP-54, tested by means of the fibrin plate. It is concluded that at a daily dose of 300 mg. intramuscularly satisfactory fibrinolytic activity develops in plasma.

—E. S.


A patient with multiple myeloma and bleeding manifestations due to a heparinoid antithrombin activity of the abnormal protein is reported. This activity was demonstrated by clotting studies performed on the isolated serum protein fractions. Electrophoretically the abnormal protein was a γ-2 globulin. Immunoelectrophoretic chemical, and ultracentrifugal studies revealed a 7S γ-globulin with a high hexose content and a 6.35 sedimentation rate. The latex fixation test was positive 1:640. The response to the administration of protamine sulphate (100 mg. daily) had a dramatic effect on the bleeding manifestations.—E. S.


Heparin treatment is considered adequate when the R value in the thromboelastograph goes up to 20 mm., according to the authors. Although only a few patients were studied, the results were uniform with a dose of 150–200 mg. subcutaneously every 12 hours.—E. S.

**ABSTRACTS**


The present investigation was a 2-year study of the effect of age on the hematology of the male C57 BL/6 Jax mouse. The experimental design differed from prior hematologic studies in that the blood pattern was determined for individual animals throughout their life spans. There was a decrease in certain hematologic values in male mice with increased age, although the decrease was not of a magnitude characteristic of an anemia. However, the decrease in mean values with increased age does indicate the need for careful selection of age limits in hematology studies with the male C57 BL/6 Jax mouse.—O. P. J.


The experiments described in this article provide information concerning the sequence in the various chromosomes of the human blood cell complement complete replication. The replication of DNA, which was completed before the onset of cell division, is asynchronous. The early duplication of certain genes and very late duplication of others is at the present time of unknown significance in relation to cellular differentiation. The very late replication of one X chromosome of the female cell strongly suggests that the pattern of DNA may be of functional significance.—O. P. J.

**MISCELLANEOUS**


Ferritin-conjugated antibodies have been shown to bind specifically with a wide variety of antigens. Biological problems amenable to study by the ferritin-antibody technic may be grouped into three categories, viz., (1) tagging of surface antigens such as in cell suspensions or cultures, (2) staining of predominantly extracellular antigens encountered in whole tissues or organs, and (3) localization of intracellular antigens. Ferritin has been identified in the lumen of endoplasmic reticulum in a mouse myeloma cell after reaction with ferritin-conjugated to an abnormal serum γ-2-globulin. Doubly labeling antibody globulin with both the fluorescent and the electron-dense markers has been described.—O. P. J.


A 7-year-old boy after a short time on Dilantin therapy developed a syndrome manifested by
fever, rash, gum hypertrophy, adenopathy, hepatosplenomegaly, arthropathy, ankle edema, anemia, thrombocytopenic purpura, eosinophilia, and intermittent leukopenia and albuminuria. Dilantin was continued at a decreased dosage and the patient’s illness was controlled by treatment with prednisolone 40 mg./day. When the steroid dosage was decreased, the signs and symptoms recurred. Dilantin was discontinued and prednisolone was restarted. Repeated attempts during the next few months to lower the prednisolone below 20 mg./day resulted in exacerbation. Three days after 6-MP was started improvement was noted, and the patient has remained in partial remission for a year on 5 mg. of prednisolone and 25 mg. 6-MP daily. L.E. preps were negative, but it seems likely that this younger has lupus, which was perhaps triggered by the dilantin therapy.—J. B. S.


With a modification of Laves method it was found that in the bone marrow of white rats, certain cells morphologically similar to lymphocytes have nuclei which lose their basophilia after treatment with urine dialysate, thus behaving like nuclei of neutrophilic granulocytes. These cells have been named lymphoid granulocytes, and it has been noted that they can originate from pro-myelocytes or myelocytes by budding. Mast cells undergo digestion with ribonuclease, suggesting that mast cells in white rats originate from well differentiated haemopoietic tissue.—E. K.

Peripheral Blood and Bone Marrow in the Chick Embryo. M. Grundboeck. From the Veterinary Institute, Pulawy, Poland. Polskie Arch. Weteryn. 8:105, 1963.

The cellular composition of blood and bone marrow has been studied in the chick embryos from tenth day of incubation till hatching and in chicks 1 and 2 days old. The smears were stained mainly with Pappenheim’s method, but several characteristic features of cells have been demonstrated by means of special staining techniques. Hematocrit values and the hemoglobin content were established. Description of the individual types of cells is supplemented by 75 photographic prints.—E. K.


In rats subjected to vibrations there were observed a pronounced decrease in the number of erythrocytes and an increase in the number of leukocytes with a predominance of neutrophilic granulocytes. In the bone marrow stimulation of the myeloblastic system was noted.—E. K.


Ninety albino mice were given doses of P32 of about 5 mc./Gm. intraperitoneally. The animals were divided into three groups and given, during the four previous weeks, diets containing 0, 3, and 30 per cent olive oil respectively. The survival figures 3 weeks after radiation were 0, 3, and 13 per cent respectively.—E. S.


These workers have confirmed previous observations that erythrocytes and lymphocytes show no evidence of uptake of labelled endotoxin. Four to 8 per cent of the circulating granulocytes were tagged, but many more tagged cells were trapped in the lung and other organs. A striking finding was the association between endotoxin and platelets, but the nature of the association was not evident.—C. R. M.


The authors describe in detail a technic by which they claim that from “a few up to 100”
good metaphase plates may be obtained from each bone-marrow slide examined. Since 6 slides are usually prepared, they claim that failures are very few. The process appears to take about 3½ hours to complete, but has the obvious advantage that it can be performed with specimens which have been held overnight in the refrigerator. If necessary, they can apparently be held for much longer. Some excellent pictures are shown, including one from a preparation stored at 4°C. for 38 days.—C. R. M.


The author presents studies leading to the conclusion that the classical Anitschkow cell (assumed to be identical with the "Aschoff cell") is not a modified histiocyte, but is rather derived from myocardium itself. This is in conflict with popular opinion, but interestingly enough is the view of Anitschkow himself (1912).—C. R. M.


Two case reports and a review of the literature are used to demonstrate that polyarteritis nodosa presents fairly characteristic clinical and pathologic features during infancy. The disease often presents with fever, associated with rhinitis, conjunctivitis and an erythematous macular eruption. Hypertension, an abnormal urinary sediment, and an electrocardiogram indicating left ventricular hypertrophy and/or myocardial ischemia, are frequent findings. Less common signs are ischemic gangrene of an extremity, congestive heart failure, and pericardial effusion. Among the 20 infants described the mean duration of illness was four weeks. At autopsy, aneurysmal dilatations of many arteries, myocardial and/or renal infarctions, and pericarditis were frequent. The most prominent microscopic feature of the blood vessel changes was an exudative endarteritis, particularly in the coronary arteries. Fibrinoid necrosis was less frequent than in adults.—J. B. S.