ABSTRACTS

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ABSTRACTERS

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ABSTRACTS OF SPECIAL INTEREST


Experimental polycythemia was induced in sheep by multiple transfusion of isologous red cells and plasma. Polycythemia was accompanied by the appearance of a thermolabile substance in plasma which inhibited erythropoiesis following injection into normal rabbits. This substance was called "erythropoietic inhibitor." Marrow studies (total number of erythroblasts, maturation curve, and percentage of erythroblasts in mitosis) suggested that the action of this inhibitor consists in:
1. Inhibition of differentiation of proerythroblasts from their precursors (fall in total erythroblast number with the character of the maturation curve essentially unchanged).
2. Inhibition of the mitotic activity of all, and especially orthochromatic erythroblasts. Short term action of the inhibitor only inhibited hematopoietic processes in the marrow; continued administration also affected maturation of reticulocytes in the peripheral blood.

The authors advance the hypothesis that normally the level of erythrocytes in the blood is regulated by erythropoietin, which stimulates erythrocyte production, and the inhibitor, an erythropoietin antagonist.—E. K.


Plasma obtained from 25 patients with uremia and anemia and from 27 patients with anemia but without uremia was bioassayed for erythropoietic-stimulating factor (E.S.F.). The bioassays were carried out in starved or in polycythemic rats and both test animals were found to respond equally well and to give consistent and reproducible results. In all but three of the 25 patients with anemia secondary to renal insufficiency, the levels of E.S.F. were low in contrast to the high levels found in all but 7 of the 27 non-uremic anemic patients. Cobalt was found to give rise to an accelerated red cell production in half the uremic patients in which it was tried. However the level of E.S.F. did not change significantly. This study seems to establish convincingly that a low level of E.S.F. is an important and consistent finding in the anemia of renal insufficiency. It furthermore shows that a reliable and clinically useful bioassay technic for E.S.F. is almost at hand.—A. E.

The Chromosome Constitution in the Virus-Induced Chicken Erythroleukemia. K. Bay-
ABSTRACTS

MacrOchromosomes were studied in each cell; and 50 metaphase-cells in both bone marrow and spleen were studied in 10 animals. Mainly the 6 additional microchromosomes were too small to study. The virus-induced erythroleukemia cells had the normal diploid macrochromosome constitution. The authors find it unlikely that the tumor viruses cause neoplastic transformation via chromosome mutations.—P. G. R.


After a 24-hour passage in a rabbit, fragments of spontaneous isologous (AK) leukemic tissue, implanted subcutaneously in young AKR females, reduces the incidence of spontaneous leukemia from 85 to 38%.—G. M.


The author investigated the adsorption with different concentrations of bentonite (5-30 mg. ml.) of fibrinogen, plasminogen, proactivator and antiplasmin from human plasma.

Treatment of plasma with bentonite in 0.5 per cent concentration removes 96 per cent of the fibrinogen, while adsorption of the other factors is negligible. Treatment of plasma by bentonite in 2-3 per cent concentrations removes 25-30 per cent of antiplasmin and more than 90 per cent of plasminogen. Adsorption graphs for plasminogen and proactivator are parallel. Separation of antiplasmin and proactivator is optimal when human plasma diluted by ½ at pH 5.1 is adsorbed by a 2 per cent concentration of bentonite. Under these conditions, only 0.1-0.3 per cent of proactivator remains in the plasma, but there is still 60-70 per cent of the original amount of antiplasmin. Plasma prepared in this way strongly inhibits the fibrinolytic and proteolytic activity of plasmin obtained in the presence of streptokinase. This technic for the separation of plasminogen and antiplasmin is superior to other technics using isolectric precipitation of the euglobulins. Partially purified preparations of plasminogen and especially plasmin are easily adsorbed by bentonite in 0.2 to 1 per cent concentrations. The spontaneous lysis of the euglobulins of normal plasma is considerably accelerated when the plasma is previously stirred with 0.1 per cent of bentonite, this dose being sufficient to activate the contact factor. The author points out certain analogies between the effects of bentonite on the coagulation process and on the process of fibrinolysis.—G. M.

ERYTHROCYTES


The γ globulins of two normal group O subjects, after isolation by zone electrophoresis on polyvinyl chloride particle blocks, contained all of the α and β isoagglutinin activity of the native serum. These electrophoretically pure γ globulins, as well as the native sera, were fractionated by anion exchange diethylaminoethyl cellulose column chromatography. Each eluate was concentrated by ultrafiltration and then tested for α and β isoagglutinins. Chromatogram pools were further fractionated by preparative ultracentrifugation and successive layers were also tested for isoagglutinin content. The association of α and β isoagglutinins with γ globulins of different molecular weight was confirmed. Two chromatographically separable fractions containing isoagglutinin activity were eluted. The first fraction corresponded with γ globulins having 6.6S sedimentation characteristics, but the second and major fraction corresponded with 18S γ globulins.—R. E. R.


Washed red cells of the umbilical vein bloods from 104 ABO compatible newborns and 88 ABO incompatible newborns, were heated at 56 C. for 20 minutes in an equal volume of buffered saline; the supernatant fluids were then tested for anti-A and anti-B activity by acacia, glue, and antiglobulin technics. No antibodies were found.
when the newborns were ABO compatible, but of the incompatible newborns, twelve (13.6%) yielded positive eluates, eleven of which were directed toward the A antigen. Only four of these twelve newborns developed visible icterus, and only one received an exchange transfusion for hyperbilirubinemia.—R. E. R.


Two new isoantibodies for rabbit red cell antigens were isolated, and the antigens, J and K, were found to be genetically determined by the Hg system. Genes Hg and Hg determine K, but J may be determined not only by gene Hg but by interaction in the heterozygote Hg Hg. This is the second interaction antigen in this complex blood group system, which otherwise resembles Rh in man.—R. E. R.


In 549 mother-newborn pairs tested, hemolytic disease, as detected by a positive direct γ anti-globulin test on cord red cells, and by elution of α and/or β isoagglutinin activity from cord red cells, was encountered in 74 newborn, 35 of whom were type A and 4 of whom were type B. All had type O mothers. Four other infants were found to have erythroblastosis due to Rh isosensitization of their Rh negative mothers. The incidence of clinical erythroblastosis due to ABO disease in this series is not reported, but the risk of kernicterus in absence of treatment is estimated to be the same as that for Rh disease: about 2 per 1000 pregnancies.—R. E. R.


ABO erythroblastosis in 51 families is reported, but there is insufficient hematologic data to exclude an occasional case of nonserologic hyperbilirubinemia. All but one mother was type O, and all affected children were type A or type B. Of the type A affected children, one was subtype A2. ABO erythroblastosis almost always recurred in subsequent incompatible children. Affected children and their fathers lacked the proportion of nonsecretors to be expected, or that was found among the mothers.—R. E. R.


Comparison of two mating classes, 102 couples infertile for over five years without known gynecologic or urologic explanation, and 171 fertile couples having two or more pregnancies, revealed an increased frequency of ABO incompatibility in the former (87.3 per cent versus 38.6 per cent) as well as an increased number of nonsecretor women (57 per cent versus 27 per cent). The data presented do not permit further analysis, and do not support the authors' suggestion of a serologic mechanism causing infertility.—R. E. R.


A hemoglobin variant seen in two unrelated 2 year old children of mixed ancestry, but not in their parents, had the following properties: on electrophoresis at pH 8.6 it moved between A and J, but at pH 6.5 it did not separate from A; on chromatography on amberlite resin at pH 6 it separated in front of F, but behind H; alkali resistance and ultraviolet spectrum were indistinguishable from hemoglobin A. This may be a variant of fetal hemoglobin, and possibly a recessive character in the adult; it is apparently identical with that previously referred to as the hemoglobin of Fessas and Papaspyrou ("F & P") and has now been redesignated hemoglobin "Singapore-Bristol".—R. H. H.

A Fast-Moving Hæmoglobin in Hydrops Foetalis. Lie-ino Lauan Eng and Jo Buan Hie. From the Department of Parasitology and General Pathology, Faculty of Medicine, University of Indonesia and the Department of Obstetrics, Jang Seng Ie Hospital, Djakarta, Indonesia, Nature (London) 185:698, 1960.

A fast-moving hemoglobin, which resembled the hemoglobin of Fessas and Papaspyrou, was the major component isolated from the blood of a premature infant with hydrops fetalis. There was no evidence of fetal-maternal blood incompatibility, but both parents showed abnormalities of the peripheral blood resembling those of thalas-
saemia minor; in neither, however, was fetal hemoglobin raised, or an abnormal hemoglobin found on electrophoresis.—R. M. H.


Cell suspensions from liver, spleen and bone marrow of a 17-week human fetus were shown to produce both hemoglobins A and F when culture for 24 hours in the presence of glycine 2-C14. Anoxia resulted in proportionately greater reduction of Hb-A than of Hb-F synthesis. The liver of a 9-week fetus also produced both types of hemoglobin in a similar experiment.—R. M. H.


Fetal hemoglobin as present intracorpuscularly in peripheral blood smears was stained according to the technic of Kleihauer, et al. (Klin. Wchnr. 35:637, 1957). Red cells containing Hb A appeared as ghosts, whereas cells containing Hb F showed normal staining reaction. Cord blood showed 3 types of cells (1) cells with Hb A (2) cells with Hb F and (3) cells with Hb A + Hb F. Smears from Hb E-thalassema disease with elevated levels of Hb F showed a pattern similar to cord blood but with lesser proportion of well stained cells. In addition, some of the normoblasts appeared to have Hb F in their cytoplasm.—J. B. C.


A preliminary report on the combination of electrophoretic and ion-exchange techniques applied to the separation of human hemoglobin variants, using carboxymethyl cellulose gel as the supporting medium. The rate of migration to the cathode increased with the sodium ion concentration, and good separation of hemoglobins A, S, F and C was achieved with 0.07 M NaCl.—R. M. H.


Experiments are described in which red cells that had been stored in glycerol at -45 C. for 3 months were resuspended and stored at +5 C. for a further period of 10 days. After thawing, some of the cells were taken a distance of 85 miles in ice-packed canvas bags of a type used routinely for transporting blood. After this treatment the red cells had an in vivo survival of over 85 per cent, after both auto- and homotransfusion. The method is suitable for the storage of red cells from rare donors for transfusion to sensitized recipients, and a bank of human red cells of rare types is being made for this purpose. A five year dating period has tentatively been given to these cells.—R. M. H.


Ten out of 12 patients with PNH had low erythrocyte acetylcholinesterase levels. Low levels were present in mature and in immature cells. No diurnal variations were noted and no change occurred in crisis. No enzyme inhibitor was found in vivo or in vitro.—W. J. M.


The distribution of glucose-6-phosphate dehydrogenase deficiency in the red cells of East Africans was studied, and considerable variations were found. Tribes living in highland regions showed a frequency of 1.7-2.9 per cent; on the coast and around Lake Victoria frequencies of 15-28 per cent were found. Distribution of this enzyme defect approximately paralleled that of the sickle-cell trait. The author suggests that subjects having low glucose-6-phosphate dehydrogenase activity in their red cells are at a selective advantage in malarious environments, and that the trait may be maintained as a sex-linked polymorphism.—R. M. H.

A girl, 4½ years old, presented since the eleventh month of life skin eruptions on exposure to sunlight. In the last year a slight hypertrichosis developed. Dark urine had been present since birth. Family history was negative and anemia was absent. In urine, coproporphyrin, preformed uroporphyrins, total uroporphyrins, uroporphyrins III and uroporphyrins I, were respectively: 128, 1,776, 2,184, 1,020 and 756 micrograms per day. Porphobilinogen, protoporphyrin, hematoporphyrin and delta-aminolevulinic acid were absent from the urine. Chromatographic studies of the urine revealed the presence of coproporphyrins, uroporphyrins and porphyrins with a number of carboxyl intermediates to copro- and uro. The urinary 17-ketosteroids and 11-hydroxycorticoids measured 4.1 and 2.2 mg per day, an elevation possibly related to hypertrichosis.—M. J.


Iron-deficiency anemia (hemoglobin less than 11.8 Gm. per 100 ml.) not associated with organic disease was found in 22 of 2,000 recruits to the Royal Army Medical Corps. Details are given of the clinical and laboratory findings in 30 young soldiers aged 18 or 19 with iron-deficiency anemia, but no evidence of organic disease. All were successfully treated with oral iron, and none had relapsed when seen 3-12 months after the end of treatment. Acid had returned to the gastric secretion in most of those who previously had achlorhydria. It is suggested that a period of rapid adolescent growth may lead to iron-deficiency anemia in those young men whose iron uptake from food is relatively poor.—R. M. H.


Using normal untreated dogs as controls, the authors investigated the production of erythropoietine in dogs made anemic by bleeding or phenylhydrazine administration, and in dogs subjected to hypoxia. Deproteinized extracts of plasma from these animals were administered to rats for 7-9 days. As a result, although there was no increase in reticulocytes, all groups except the controls showed a significant increase in hemoglobin and hematocrit levels. In addition, the material from phenylhydrazine treated dogs produced a raised red cell count in recipient rats. The authors suggest that the dog, from which relatively large volumes of plasma can be obtained, is a useful animal for the study of erythropoietine production.—R. M. H.


By means of benzol the author was able, in rabbits, to cause lesions comparable to those found in human cases. In the experimented animals and a patient under long term study the following stages were observed: First, severe aplastic lesions, initially affecting the bone marrow and the spleen, without lesions in liver and only slight and inconstant involvement of lymph nodes. Next there was inhibition of organ reticulum, a proteinoid substance derived from the hepatic sinusoid capillaries and proliferation and swelling of the reticuloendothelial cells. Finally, there developed myeloid metaplasia, with erythroblasts, granuloblasts and megakaryocytes in the bone marrow, spleen, liver and lymph nodes. With this metaplasia there was fibrosis of marrow and spleen and occasionally in lymph nodes and liver. Apparently there is a connection between the fibrosis and inhibition by the proteinoid substance. The disease appears to develop intermittently, by successive contacts with the toxic agent and periods of latency and of recrudescence. During the evolution of the process reactions of the leukemic type are possible.—M. J.


Rats were maintained on four schedules of vegetable protein. Two groups living respectively on skin milk and whole egg protein served as controls. Animals maintained on vegetable protein diet for 6 weeks to 6 months did not show any evidence of vitamin B₁₂ deficiency. The feces of all animals showed appreciable vitamin B₁₂-like activity exceeding the initial values in many cases. The storage of vitamin B₁₂ in the livers was significantly higher than at the start suggesting the
possibility of utilization of biosynthesised vitamin B₁₂—J. B. C.


This paper reports a study of buccal epithelial nuclei in patients with pernicious anemia before and after treatment. The nuclei were larger and more variable in six patients than in normal subjects, although nuclear size was independent of the degree of anemia. After treatment with vitamin B₁₂, nuclear size diminished significantly, especially in its short axis; in many cases also the nuclear chromatin became pyknotic.—R. M. H.


In macrocytic anemia with megaloblastic marrow, successful treatment with a single injection of vitamin B₁₂ or folic acid produced a significant drop in serum iron level. Edema developed in some of the patients, due possibly to hypoproteinemia developing along with hypoferremia.—J. B. C.


This paper reports the results of laboratory tests in a single patient with di Guglielmo’s disease whose marrow was found to show megaloblastic erythropoiesis. Red cell half life, as measured by labelling with radioactive chromium, was only 8 days, and utilization of injected radio-iron was 38 per cent, compared with the normal range of 68–86 per cent. Serum vitamin B₁₂ level, absorption of ⁶⁰Cr-labelled vitamin B₁₂, and folic acid clearance, however, were all within normal limits. It is suggested that the megaloblastic changes in di Guglielmo’s disease may be due to a defect of vitamin B₁₂ or folic acid metabolism at a cellular level.—R. M. H.

LEUKOCYTES


Imprints from human and animal tissues have been studied for esterase activity by using a stable naphthol AS-D chloroacetate for the substrate. A biochemical method has also been employed for the study of this activity in tissue homogenates, blood serum and other body fluids. The present report is concerned with the demonstration by histochemical methods of esterase activity in peripheral blood and bone marrow cells of normal individuals and patients with a variety of hematological disorders. Segmented and immature neutrophilic cells gave a positive reaction, and a strongly positive reaction was found in histiocytes and tissue mast cells. No differences in esterase activity were noted between neutrophilic leukocytes in normal individuals and in patients with chronic myelogenous leukemia and other diseases. Activity in young neutrophils in nonleukemic bone marrow smears and in peripheral blood of patients with myeloid leukemia were inhibited less by various agents than adult segmented neutrophils. Further studies of this enzyme seem warranted.—O. P. J.


Granulocytotoptic and erythrocytotoptic activities in salamanders are localized in two main areas, namely the perirenal tissue for the former and the spleen for the latter. This makes it possible to study accumulations of neutrophil leukocytes for the purpose of demonstrating the relationship between peroxidase reacting granules and the specific granules. It has been found that peroxidase activity survives brief treatment of tissue with osmiium tetroxide. This observation may contribute to a solution of the problem of the nature of the peroxidase substance. Liver tissue was fixed in 1.33 per cent osmium tetroxide solution buffered at pH 7.50 with collidine buffer. It was treated with the peroxidase reagent before embedding in resin. In electron micrographs a change in density in cytoplasmic components as compared with the normal cytoplasm was located especially in the central portion of the specific granules. Many problems still remain unanswered; for example, what is the exact nature of the final product that causes the increase in density of the specific granules?—O. P. J.

Mast cells obtained from tumors have been grown in tissue culture and in some instances practically pure strains have been obtained. However, the cells obtained in this way appear to be morphologically different from the normal mast cells, and for that reason cultivation of subcutaneous tissue and peritoneal fluid was undertaken. This material was obtained from 150 Gm. rats of the Sprague-Dawley strain. Eagle's culture medium was used in most instances. The addition of sulfate ions did not appear to affect the development of the cultures. With the help of cinemicrography, it was observed that mast cells die after 4 days in cultures; their granules, released after the disruption of the cells, are phagocytosed very actively by different connective tissue elements. Mast cells in the vicinity of blood vessels travel at 100 μ per hour. There was some evidence suggesting that the well differentiated mast cell could divide.—O. P. J.


Human leucocytes were found to be slightly less highly negatively charged than red cells, but platelets possessed a negative charge about 4 times as high. Sensitization of leucocytes with leukogglutinin slightly reduced their negativity.

—R. M. H.


In the cases of hyaline membrane disease there was a delay and inadequacy in the development of the reticuloendothelial cells. Lymph nodes also showed an increase of eosinophilic leukocytes.

—W. J. M.


The Syrian hamster is distinctive among mammals in that it readily accepts a variety of transplanted tissues. In order to investigate the lymphoid response of the hamster to tumor homotransplants, human amelanotic melanoma (BCH 2) and a spontaneous hamster amelanotic melanoma were transplanted to the left cheek pouch. Both tumors have an accelerated growth rate for the first 10–14 days. Animals receiving a heterotransplant were conditioned with cortisone acetate. The regional lymph node and the contralateral node were analyzed for the number of secondary centers, the per cent ratio of large lymphocytes to small lymphocytes in the cortex, and differential counts were made of the medulla to determine percentages of (a) small, medium and large lymphocytes, (b) plasma cells, (c) reticular cells, (d) granulocytes, and (e) mitotic cells. Cortisone conditioning inhibits any alterations of the regional node that might be induced by a successfully growing tumor heterotransplant. Following tumor homotransplantation, the regional node responds in a fashion that may be called a typical histo-immunological response. It is suggested that the cortical large lymphocyte, as well as the plasma cell, is involved in the immunological response.—O. P. J.


This paper is a retrospective survey of deaths from leukaemia in Scotland between 1939 and 1956. The country was divided into ten areas, six of which were largely rural, and the natural background radiation was measured in four. In two areas, Aberdeen and Edinburgh, there was a highly significant excess mortality over that predicted; in Aberdeen this excess was due principally to acute leukemia and chronic myeloid leukemia, and in Edinburgh to chronic lymphatic leukemia. It does not appear that the observed differences in background radiation, which were statistically significant, are of sufficient magnitude to account for any of the differences in mortality; factors thought to be of significance are better case finding and high economic status, although it is unlikely that these are the sole explanations. This paper is the result of long and painstaking observations, together with thorough statistical analysis, and should be read in the original by all those interested in the subject.—R. M. H.

The activity of various phospholipids in the formation of thromboplastic activity was determined by means of the thromboplastin generation test. Phospholipids fractions prepared from calf brain and fresh egg yolks and synthetic phosphatidyl ethanolamine were studied. The findings indicate synthetic phosphatidyl ethanolamine or that derived from eggs is inactive as is lecithin or combinations of these in the thromboplastin generation test. Both phosphatidyl ethanolamine and choline became highly active when present with about 10 per cent phosphatidyl serine. Sodium deoxycholate gave clear suspensions but decreased activity.—R. C.


Oral dosage of 0.25 Gm. magnesium and 15 Gm. peptone produced a significant delay in whole-blood thrombin generation. Smaller doses were without constant effect. A similar, but more transient, effect followed the intravenous injection of 50 mg. Mg++. The addition of magnesium in small amounts to whole blood in vitro also delayed thrombin generation, and this effect was antagonized by the addition of calcium.—R. M. H.


Platelet lifespan determinations were carried out on ten cases of polycythemia vera, three of thrombocytopenia, two of localized malignant tumours, one of Hodgkin's disease and 1 of lymphosarcoma. No normal subjects were studied. The technic, which is given in detail, consisted of direct in-vivo labelling with DF32P and subsequent counting of radioactivity in isolated platelets.

The four cases of reticulosis and localized malignant disease all had platelet lifespans of 6–8 days. Four of the polycythemiac patients had platelet counts between 118,000 and 177,000 per cu.mm., and these had platelet lifespans ranging from 5.2 to 8.5 days. The other patients with polycythemia had normal or raised platelet counts, and platelet lifespans between 10 to 14 days. All three patients with thrombocytopenia had platelet lifespans in excess of 12 days. The authors accept Leeksmi and Cohen's (1956) estimate of 8–10 days, using a similar technique, as the normal platelet lifespan, and discuss possible mechanisms leading to the abnormal lifespans found in their own cases.—R. M. H.


Clots derived from various sources have different solubilities in 5 M. urea. Among others investigated, ante- and post-mortem clots differed in this respect. It is postulated that intravascular clotting is not a function of the conversion of the prothrombin to thrombin and subsequent action on fibrinogen, but rather it is a function of an enzyme derived from the plasma or wall of the vessel, acting directly upon fibrinogen.—W. J. M.


The chemical, electrophoretic and chromatographic properties of an 131I-tagged fibrinogen preparation were described. Eighty eight to 94 per cent of the radioactivity was coagulable. All the radioactivity was found to be with the fibrinogen in the best batches; chromatography after hydrolysis with trypsin or 6N-HCl suggested that much of the binding was as mono- and di-iodotyrosine. A method for the determination of plasma fibrinolytic activity by the use of the tagged fibrinogen is described, and the results compared with those of a conventional method involving tyrosine estimation. The results with tagged fibrinogen were generally somewhat lower than those obtained by the other method, and confirmed that fibrinolysis is relatively more active in dilute solutions.—R. M. H.


Fibrinolytic activity, estimated by means of the fibrin plate method with plasminogen activator, was considerably increased in the course of experimental poisoning with carbon tetrachloride. A decreased prothrombin activity and a prolongation of recalcification time, as well as a decrease of factor VII were also found. Thromboplastin formation was impaired, probably due to a decrease of factor V and factor X.—P. d. N.

As determined by prothrombin time, heparin tolerance, stypven time, thromboplastin generation, and by the levels of prothrombin, factor V, VII, and X, no significant difference was found in the coagulability of venous and arterial blood in normals and subjects with atherosclerosis. In addition no differences were found between the two groups. Fibrinolytic activity as determined by the euglobulin lysis time was found to be statistically significantly lower in arterial than in venous blood in both groups. In addition, a lower fibrinolytic activity was found in the group with atherosclerosis as a whole compared with normal subjects. Fibrinolytic activity was particularly reduced in relatively young patients (ages 30-45) with occlusive disease of the peripheral arteries.—R. G.


A comparative study of the effects of different fats (75 Gm.), viz., butter fat, hydrogenated vegetable fat and mustard oil, was done on the blood coagulability and serum lipids of normals and of patients with myocardial infarction. Statistically significant reduction of coagulation time and prothrombin time was seen in all the cases along with elevation of total serum cholesterol and serum lipid phosphorus.—J. B. C.


The coagulability of canine blood obtained from the general circulation and from immediately above and below a venous constriction was studied before and at varying intervals after the intravenous administration of homologous serum I.V. (10 ml./kilo.). Stasis alone caused little change. Above the stenosed segment the platelets were somewhat increased and below somewhat decreased. Immediately following injection of serum there is acceleration of thromboplastin and thrombin generation. This was associated with a drop in platelets and labile factor. The injection of the serum resulted in thrombosis taking place in the constricted venous segment, where stasis occurred. After the effects of the serum on the general circulation are no longer evident there are changes present in the blood coming from below the stenosed thrombosing venous section. Platelets are reduced, platelet poor plasma has a shortened clotting time, labile factor activity is elevated, the generation of thrombin and thromboplastin are accelerated. Within 30 minutes after the initiation of thrombus, an antithromboplastin appears which persists for several hours. The authors feel that their results emphasize differences in mechanism between initiation and propagation of a venous thrombus. The entrance into the blood stream of thromboplastin or clot accelerating substances is probably most important in initiating the clotting process which leads to thrombus formation. Platelets and labile factor seem involved in the further propagation of the thrombus.—R. G.


This paper gives a detailed description of a new one-stage test for the control of anticoagulant therapy with dicoumarol-like drugs. The test is designed to be equally sensitive to all the absorbable coagulation factors, whether they affect the intrinsic or the extrinsic thromboplastin system. Blood or plasma is mixed with a single reagent (commercially available in lyophilised form) consisting of crude cephalin, animal brain thromboplastin, adsorbed bovine plasma and calcium chloride. The clotting time is then measured. Variations of the test are described for use with “native” capillary blood, citrated venous blood or citrated plasma. The importance is stressed of avoiding incipient coagulation in test samples of capillary blood, and contact activation of venous blood and plasma. Evidence is presented that the test is sensitive to isolated deficiencies of factors VII and IX (PTC), and also to the combined deficiency of prothrombin, factors VII and IX and Stuart-Prower factor in adsorbed normal plasma.—R. M. H.

ABSTRACTS

Plasma AHP concentrations were significantly higher in a group of Australian aborigines than in normal white Australians. Values in white patients with hyperglobulinemia resulting from various diseases approximated to those found in the aborigines, who are known to have higher plasma γ-globulin concentrations than white Australians. — R. M. H.


The method for assay of PTC activity of plasma described is based on the partial thromboplastin technic, using plasma from a PTC deficient individual as the substrate. Using this technique the PTC levels of 61 control females, of 13 heterozygous carrier mothers, and of 17 affected sons were determined. In 25 per cent of the heterozygotes studied, PTC was sufficiently reduced to allow a confident diagnosis of abnormality; however, the PTC levels of the remainder (75 per cent) fell within the normal range. Those mothers with significant reduction in PTC had had no hemorrhagic manifestation. The data indicate that the severity of PTC deficiency is clearly inherited. There was a highly significant correlation between the PTC levels of affected sons and the reduced PTC levels of carrier mothers. From the data available, it was not clear whether the variation in severity of PTC deficiency is due to a number of alleles capable of residing at the PTC locus which have different efficiencies in controlling PTC levels or due to modifier genes elsewhere in the genome upon the abnormal allele. — R. G.


In 40 cases of malignancy, thromboelastographic determinations were carried out. In about 50 per cent of the cases, a prolongation of the reaction time and of the clot formation time, and a prolongation of prothrombin time, were observed. The authors assume that such modifications are due to a defect in thrombin and fibrin formation. — P. d. N.


Routine studies on an 80 year old woman admitted for surgical removal of a carcinoma of the rectum revealed an elevated prothrombin time (18 sec. — 40 per cent), a normal sized liver and good nutrition. Twenty-four hours postoperatively she was given 150 mg. of menadial sodium diphasate I.M. and 50 mg. of phytonadione I.V. Operation was performed without excessive bleeding. Despite the fact that the prothrombin time had reached normal levels by the fourth postoperative day, 30 mg. of menadial sodium diphasate I.M. were given daily for 11 days postoperatively and 50 mg. of phytonadione I.V. on days 8 through 11. On the twelfth postoperative day the prothrombin activity fell to 29 per cent and hemorrhagic oozing from the operative site began. From admission to this point, the patient had received 10 units of bank blood. Further therapy consisted of omission of vitamin K and two transfusions of fresh blood. Her prothrombin time returned to normal in three weeks. At the time of oozing it was also found that there was significant sulfomorphithalin retention. This remained elevated for about three weeks and then returned to normal. The authors point out that vitamin K in excessive doses can be toxic and may induce hypoprothrombinemia and alteration of other liver functions, and suggest that these drugs should not be prescribed unless hypoprothrombinemia not due to advanced liver disease is present. They stress that large doses should not be given to patients with significant liver disease and even small doses should be discontinued after several days if there has been no response. — R. G.


A definite decrease of prothrombin activity was observed in seven cases of trichloroethylene poisoning, in one case of methyl chloride poisoning, in one case of ammonia vapour poisoning, in one case of methane asphyxia and in two out of four cases of acute carbon monoxide poisoning. The changes were maximal in several hours and were followed by a slow return to normal values, not complete even after 2–3 weeks. Factor VII presented a behavior similar to that of prothrombin activity; the diminution of factor V was less marked. In two other cases of acute carbon...
monoxide poisoning and in two cases of fire smoke acute asphyxia there was an increased activity of prothrombin with signs of hypercoagulability in other tests.—P. d. N.


It was observed that finger blood, taken for the determination of whole blood prothrombin time from polycythemic patients, often either failed to clot or resulted in the formation of a few single fibrin threads only. Patients with erythrocytosis secondary to cardiac and pulmonary disease were examined by the whole blood and Quick’s one stage methods. Although the plasma prothrombin times were normal in all, the prothrombin index obtained by the whole blood method decreased as the RBC count went up and, in fact, near the 9 million/cu.mm. figure blood did not clot. With the decrease in count the index increased. Anemia produced no difference between the two methods. It is concluded that the much simpler method of whole blood prothrombin determination is reliable except in cases of increased RBC count.—J. J. B.


In a group of 32 diabetics treated with sulphanilureas for 12 months and in another group of 36 diabetics treated for 4 to 6 months, the following hematologic modifications were observed: After 2–3 months of treatment the leukocytes (chiefly neutrophiles) and platelets diminished somewhat; the tourniquet test and platelet agglutinability were slightly impaired, and prothrombin consumption test was moderately altered. All these changes disappeared with continuation of treatment.—P. d. N.