ERYTHROCYTES and ANEMIA

The Hemolysis of Human Erythrocytes by Sodium Dodecyl Sulfate. L. H. Love.

From the Department of Physiology, University of Pennsylvania, Philadelphia, Pa.


Studies of the hemolysis produced by an active protein denaturant—sodium dodecyl sulfate—have revealed some irregular and unexpected results. Some of these are explained on the basis of inadequate studies in the past, others are due to the peculiar effect of minute undissolved particles, and the antihemolytic as well as hemolytic properties of the detergent.

The present studies show that for each concentration there is a temperature at which maximal hemolysis occurs. The hemolytic system is complicated by the fact that hemolysis is initially very rapid and then it slows or stops completely. In the latter instance cells seem to be protected by the compound. Increases in acidity favor hemolysis. Temperature increases produce a small degree of initial hemolysis and a more rapid destruction of cells originally protected.—O.P.J.


The present study concerns the types of substances to which the erythrocyte is permeable and the degree of permeability in some 87 species. The solutes used were ethylene glycol, glycerol, urea and thiourea, and the endpoint in determining the times of hemolysis was 75 per cent hemolysis. Results obtained with the 4 standard solutes were plotted as logarithms of the times of hemolysis and drawn to form a quadrilateral. The various species were characterized by the shape of the quadrilateral. In most instances samples of vertebrate blood could be assigned to their proper zoologic classes by this device. There is the possibility that a specific enzyme may be involved in the unusual rate of entrance of glycerol into the bird erythrocyte.—O.P.J.


From the Medical Research Laboratories, Beth Israel Hospital and the Department of Medicine, Harvard Medical School, Boston, Mass. New England J. Med. 243: 944-948, 1950.

This is the second case of this type of hemoglobinuria reported in a woman. It was estimated that while the patient walked fifteen miles 10 Gm. of hemoglobin were released from intravascular destruction of erythrocytes. No anemia was observed. Alteration of posture during the walks did not seem to alter the destruction of erythrocytes.—P.F.W.

Pernicious Anemia in the American Negro. M. H. Hicks and B. S. Leavell.

This report again emphasizes that pernicious anemia in the Negro is not rare. As more data and studies become available the incidence appears to approach that among the white race. There apparently is no significant difference in symptomatology in the two races. Although in the 15 Negro patients reported here both the red blood cell count and hemoglobin eventually returned to normal values the rate of response to liver extract seemed slower than that observed in white patients without complications.—P.F.W.


Ten patients with chronic hypochromic anemia secondary to nutritional deficiency and/or hemorrhage were treated by means of the intravenous injection of saccharated iron oxide. The response in all cases was excellent, with good reticulocytoses and return of blood values completely to normal. Reactions were infrequent and very mild.

The general problem of intravenous iron therapy is discussed. Few indications for its use exist: iron deficiency anemias in ulcerative colitis, bowel resections, sensitivity to oral iron therapy, lack of response to oral iron therapy. Excessive use of intravenous iron is interdicted because of possible dangers following the deposits of large amount of iron in the tissues over a period of years. The use of intravenous iron might occasionally, however, prove an ideal mode of therapy in a patient with hypochromic anemia.—S.E.

LEUKOCYTES


This is a review of the literature on case reports and studies of infectious mononucleosis involving the nervous system. Nervous system involvement apparently occurs in less than one per cent of patients with this disease. Serous meningitis, meningitis, encephalitis, meningoencephalitis, polyneuritis and peripheral neuropathy have been described. The changes in the spinal fluid consist of an increase in lymphocytes and/or protein. Prognosis with nervous system involvement is very good. The authors suggest involvement predominantly of the nervous system may occur with minimal evidence systemically of infectious mononucleosis. Therefore, heterophil antibody tests are suggested as of possible value in cases where the etiology of nervous system disease is obscure.—P.F.W.


This is a case report of anemia and leukopenia associated with sarcoidosis. Following the removal of a 220 gram spleen showing histologic evidence of sarcoid the anemia and leukopenia apparently improved.—P.F.W.

MULTIPLE MYELOMA. II. Variability of Roentgen Appearance and Effect of Urethane Therapy on Skeletal Disease. R. W. Rundles and R. J. Reeves. From the Departments of Medicine and Radiology, Duke University Medical School, and the Hematology Laboratory, Duke Hospital, Durham, N. C. Am. J. Roentgenol. 64: 790-809, 1950.

Numerous x-ray plates are reproduced of multiple myeloma bone lesions found in 24 cases. On urethane therapy no bone repair was evident in the first three months but after four to six months of such treatment bone repair was demonstrable by x-ray. The authors conclude that the effect of urethane in multiple myeloma represents an encouraging advance in therapy.—P.F.W.
ABSTRACTS


A case that apparently merits the clinical and pathologic diagnosis of plasmacytic leukemia is presented. The patient was a 55 year old male whose symptoms antedated death by only four or five months. Globulin was 9.5 Gm. per 100 cc. No Bence-Jones protein was found in the urine. There was no amyloidosis.—P.F.W.


Examination of a great number of healthy individuals of either sex gave figures of between 3500 and 7500 leukocytes. The average of 5500 is definitely lower than the value found some years ago. The decrease is caused by a fall of the neutrophiles, whereas a slight absolute and relative rise in lymphocytes could be noted. Modified nutrition and psychic troubles are considered as causative influences.—C.Jhi.


As well established in literature, administration of adrenocorticotropic hormone, Compound E, or epinephrine produces an eosinopenic response which occurs gradually, reaching its maximum in three to four hours. The present study was done to test the eosinophil response to epinephrine and histamine in a series of unanesthetized, trained dogs. Following the infusion of histamine, the eosinophil count decreased within the first ten to fifteen minutes and then slowly rose to about 60 per cent of the control values. In contrast, epi-nephrine infusions effected a gradual eosinopenia which reached a maximum in four hours. The intravenous administration of large doses of ACTH or adrenal cortical extract also produced the delayed type of eosinopenic reaction. These data suggest that in the dog there are at least two types of eosinopenic responses: an immediate, and a gradual or delayed type. The authors indicate that the immediate type of eosinopenia is not mediated through the release of C-11 adrenal steroids and that these data emphasize that eosinopenic responses must be evaluated in terms of both time and magnitude.—R.C.C.


Lymph and lymph nodes from normal rabbits, guinea pigs and rats were studied by various methods in order to determine the origin and fate of hyaline cytoplasmic bodies. Medium sized lymphocytes are most active in shedding buds in the lymph nodes, a process which continues in the lymph. Mitochondria were demonstrated not only in the cytoplasmic bodies but also free in the lymph nodes. These observations indicate that lymphocytes by means of their shed buds contribute the chemical constituents of their cytoplasm and mitochondria to the lymph.—O.P.J.


It is frequently necessary to make repeated punctures of vessels in laboratory animals to determine blood values under experimental conditions. Apparently no information has
been published regarding the systemic and local changes in leukocyte counts as a result of repeated puncture alone. In the present study, rabbits were previously starved for twenty-four hours, had the hair removed from their ears and were punctured in the lateral marginal vein with a medium sized needle in order to produce endothelial damage. The first drop of blood was sampled. Later punctures at the same site were made without additional traumatization. Simultaneously blood from an uninjured vessel on the same or other ear was examined. Data show that after two and one-half hours the leukocyte count in the systemic circulation did not undergo any significant change, but that the first droplet of blood from the site of repeated puncture showed a progressive increase of leukocytes.

One of the most important and interesting observations was that the basophil leukocytes increased relatively and absolutely in the injured vein. In order to detect these changes, a 1 per cent solution of toluidin blue in 60 per cent alcohol was used to prevent the dissolving of metachromatic material before it was stained. Interpretations of the local intravascular accumulation of basophils must await further investigations.—O.P.J.


Studies of fat absorption and phagocytosis have usually been approached by administering fatty materials to the test animal and then employing various fat soluble dyes to visualize and localize. In the present study, Sudan IV was dissolved in cod liver oil and then injected intraperitoneally into 26 white rats. Smears were made by passing glass slides along the peritoneal surface over the inside of the body walls and over the organs one to six hours after injection. They were dried, fixed in 10 per cent formalin and mounted in glycerogel. Staining of some smears was intensified by an additional staining with Sudan IV. All slides were processed by the Gomori technic for the identification of lipase. Two types of cells take part in the absorption of fat, viz., mononuclears or histiocytes, and a fibroblast-like cell. The former has greater phagocytic powers than the latter.

First there is a surface association with the fat and then one or more areas show a fine stream of fat entering the cytoplasm. Lipase is present in the region where the cytoplasm of the phagocyte touches the fat globule. Apparently this reaction is brought about by the lipase breaking down triglycerides thereby producing free fatty acids which combine with lead ions to produce lead soaps. The latter react with ammonium hydrosulfide to form dark areas containing lead sulfide. The evidence presented here indicates that a lipase at the cell-fat interface acts extracellularly on the fat that the cell is about to ingest.—O.P.J.


The study of glycogen in blood cells has interested many investigators including Ehrlich. There is general agreement that segmented neutrophils, neutrophilic metamyelocytes and some myelocytes and megakaryocytes contain glycogen. In general, most lymphocytes do not contain glycogen when the Bauer-Feulgen and periodic acid-Schiff reactions are used, but Gibb and Stowell (1949) used the chromic acid-silver-methenamine (Gomori) technic and found glycogen in more cell types than most investigators. They believe this is due to the superiority of the marked contrast which the black reduced silver produced in blood films for the detection of minute quantities of glycogen.

In the present investigation, thymuses of mice and kittens were studied with the periodic acid-leukofuchsin (McManus) method. In fetal mice about 40 per cent of the thymic cortical small lymphocytes contained glycogen. From shortly after birth through the fourteenth day about 32 per cent of these cells contained glycogen. There was a marked decrease in glycogen between the fourteenth and eighteenth days which continued at a lower level as
ABSTRACTS

long as seventy-nine days. Evidence is presented to indicate that depletion of glycogen storage in the thymus is correlated with changes in the food and growth pattern of these animals.—O. P. J.

AGranulocytosis due to Gantrisin. Report of a Case with Recovery. E. A. Haunz, J. D. Cardy and C. M. Graham. From the Department of Internal Medicine, Grand Forks Clinic, and the University of North Dakota School of Medicine, Grand Forks, N. D. J. A. M. A. 144: 1179-1181, 1950.

The occurrence of severe agranulocytosis during therapy of an upper respiratory infection with gantrisin, is reported. The patient had taken 30 Gm. of the drug in a period of five days. Complete recovery occurred after cessation of the drug, and after use of auro- mycin, penicillin and blood transfusions.

There are eight reports in the literature, according to the authors, of leukopenia following gantrisin therapy, but this is the first of almost complete "agranulocytosis."—S. E.


Attention is called to the frequency of mediastinal lymph node enlargement and pulmonary changes suggestive of atypical virus pneumonia detected by x-ray studies of patients with infectious mononucleosis. The author states that splenic enlargement occurring in infectious mononucleosis may persist for years.—P. F. W.


After reporting a case of multiple myeloma with a fatal reaction to urethane the literature on the toxicity of the drug is reported briefly. Fifty per cent of the cases develop gastro-intestinal symptoms; 16 per cent have developed leukopenia. Aplastic anemia has resulted from urethane therapy. Liver damage may be severe.—P. F. W.

LEUKEMIA and MALIGNANT LYMPHOMA

Leukemia, Polycythemia and Related Diseases. C. S. Wright. From the Department of Medicine, Ohio State University, Columbus, Ohio. Am. J. Roentgenol. 64: 907-912, 1950.

This is a short, concise, clear article on the treatment of several blood dyscrasias. In the author's opinion radioactive phosphorus (P³²) with venesection as indicated is the choice for treatment of polycythemia vera. He emphasizes that dosage must be individualized to each patient. He points out that although the sluggishness of circulation and high platelet count may be associated with thromboses the hypostheninemia found in such patients may occasionally cause hemorrhage. Radioactive phosphorus (P³²) is also a valuable adjunct in treatment of leukemia. Urethane is said to have been as successful as roentgen irradiation in the management of chronic myeloid leukemia. Elimination of nucleoprotein, proteins and lipids from the diets of patients with chronic myelocytic, lymphoeytic and monocytic leukemia respectively is recommended by the author. The importance of specific cellular diagnosis of the type of acute leukemia is emphasized. Ami- nopterin has induced remissions of six months or longer in 60 per cent of cases of acute lymphatic leukemia. Nitrogen mustard has shown benefit in instances of acute monocytic leukemia and urethane in subacute myelocytic leukemia. The author did not point out the complications and objectionable features of these newer forms of therapy.—P. F. W.

Hodgkin's Disease. H. A. Hoster. From the Department of Medicine and Radiology, Ohio State University College of Medicine, Columbus, Ohio. Am. J. Roentgenol. 64: 913-918, 1950.
This is a paper on the treatment of Hodgkin's disease. Six factors that seem to affect the response to x-ray therapy are discussed. Superficial and early mediastinal lymphadenopathy seem the most responsive. Radiotherapy for lesions in bone and skin is usually satisfactory if the lesion is not widespread. As a general rule the success of therapy varies inversely with the duration of the disease prior to therapy. If the disease is widely disseminated a satisfactory response of therapy is unusual. Burns, broken bones, contusions, surgery, childbirth, almost all infectious processes, profound exertion and fatigue and consumption of alcohol may result in exacerbation and increase in rate of the disease process. Although virus hepatitis may produce a temporary favorable effect in selected cases therapeutic production of virus infection is not recommended. When symptoms or signs indicate generalized disease nitrogen mustard is the treatment of choice. The most common error in therapy, according to the author, is the deferring of HN2 therapy until the patient is no longer capable of responding to roentgen irradiation. Anorexia, weight loss, weakness, fatigue, fever, night sweats and pruritus are indications usually for further treatment. When a secondary infection in the lung develops as a result of obstruction along the bronchial tree a combination of HN2 and antibiotics followed in six to eight weeks by irradiation of the involved area is suggested. Laboratory indications or progression of the disease are development of lymphopenia, monocytosis, leukocytosis, elevation of the sedimentation rate, anemia, alterations in differential bone marrow counts and appearance of myelocytes in the peripheral blood. HN2 therapy may decrease radioresistance of Hodgkin's lesions.—P.F.W.


It is emphasized that leukemia in childhood is often aleukemic and that some cases may present with anemia, bone pains, arthralgia or joint pains, and possibly hemic cardiac murmurs simulating rheumatic fever.

The bone lesions of acute leukemia are reviewed. Radiologically they fall into four groups:

1. Osteolytic and destructive lesions first affecting long bones by erosion and thinning of the cortical compact bone and sometimes causing pathological fractures.
2. Periostitis: Periosteal elevation with subperiosteal new bone formation is frequently associated with cortical erosion and is due to leukemic infiltration and subperiosteal osteoid formation. The metaphyseal ends of long bones are the sites most frequently involved.
3. Disordered epiphyseal growth. A band of increased translucency at the site of most rapid growth, i.e. distal ends of femur, tibia, radius and ulna is sometimes seen in acute leukemia but is not pathognomonic.
4. Osteosclerosis is a rare finding in the aleukemic type of acute leukemia in childhood and must be differentiated from Albers-Schönberg's disease.

During temporary remissions of the leukemic process in 5 cases of acute leukemia, a reversal of the radiographic lesions was demonstrated.—C.E.R.


The temporary palliative effect of the adrenocorticotropic and cortical hormones of certain lymphomatous processes are by now well known. This article summarizes experiences in a large number of patients with these disorders, and records both the striking nature and purely temporary effect of these drugs in these disorders.

In 8 patients with chronic lymphocytic leukemia, there was appreciable shrinkage of lymph nodes, liver, and spleen, and some hematologic improvement; but always there was rapid relapse. In 6 patients with lymphosarcoma, shrinkage of tumor masses occurred, but again there were no permanent effects. Of 30 children and adults with acute leukemias, 22
had objective clinical and/or hematologic improvement; but remissions were short lived. Patients with Hodgkin's disease sometimes showed improvement, and 1 case of plasma-cell myeloma was thought to have remitted remarkably. There was no effect in chronic myelocytic leukemia, acute monocytic or monocytoid leukemias, and various other non-hematologic neoplastic processes.—S.E.

**CORTICAL STEROIDS IN TREATMENT OF CANCER. OBSERVATIONS ON EFFECTS OF PITUITARY ADRENOCORTICOTROPIC HORMONE (ACTH) AND CORTISONE IN FAR ADVANCED CASES. S. G. Taylor, III, J. P. Ayer and R. S. Morris, Jr. From the Rush Department of Medicine and Pathology of the Presbyterian Hospital, and the University of Illinois, Chicago, Ill. J.A.M.A. 144: 1058-1064, 1950.**

Among 26 patients with "far advanced malignant disease," 12 patients had leukemia, lymphosarcoma or Hodgkin's disease. Treatment of these patients by means of ACTH or cortisone gave temporary and incomplete remissions in 3 of 3 patients with Hodgkin's disease, 5 of 6 patients with lymphosarcoma, and the 1 patient with chronic lymphatic leukemia studied. There was no effect in 1 patient with acute leukemia or 1 patient with chronic myelocytic leukemia. There was also some effect in 1 of 2 additional patients who had mycosis fungoides.—S.E.

**STUDIES ON THE ACUTE TOXIC EFFECTS OF 4-AMINOPTERYLGLUTAMIC ACID IN DOGS, GUINEA PIGS AND RABBITS. V. Minnich, C. V. Moore, D. E. Smith and G. V. Elliott. From the Departments of Internal Medicine and Pathology, Washington University School of Medicine, St. Louis, Mo. Arch. Path. 50: 787-799, 1950.**

Aminopterin has been used in laboratory animals to investigate its relation to folic acid and to study its hematogenic effect on constituents of the hematopoietic system. Many experiments have been conducted on practically every kind of laboratory animal.

The present study defines the acute toxic effects produced by large doses of 4-aminopteroylglutamic acid in 7 dogs, 7 guinea pigs and 4 rabbits. Toxic symptoms appeared in dogs whenever the dose was greater than 0.01 mg. per Kg., in guinea pigs when it was 1.1 to 10 mg. per Kg. and in rabbits when it was 2.5 to 6.2 mg. per Kg. Reticulocytopenia occurred early in dogs and guinea pigs, but in only 1 rabbit; lymphocytopenia and granulocytopenia concomitantly in dogs and guinea pigs, whereas a leukocytosis appeared in 2 rabbits. Bone marrows became hypoplastic and no megaloblast-like cells were found. Rabbits survived longer than guinea pigs, and guinea pigs longer than dogs. When folic acid was administered to dogs in the amount of 200 to 800 times greater than the dose of antagonist, a relatively high degree of protection was afforded. If the antagonist affects metabolism by interfering with the process by which folic acid is converted to the "citrovorum factor," it is not clear why there should be a species difference in susceptibility to antagonist.—O.P.J.

**REVERSAL OF AMINOPTERIN AND AMETHOPTERIN TOXICITY BY CITROVORUM FACTOR. E. B. Schoesbach, E. M. Greenspan and J. Colsky. From the Department of Preventive Medicine, Johns Hopkins University School of Medicine, and the Clinical Research Unit, National Cancer Institute, United States Marine Hospital, Baltimore, Md. J.A.M.A. 144: 1558-1560, 1950.**

"Citrovorum factor" is a growth factor necessary for the growth of the bacillus Leuconostoc citrovorum. When administered together with lethal doses of aminopterin in mice, it protected from the toxic manifestations of aminopterin (in contrast to folic acid, which failed to protect). The present clinical report presents a similar result in 2 patients.

In the first patient, buccal ulcerations and marked leukopenia caused by amethopterin were eliminated on concurrent use of the citrovorum factor. In the second patient, buccal
ulcerations and leukopenia caused by aminopterin failed to disappear if estradiol, folic acid, or 20 million units per day of citrovorum factor were used simultaneously with the aminopterin; but, when 40 million units of citrovorum factor were used with aminopterin, these toxic manifestations disappeared and failed to reappear.—S.E.

BLOOD COAGULATION and HEMORRHAGIC DISEASES


Observations are presented on the level of plasma prothrombin, platelets, plasma fibrinogen, plasma thromboplastin (as evidenced by a heparin resistance test) and serum prothrombin in patients in the pre and postoperative period. Plasma prothrombin activity decreased from the first to seventh postoperative day. Platelets were found to be decreased prior to the seventh postoperative day and increased thereafter. The plasma fibrinogen was somewhat above normal from the third to the ninth postoperative days. There was a decrease in the clotting time of plasma in the presence of heparins which was maximal between the second and fifth postoperative days and a significant decrease in serum prothrombin was observed between the first and fourth days after operation.

These latter observations were felt to give suggestive evidence of the presence of circulating thromboplastin in the early days following surgery. The authors emphasize that the results reported became evident only when analyzed as composite figures and do not indicate that each postoperative patient can be expected to show changes analogous to those of the composite curves. Inability to isolate the substances in question other than fibrinogen and platelets made interpretation of the data difficult, but it is possible to obtain a picture of tendencies and trends in the postoperative state.—W.N.Y.


Two hemophiliac brothers, were intravenously injected with sodium citrate (20 mg. in 10 cc. of saline) during three consecutive days. In both cases the curve of the clotting times obtained were strikingly similar, with a very important shortening (from more than sixty minutes to twelve minutes), total calcium increases, while phosphorus decreases, giving an increase of the Ca/P ratio from 2.8 to 3.64 in one case, and 2.59 to 3.40 in the other.

In spite of the prolonged shortening of the clotting time, lasting more than three days, both patients exhibited hemorrhosis during this treatment, perhaps in relation to a calcium transfer from the skeleton.

The authors studied the reason why an excess of sodium citrate is necessary to inhibit coagulation in vitro. Using resistivity measurements they showed that to decrease Ca++ ions below a critical level, 16 times the calculated amount of sodium citrate is necessary, and even this amount allows some Ca++ ions to remain free.

Finally the effects of intraperitoneal injection of calcium citrate in guinea pigs was studied.—J.P.S.


This work was performed to determine whether there was any difference in the solubility of fibrin clots produced by thrombin and by snake venom. Former work indicated that fibrin clots produced by thrombin in the absence of either a thermolabile serum factor or calcium ions are soluble in a concentrated urea solution. The present work confirmed the above finding and showed that fibrin clots produced by snake venom dissolved readily in all cases.
The authors point out that the difference in the solubility of fibrin clots produced by thrombin and snake venom offers further evidence in support of the opinion that the clotting agent in snake venom of the Bothrops species is different from thrombin. — R.C.C.

Sang Incoagulable et Maladie de Vaquez. (Uncottable blood and polycythemia.)

Venous blood taken from a polycythemic patient was not clotted after twenty-four hours. Addition of Ca, or thromboplastin or thrombin was ineffective in correcting this defect. The blood was devoid of fibrinogen. A similar observation of uncottable blood in polycythemia has already been made by technicians of the same laboratory.

Fiehrer interprets this fact as an acute afibrinogenemia, the consequence of spontaneous defibrinination through intravascular clotting (knowing the frequency of thrombosis in such patients).

The abstractor does not agree with this interpretation, having demonstrated on several occasions a fibrinolysis in polycythemic blood. Is it not possible that the lack of fibrinogen is due to fibrinogenolysis rather than to an in vivo defibrinogenation through intravascular clotting? Whatever interpretation may be correct, the possibility of uncottable blood in polycythemic patients is of the greatest interest and deserves further studies. — J.P.S.

From the Department of Medicine, University of Edinburgh Rheumatic Unit, Northern General Hospital and the Eastern General Hospital, Edinburgh, Scotland. Brit. M. J. 2: 971–977, 1950.

A negative pressure method was used to measure capillary resistance under a variety of conditions. It was found that heat, x-radiation and nitrogen mustard therapy increased capillary resistance. Three mg. of histamine given in a slow saline drip was accompanied by a fall in capillary resistance during the time of administration. Following the infusion the resistance returned to normal and then became increased for a period of about twenty-four hours. Protein shock had a somewhat similar effect. Adrenaline produced a rise in capillary resistance as did the induction of hypoglycemia. These observations suggested that increased capillary resistance might be a manifestation of increased adrenocortical activity. In 10 patients treated with ACTH for rheumatoid arthritis, spondylitis ankylopoietica and disseminated lupus erythematosus a rise in capillary resistance was demonstrable. This led to treatment of 2 patients suffering from idiopathic thrombocytopenic purpura with ACTH. In the first case clinical remission followed ACTH administration on two separate occasions. Capillary resistance was increased and there was a delayed slight increase in platelets. After stopping ACTH the capillary resistance returned to the previous abnormal level but clinical relapse did not occur for some time after.

In the second case more marked changes in capillary resistance and platelets followed ACTH injections and after stopping treatment the levels remained above the pre ACTH level. A good clinical remission was observed. — S.C.


Sixty-six cases are related to plasmatic abnormalities. Forty-nine cases are hemophilic patients, among whom 7 are mild cases and 5 are associated with bleeding abnormality. As many as 23 cases, biologically identical to the familial type, were not associated with a familial history of bleeding.

Female conductors were always found to be normal. Three cases of circulating anticoagulant were described. One hundred cases of thrombocytopenias are divided into two groups; one group (40 cases) with a permanent defect which seems to be idiopathic and constitutional and merits splenectomy and the other group (49 cases), where the hemostatic defect
is intermittent, appears to be secondary thrombocytopenias, and in which splenectomy is to be avoided. Eleven cases are unclassified. The study of megakaryocytes in the bone marrow, contrary to previous hope, does not allow differentiation between these two groups.

Two hundred and seventy-three cases of hemorrhagic syndrome do not show any plasmatic or platelet defect.

Twenty-six cases fall in the Willebrand disease group. Fifty-six cases are associated with an isolated abnormality in capillary function (38 cases of this type are described in detail in another paper in the same issue). Finally, 191 cases with normal hemostatic tests were allergic purpuras, dermatologic purpuras, localized hemorrhages, Osler disease, etc.—J.P.S.


The authors confirmed the observations made by others that dicoumarol has a damaging influence on the endothelium of blood vessels. Bleeding tendency could be avoided by prophylactic administration of 200 mg. rutin (hesperidin) daily.—C.M.

THE EFFECT OF WATER-SOLUBLE PREPARATIONS OF VITAMIN K IN DICOUMAROL-INDUCED HYPOPORHOBINEMIA. S. Shapiro, M. Weiner and G. Simson. From the Third Division,

Goldwater Memorial Hospital, Welfare Island, New York and the Department of Medicine, New York University College of Medicine, New York, N. Y. New England J. Med. 245: 775–779, 1950.

Data is presented to demonstrate that water-soluble vitamin K is effective in controlling excessive dicoumarol-induced hypoprot hrombinemia. The apparent inconsistencies reported in the literature are discussed.—P.F.W.


The unusual situation of 4 children in one family who died with hemorrhagic diatheses is reported. Three of these children who were available for study showed thrombocytopenia. A family study over a thirteen year period and including three generations failed to reveal any clinical or laboratory evidence of the disease in other members.

The report is of interest because of the difficulty in classification of the disease in these siblings. Unlike the reported cases of congenital thrombocytopenic purpura, the disease first became manifest in these children between the ages of 3 to 7 years. Bone marrow studies were done in 2 of the children. In one the marrow was reported as normal, and in the other a striking decrease in megakaryocytes was the only abnormality. Clinical and autopsy data furnished no clue as to a possible cause for secondary thrombocytopenia. The years that elapsed between the hospital admissions of the 3 children make a common exogenous etiologic factor unlikely. The authors propose that the disease in these patients be classified as familial thrombocytopenic purpura.—H.W.B.


A woman of 48 with mitral stenosis and auricular fibrillation was treated with quinidine sulphate. Four-tenths Gm. was given in two days followed by an interval of ten days, when a daily dose of 0.2 Gm. was started. Epistaxis, slight vaginal hemorrhage and purpura developed three days later. Platelets were reduced to less than 20,000 per cu. mm. In a week the count had returned to normal but a further course of 0.8 Gm. was followed by a recurrence of purpura and thrombocytopenia. After another interval an attempt at desensitization was made but had to be abandoned because of reappearance of purpura.—S.C.
ABSTRACTS

PURPURA IN PREGNANCY WITH SPECIAL REFERENCE TO IDIOPATHIC THROMBOCYTOPENIC PURPURA. H. N. Robson and L. S. P. Davidson. From the Department of Medicine, University of Edinburgh, Edinburgh, Scotland. Lancet 2: 164-169, 1950.

The authors have reviewed the 95 published cases of purpura in pregnancy and have classed 21 of these as instances of idiopathic thrombocytopenic purpura. The findings in these 21 are summarized together with the records of 4 further examples.

There appeared to be no real evidence that the pregnancy either precipitated or aggravated the purpuric state or that pregnancy altered the prognosis of the disease. The maternal mortality in the 25 cases involving the 34 pregnancies was 8 per cent, i.e., no greater than the expected mortality in the nonpregnant. Bleeding at delivery was rarely excessive.

The infant mortality was about 25 per cent. Thrombocytopenic purpura appeared in 18 out of 32 infants. Though usually transient, purpura was the cause of death in 4. The purpura tended to be more frequent and severe in those children whose mothers had responded poorly to previous splenectomy. One of 6 children born of 3 mothers who had shown a good response to splenectomy showed transient purpura. —S.C.

THE SPLEEN


The results of splenectomy in 220 patients with blood dyserasias are presented. The results were uniformly good in congenital spherocytosis, usually good in thrombocytopenic purpura and "primary" splenic pancytopenia and frequently poor in acquired hemolytic anemia and pancytopenia associated with other diseases. The authors propose the term "splenism" for the state in which the "normal" inhibitory action of the spleen on the bone marrow is conceivably deleterious. Under this classification are listed 4 cases of congenital hypoplastic anemia treated by splenectomy. Apparently 2 of the patients improved following the operation. Opinions on any relationship of the spleen and bone marrow are to a high degree speculative at the present time. —P.F.W.


This lecture reviews the present views on splenic function and discusses the indications for and effects of splenectomy. The results of splenectomy are described in 13 cases of hemolytic anemia (4 familial and the rest acquired), 19 cases of idiopathic thrombocytopenic purpura and 11 cases of "hypersplenism" secondary to a variety of conditions. —S.C.

HOMOLOGOUS SERUM JAUNDICE


Homologous serum jaundice is presumably a virus disease caused by transmission of a virus present in plasma or blood into a recipient. The authors point out that the usual current methods used to store and preserve plasma (notably, refrigeration, storage in deep freeze, and lyophilization) are independently methods which have long been recommended for the preservation of viruses. On the other hand, storage of known viruses at room temperatures usually results in loss of virus activity in from a few hours to days.

From this point of view, it is of interest that the incidence of serum hepatitis following use of the authors' plasma—which happens to be stored at high room temperatures—is very low. By study of records of patients who had transfusions of blood and plasma, the authors...
were able to discover 17 cases of serum hepatitis; of these, 3 had received University of Chicago plasma (but had also received lyophilized plasma and/or whole blood), and the other 14 had received whole blood only. They could find no other instances of jaundice following the use of University of Chicago plasma, even in patients who received plasma from the same pools as the 3 patients above with hepatitis. Actually, of 212 patients who received such plasma alone, none developed hepatitis. Of 652 who received only blood, or blood as well as plasma, 17 (already mentioned) developed hepatitis. It was felt likely that the 3 of these 17 who received both plasma and blood might well have developed their hepatitis from the blood, not the plasma.

These figures are in marked contrast to all other reports, in which the incidence of serum hepatitis is always higher following the use of pooled plasma, than after the transfusion of blood alone.

The University of Chicago plasma is prepared from whole blood which is five days old or older. This blood has perforce been refrigerated since collection. When the plasma is prepared, it is withdrawn from the whole blood, pooled, and stored at room temperatures without any preservatives until used. The actual temperatures of storage range about 78 to 96 F. Plasma is not used until it is at least two to three months old. Although chemical changes presumably occur in the stored plasma, the authors state that such storage preserves the nutritive value of the plasma and has not increased the rate of reactions following administration of plasma.

This would seem a simple manner to help solve the problem of serum hepatitis following the use of plasma—simpler than ultraviolet irradiation, which does not seem always to prevent hepatitis. Substantiation and further studies on plasma factors are indicated, but the presentation is a convincing one.—S.E.

HOMOLOGOUS SERUM JAUNDICE. REPORT OF EIGHT FATAL CASES. J. Runyan, A. W. Wright, and R. T. Beebe. From the Department of Medicine, Albany Medical College, Union University, and Albany Hospital, Albany, N. Y. J.A.M.A. 144: 1065-1068, 1950.

Details are presented in 8 fatal cases of homologous serum jaundice, including the findings in 6 autopsies. Seven patients developed the disease after transfusions of plasma and/or blood; in the eighth, there was contact (during embalming) with one of the 7 patients. In addition, the authors mention 10 cases of similar hepatitis which were supposed to have followed the transfusion of irradiated plasma and whole blood, but give no details.

It is pointed out again that the potential dangers of serum hepatitis are not confined to patients, but also to ancillary medical workers.—S.E.

PURPURA AND BLOOD COAGULATION

Thrombocytopenic Purpura Associated with Sarcoid Granulomas of the Spleen. P. Kunkel and R. Yesner. From the Veterans Administration Hospital, Newington, and the Department of Medicine, Yale University School of Medicine, New Haven, Conn. Arch. Path. 50: 778-786, 1950.

Thrombocytopenic purpura associated with sarcoid granulations of the spleen in a middle aged man has apparently been cured by splenectomy. The patient exhibited the cardinal signs and symptoms of idiopathic thrombocytopenic purpura. There was a hyperplasia of megakaryocytes in the bone marrow with a failure of these cells to produce platelets. The evidence presented suggests that perhaps some agent in the spleen was responsible for the maturation arrest of the megakaryocytes.—O.P.J.

A 3 year old boy with a two week history of petechiae, purpura, bloody stools, occult hematuria and abdominal pain was found to have a nonthrombocytopenic variety of purpura. The use of ACTH resulted in marked clinical improvement and reversal of pathologic changes in the skin. Relapse occurred two months after cessation of ACTH therapy, and was followed by spontaneous remission. However, persistent albuminuria and hematuria, and elevation of the nonprotein nitrogen, occurred.—S.E.

**The Relation Between the Proteolytic and Blood Clotting Activity of Snake Venoms.** B. Janszky. From the Instituto Finheriros Biochemical Department, Sao Paulo, Brazil, South America. Arch. Biochem. 28: 139-140, 1950.

The author has reinvestigated the relationship between the proteolytic and blood clotting activity of various snake venoms using venoms which possessed a strong clotting effect on both plasma and fibrinogen. The recorded results show a close correlation between the two activities and the author concludes that the proteolytic and coagulating activities are due to the same substance.

The proteolytic activity determinations were made by the method of Anso on hemoglobin substrate. The coagulating activity is expressed in reciprocal minutes of the clotting time, employing oxalated rabbit plasma.—C.E.R.

---

**NEWS AND VIEWS**

**Blood Club**

The Fourth Annual Meeting of the Blood Club will be held Sunday, April 29, at the Chalfonte-Haddon Hall, Atlantic City. The dinner and meeting are open to all those interested in the field of hematology. There will be no sponsored cocktail party this year, but the Hotel has set aside a room where dinner guests may buy cocktails and talk from 5:30 to 6:30 p.m. Dinner will be served at 6:30 p.m.; the charge will be $5.50 including gratuities. Reservations must be made before April 21 with Dr. Wayne Rundles, Department of Medicine, Duke University School of Medicine, Durham, North Carolina. Dinner tickets may be obtained during the cocktail hour. Only 250 dinner guests can be served.

The following program will be presented at 8 p.m.:
2. “The Lung In the Hematological System of Man.” Howard R. Bierman, Ralph Byron, Keith Kelly, Nicholas Petrakis
3. “Mechanism Responsible for Inability to Transfuse Leukocytes.” Austin S. Weisberger

Discussion will be informal and everyone is invited to participate.

Program Committee: Byron E. Hall
Wayne Rundles
Carl V. Moore