ABSTRACTS

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ABSTRACTERS

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CYTOLOGY

Studies on the Megakaryocyte. 1. The Normal Granulopoiesis of the Megakaryocyte. II. Deficient
Granulopoiesis in the Megakaryocyte in Essential Thrombocytopenic Purpura. E. Schwarz. From
Department of Hematologic Research, Michael Reese Hospital, Chicago, Ill. Arch. Path. 45: 333–353.
1948.

This series has as background Schwarz’s experience since 1888, when he published his first paper and
his chief preoccupation was with morphology and biology, to his recent freedom from clinical and
Teaching duties and a return to studies in cytology. His contribution to the megakaryocyte problem is
chiefly a focusing of attention to the previously neglected developmental history of the granulation and
the light areas in the cytoplasm. After becoming thoroughly acquainted with the appearance of early
developmental forms of normal megakaryocytes, his studies were carried over to cases of Werlhof’s
essential thrombocytopenic purpura. In megakaryoblasts and early promegakaryocytes the first evidence
of granulopoiesis appears in a light staining area located close to the nucleus. Because this area increases
and becomes pinkish with the growth and development of the cell, Schwarz has designated it the “func-
tional area.” In the light of some recent studies on the cytoplasm of immature blood cells, the proposed
term is particularly satisfactory because it probably represents the negative images of underlying
cytoplasmic organoids and as such justifies the importance which Schwarz has assigned to it. Under
normal conditions, the functional area is related to granulopoiesis. But under pathologic conditions, as
in some cases of essential thrombocytopenic purpura, the functional area does not produce azurophilic
granules and it may even become hyalinized. According to Schwarz’s analysis of megakaryocytes in
essential thrombocytopenic purpura, these cases fall into three groups: those with intact granulopoiesis,
which are the common type; those with functional disturbance of granulopoiesis, and those with de-
generation and destruction of megakaryocytes. The type with hyalinization of the functional area may be
due to deficiency of some substance necessary for megakaryocytic granulopoiesis. It is to be regretted that
this important article was not illustrated with colored plates.

O. P. J.

Contribution to the Pathology of Thrombocytopoiesis. F. Holmanský. From the Department of
Medicine, Hospital of Charitable Sisters, Prague. Čas. lék. čes. 86: 232, 1947.

In accordance with Jasiński (Schw. med. Wschr. 12.18, 1944), the megakaryocytes were classified into
six groups, namely: megakaryoblasts, promegakaryocytes, basophile megakaryocytes, transitional
forms, granular megakaryocytes and nude nuclei.

In five cases of thrombocytopenia, the megakaryocytic formula was the following:
Case 1. Myelophthisic anemia due to radium, with leukopenia and thrombocytopenia. Formula:
0 - 1 - 3 - 15 - 77 - 4
Case 2. Acute thrombocytopenic purpura. Formula: 2 - 12 - 15 - 24 - 48 - 0
Case 3. Recurrent essential thrombocytopenia. Formula: 1 - 3 - 7 - 16 - 72 - 1
Case 4. Essential thrombocytopenia. Formula: 0 - 2 - 5 - 8 - 79 - 6
Case 5. Hypersplenic thrombocytopenia in splenomegalic cirrhosis. Formula: 1 - 4 - 5 - 6 - 81 - 3
No relation could be found between the intensity of the morbid state, the appearance and number of
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platelets and the distribution formula of megakaryocytes in the bone-marrow; nor was hypersegmentation or vacuolization of megakaryocytes in any way connected with the specific thrombocytopenic syndrome. In many cases of disturbed thrombocytogenesis, no changes at all could be observed in the megakaryocytes in the bone-marrow.

M.N.


The use of phase microscopy makes possible a method by which the cytology of living and dying cells can be studied without the interference of fixatives. Zollinger has recently reported changes observed of tumor cells in vivo and in vitro with the phase microscope (Am. J. Path.). Buchsbaum has utilized a similar approach to determine which fixatives yield preparations most representative of the living cell. His studies were limited to salamander macrophages grown in tissue cultures. Certain fixatives like absolute alcohol, Carnoy's and Bouin's solutions distort the cytoplasm more than the nucleus. Formalin alone in alkaline solution was a better fixative than either of these and better than formalin in acid solution. The best general fixatives were Zenker-formol and Zenker-formol-osmic, the latter being the better of the two. Although phase microscopy alone has not revealed any new structure which had not been preserved by the better fixatives, it does offer a means of checking the rationale for using them.

O.P.J.


Because there is convincing evidence that tissue mast cell granules contain heparin, quite a few articles have been published recently dealing with observations on the chemical cytology of these cells. The present article extends this knowledge by demonstrating that mast cell granules contain phospholipin, peroxidase and lipase.

O.P.J.


The author of this article has performed over 1000 aspirations of the iliac crest bone marrow, and presents his findings and technic with the thesis that marrow puncture, when indicated, can be performed easily, safely, and advantageously at the iliac rather than the sternum region. In 216 of the 1000 patients, comparative studies were done on samples of marrow obtained simultaneously from the two sites: the normal marrow picture was identical at both locations, and, when the marrow was abnormal, the pathologic alterations usually occurred in parallel fashion in both areas.

The advantages of the iliac crest over the sternum, according to the author, include (1) safety, since no vital organs underlie the ilium; (2) ease of performance, by virtue of less pain and less apprehension than at the sternum; and (3) ease of repetition.

Of especial interest were those diseases of the marrow in which there was patchy involvement of the bone: certain leukemias, osteosclerosis, myeloma, neoplastic infiltration. In several such cases, diagnosis was made by iliac aspiration after a sternal puncture was fruitless. (In others, the reverse was true.) The iliac bone bears no special virtue in such cases: presumably, in such diseases, marrow aspiration at various portions of the sternum and at the spinous processes—as well as at the iliac crests—may be required to obtain diagnostic information. The statement, therefore, that, in a number of cases of malignant infiltration of the bone marrow, neoplastic cells “were seen more often in the iliac than in the sternal aspiration” is somewhat startling and will bear substantiation.

The ilium, spinous processes, and sternum are now commonly used sites for puncture-aspiration of the bone marrow. In selected cases, multiple punctures in these sites may prove of value over single punctures at any one site. (See Loge: Blood 3: 198, 1948, and Dameshek: Blood 3: 209, 1948.)

S. E.
ERYTHROCYTES AND ERYTHROCYTIC DISEASE


The 49 year old man whose case history is reported in this paper showed nocturnal hemoglobinuria for a period of ten days, beginning twenty-four days after multiple transfusions. He exhibited persistent hemoglobinuria without diurnal variation during the oral administration of iron, but at other times he was free of hemoglobinuria.

Serum heated to 56° C. was shown to have an inhibitory effect on hemolysis of the patient’s cells in vitro, and the intravenous administration of 400 cc. of heated serum was followed by a cessation of hemoglobinuria for thirty-six hours.

The number of cells susceptible to acid hemolysis was computed and correlated with the effect of transfusion and the reappearance and cessation of hemoglobinuria. However, judging from the data presented, it is evident that the occurrence of hemoglobinuria is influenced by some factor in addition to the number of susceptible cells present.


The finding of free hydrochloric acid in the gastric secretion of a 2.3 year old girl who appeared to have typical Addisonian pernicious anemia led the author to attempt to satisfy all criteria as to diagnosis and to exclude other types of macrocytic anemia. The subject appeared to have pernicious anemia because of a typical reticulocyte response to refined liver extract followed by a rise in the erythrocyte count and hemoglobin. The only atypical finding was an MCHC of 27.6 per cent, which is not explained. Later, a relapse was induced by withdrawing liver, which resulted in reappearance of anemia and macrocytes. Biologic assay demonstrated a lack of extrinsic factor in the gastric contents. The failure to find megaloblastic change in the marrow makes the case not quite complete, but is readily explained since marrow examination was not made until seventeen days after treatment. Megaloblastic changes did not occur during the partial relapse. The author believes that it is possible to conclude that true pernicious anemia can and does occur in persons with free hydrochloric acid in their gastric juice, and therefore: that achlorhydria is not essential to the development of true pernicious anemia.


Studies of the peripheral blood, particularly the red cell morphology of idiopathic steatorrhea, are reported. The most consistent abnormalities were the increase in mean cell diameter, an increase in the diameter-thickness ratio and an increase in resistance to hemolysis in hypotonic saline. The mean corpuscular hemoglobin concentration was below normal in most instances. In 4 of 17 cases studied, the sternal marrow was indistinguishable from that of pernicious anemia. In the remaining 13, the sternal marrow showed a mixture of iron deficiency normoblasts and large atypical normoblasts. Fecal urobilinogen was increased in 5 of 11 patients studied. There was no consistent response to therapy with refined and crude liver, B complex, iron, and a variety of other agents. The authors discount the similarity of the anemia of idiopathic steatorrhea to pernicious anemia and the unitarian theory of the etiology of macrocytic anemias in general, a concept which in its strict interpretation has already been challenged by the discovery of the Wills factor.

The authors conclude that the similarity of the anemia of idiopathic steatorrhea to pernicious anemia is largely superficial.

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This article discusses in a general way the structure of the red cell and hemolytic mechanisms with special reference to osmotic resistance. Fetal erythropoiesis and normal red cell values in infancy and childhood are also reviewed. References are well chosen and bring the subjects dealt with up to date relating to pediatrics hematology.

C.A.F.


These observations were made on prisoners in concentration camps in Terezín, Bohemia. Under extremely difficult conditions, the author succeeded in performing blood examinations in 50 "healthy" male prisoners; the red blood cells were almost normal in number but they were distinctly macrocytic, with color index of 1.1 to 1.3. These blood examinations were supervised by Professor Hirschfeld who, himself, was one of the prisoners. This macrocytosis seems to have been conditioned by a deficiency in amino acids and vitamins, but no definite conclusions could be reached in view of the impossibility of exact scientific investigation.

M.N.

Reticulocytes, Examined by the Darkfield Method. F. Lehovec. From the 3rd Medical Clinic, Charles University, Prague. Čas. lék. čes. 86: 11, 1947.

Reticulocyte studies were made by the darkfield method, described by A. Nizet (Acta med. Scand. 1944). The identification of reticulocytes by the darkfield method of microscopy was very easy, the granulofilamentary substance appearing in the form of spots and threads of varying size and of yellow-greenish hue.

Fifty healthy young men and women between 18 and 38 years were examined by this method; the percentage of reticulocytes was higher than with the usual method using 1 per cent solution of brilliant cresyl blue (darkfield 5 to 36 pro mille, brilliant cresyl blue 0.5 to 14 pro mille).

M.N.

Development of Heinz Bodies. M. Rejsek. From the Clinic of Occupational Diseases, Charles University, Prague. Čas. lék. čes. 86: 1183, 1947.

The development of Heinz bodies could easily be followed in rabbits poisoned by dinitrobenzene. This toxic agent, administered to the animals in the daily dose of 20 mg./Kg., provoked a hemolytic anemia with a steady decrease of hemoglobin and the red blood cells so that by the seventh day the number of red blood cells fell to one fifth of the original count. Heinz bodies appeared in the red cells as soon as the second day; they were attached to the surface of the cell by a kind of pseudopod which finally disappeared, and the Heinz body was set free to circulate in the blood stream. Nile blue sulfate was the best dye for the supravital staining of the Heinz bodies.

M.N.


Plasma iron determinations were made in patients suffering from various blood dyscrasias. Decrease of plasma iron was found in acute or chronic blood loss (37 cases), in chlorosis (1 case), in hypochromic anemia (5 cases), in polycythemia (5 cases) and in chronic leukemia (8 cases); increase of plasma iron was found in aplastic anemia (6 cases) and in pernicious anemia (16 cases).

Influence of treatment on plasma iron was very marked in some cases; increase could be observed in chronic leukemia and in polycythemia following x-ray therapy; decrease to subnormal values occurred in pernicious anemia following liver therapy.

M.N.

This is an additional report emphasizing the occurrence of neurologic relapse in patients with pernicious anemia under treatment with folic (pteroylglutamic) acid. Two patients, aged 78 and 62, respectively, showed good hematologic, clinical, and, initially, neurologic remissions during treatment with folic acid. In both instances, numbness and tingling of the extremities improved; and in the second case, where drowsiness, confusion, and irrationality were present, these symptoms also disappeared. On maintenance doses of folic acid, however (10 mg. daily by mouth), paresthesiae recurred; and these and other neurologic symptoms and signs progressed despite increase in the dosage of the drug. Liver extract was ultimately given instead to each patient, with apparently satisfactory response.

It is of interest in these, as in other similar cases, that the paresthesiae initially present disappear on treatment with a drug which subsequently allows their redevelopment. One wonders whether originally the paresthesiae were not, perhaps, on a noncentral basis; and that at the time of their recurrence—together with vibratory sensation changes, position sensation changes, etc.—they are due to a lesion different from that which caused them initially. At any rate, liver extract, and not folic acid alone, seems necessary for the satisfactory clinical treatment of such cases.

HEMOGLOBIN AND HEMOGLOBIN METABOLISM


The authors conducted a series of experiments in rabbits combining right nephrectomy and left renal artery occlusion with or without the subsequent injection of stroma-free hemoglobin. The results show that hemoglobin per se is not toxic and that renal damage must precede a detrimental effect from either hemoglobin or its derivatives.


The authors critically discuss recent publications and maintain their formerly given opinion that methemoglobin and sulfhemoglobin have to be considered as the primary reason for cyanosis in sulfonamide treatment. They agree, though, that under special conditions further causes may intervene.


The results of hemoglobinometry, obtained with Sicca hemometer were compared with those of Sahl's acid hematin method and of the photometric procedure of Heilmeyer-Mutius; with the Sicca hemometer and the photometric procedure, oxyhemoglobin is reduced to hemoglobin by sodium hydrosulfite.

Sicca hemometer proved to be the most reliable apparatus of hemoglobinometry; it was more exact than the procedure of Heilmeyer and Mutius. Sahl's method, using acid hematin, is very unreliable and should be discarded from scientific laboratory work.

The results obtained with any one of the procedures were compared according to statistical methods.


The solubility of the so-called indirect bilirubin in chloroform was discovered by Dèrer and the author in 1947, independently of Ylppö (1913) and Grunenberg (1913); the nature of this phenomenon has not yet been elucidated.

In cancerous sera, bilirubin may be soluble in ether. This unusual property of the blood bilirubin, observed first by Ascoli (1935) and Albers and Merten (1940), has been found to be fairly constant and may be of some use in discriminating calculous and cancerous obstruction of the common bile duct. Further studies in this direction are desirable.
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BLOOD TRANSFUSION

From the State Health Institute and the Maternity Department of the City Hospital, Prague. Čas. lék. čes. 86: 1517, 1947.

A description of three successfully performed exsanguination transfusions is given. All were Rh positive infants born of Rh negative mothers and free Rh antibodies could be demonstrated in their sera in a high titer; the sera of their mothers contained Rh antibodies in a high titer as well.

A simple syringe technic was used in these transfusions. Native blood of the donor was given into the left saphenous vein (in the third case also into the cubital vein) and the blood was let out from the opened right radial artery or its branch. In the first case, 430 cc. of blood were transfused and 300 cc. of blood were withdrawn; as this proved not to be sufficient, the transfusion was repeated so that a total of 880 cc. of blood were transfused and 470 cc. withdrawn. In the second case, 450 cc. of blood were transfused in one session and 380 cc. of blood withdrawn. In the third case, 590 cc. of blood were transfused and 430 cc. withdrawn. The transfusion lasted from 50 to 90 minutes. The results were satisfactory; all three patients did well. No heparin was used.

M.N.


Denatured veal plasma was prepared according to the method indicated by Massons (Lancet 2: 341, 1946); the denaturation of plasma proteins was effected by formalin and heat. This liquid was completely devoid of any antigenic or toxic properties, it had the same usual colloid osmotic pressure as before, and did not provoke any sensitization in the recipient's body. The denatured veal plasma can therefore be considered a most perfect substitute of human blood or plasma for transfusion purposes, it is claimed.

M.N.


The distribution of blood groups has been determined in 6478 inhabitants of Bohemia. The results were: Group O, 37.8 per cent; group A, 41.5 per cent; group B, 14.1 per cent; group AB, 6.6 per cent; subgroup A1, 89.3 per cent; subgroup A2, 10.7 per cent; subgroup A1B, 70 per cent; subgroup A2B, 30 per cent; group M, 33 per cent; group N, 15 per cent; group MN, 52 per cent.

Among the universal donors, only 20 per cent had a low agglutinin titer.

M.N.


The author preserved and stored placental blood taken from 1000 parturient women and found the procedure to be harmless to the mother as well as to the baby. This blood was safely used in 57 transfusions performed in the hospital or elsewhere and its biologic value was found to be perfect; the same resulted from physicochemical and biologic investigations of the placental blood, performed by the author. Its high content in hemoglobin, calcium and hormones makes it very suitable for transfusion purposes; the absence of isoagglutinins or their low titer makes the transfusion of placental blood a safe procedure. There is no danger of sensitization if repeated transfusions are administered. The cost of the placental blood is insignificant and the technic is simpler than that of taking venous blood.

By storage of placental blood, the task of a blood donor service is made easier and the realization of a satisfactory transfusion service even in small county hospitals is facilitated. All maternity hospitals and all departments of obstetrics should store placental blood systematically and ought thus to be included into the network of the transfusion service. With two thousand deliveries yearly, it could be possible to store at least one hundred liters of blood and in this way, the maternity hospital should be able to supply the whole district. The technic of preservation and storage of the placental blood is simple and can easily be performed anywhere.

M.N.

During certain preliminary experiments it was noticed that the virus of foot-and-mouth disease survived longer in citrated blood than in defibrinated blood. Brookby has shown that the presence of calcium ions in guinea pig blood or serum hastens the inactivation of the virus at 37°C. Other 'decalcifying' anticoagulants, such as sodium fluoride and potassium oxalate, had the same effect as citrate in that the inactivation was prolonged. The virus in heparinized and defibrinated blood behaved similarly. Further studies may reveal that the effect of the Ca ion may be direct on the virus, or it may be on some enzyme system.

O.P.J.

LEUKOCYTES AND LEUKOCYTIC DISEASE

NEUROLOGICAL MANIFESTATIONS IN LEUKEMIA. J. Libunský and E. Ponča. From the 1st Medical Clinic and the Clinic of Nervous Diseases, Charles University, Prague. Čas. lék. &s. 86: 11-44, 1947.

Three cases of leukemia with involvement of the C.N.S. are reported in this paper.

Case 1. A male of 36 years. Severe headache for three weeks, followed by impaired vision of the right eye, nausea and signs of meningeal irritation. Acute myelogenous leukemia with 73.6 per cent myeloblasts was found at blood examination. Autopsy revealed a tumor-like infiltration of the C. N. S., especially of the dura mater on both the convexity and the base.

Case 2. A male of 21 years. Intercostal neuralgia, followed fourteen days later by signs of spinal compression; blood examination revealed the presence of acute myelogenous leukemia with 44 per cent myeloblasts. Autopsy showed an epidural infiltration of Th.1 to Th.111. On the inner side of the sternum, a flat tumor 7 x 4 cm. was found, consisting of oxidase positive myeloid elements; this subternal tumor, as well as the epidural infiltration and the bone-marrow had a definite greenish color, so that the leukemia proved to be of a chloromatous character.

Case 3. A man of 53 years, suffering from chronic lymphatic leukemia, developed herpes zoster; the histologic examination, performed at autopsy, showed a massive leukemic infiltration of the intervertebral ganglion and of the nerves supplying the area affected by the herpes zoster.

The authors reviewed the literature and collected about 300 cases of leukemia showing neurologic symptomatology. The neurologic lesion most frequently observed in leukemia is a spinal cord lesion resulting in paraplegia; next in frequency follows hemiplegia caused by cerebral hemorrhage and leukemia with signs and symptoms of a cerebral tumor, with or without papilledema. Lesions of the cranial nerves, especially the 7th, bulbary paralysis, damage of the Gasserian ganglion, lesions of other cranial nerves, peripheral nerve lesions, symptomatic herpes zoster and meningeal lesions are less frequently encountered.

The leukemic lesions of the C.N.S. are due to leukemic infiltration or to hemorrhage; primary degenerative changes, analogous to funicular myelosis of pernicious anemia, are quite exceptional and their existence would be acceptable in only some cases, associated with severe anemia of long duration.

M.N.


This authoritative article deals in section 1 with the various investigative approaches to treatment of neoplastic disease, and with methods of evaluating the effect of test substances on tumor tissue. Section 2 summarizes the evidence for the experimental use of biologic products (bacteria, molds and protozoa, urine and tissue preparations, vitamins, hormones), cell poisons (nitrogen mustards, urethane, colchicine, podophyllin) carcinogenic agents, radioactive substances and miscellaneous compounds (dyes, heptaldehyde, stilbamidine, enzyme poisons).

Of practical interest is the discussion of clinical use of these agents, particularly the detailed discussion of nitrogen mustard therapy of blood dyscrasias and lymphoma. The author also comments on effectiveness of radioactive phosphorus, urethane, and Fowler's solution in this regard.

C.A.F.
ABSTRACTS

TEMPORARY REMISsIoNs IN Acute LEUKEMIA IN CHILDREN PRODUCED BY FOLIC ACID ANTAGONIST, 4-AMI

The authors report on 16 infants and children with acute leukemia treated with aminopterin. In this
group, 10 showed clinical, hematologic, and pathologic evidence of improvement. Detailed accounts of
the 5 most favorable cases are given. The observations extend for no longer than three months after the
beginning of therapy. Stomatitis with ulceration was mentioned as a toxic manifestation of the drug.

While the immediate effect of aminopterin on the course of leukemia is dramatic in some instances,
the preliminary nature of this report and the severity of the toxic manifestations of this drug should
be emphasized.

C.A.F.

DIFFUSE PlAsMA CELL MYEL0S1s: REPORT OF A CASE IN WHICH IT SIMULATED APLASTIC ANEMIA ON POST-
MORTEM EXAMINATION. S. E. Schwartz, B. E. Armstrong, E. Loefler and W. Mavrelis. From the Depart-
ment of Pathology and the Hektoen Institute for Medical Research, Cook County Hospital, Chicago,

If a case of multiple myeloma has a diffuse involvement of the marrow without an infiltration of other
organs, the examining pathologist might be misled by the gross appearance at necropsy. The authors
report such a case which had a diffuse myelomatosis of the marrow without any localizing lesions, tumor
formation or peripheral plasmacytosis.

O.P.J.

Plasmocytic Leukemia. F. Lebovec. From the 3rd Medical Clinic, Charles University, Prague. Čas. lék.

A rare observation of plasmocytic leukemia in a man of 42 years is reported. Duration of the disease,
from the onset, was fourteen months. The blood picture showed a slightly macrocytic anemia, moderate
leukocytosis of 38,000 and 62 per cent myeloma cells.

M.N.

TREATMENT OF MULTIPLE MYELOMA WITH "STILBAMIDINE"; CLINICAL RESULTS AND MORPHOLOGIC
Changes. By I. Snapper. From the Mount Sinai Hospital, New York, N.Y. J. A. M. A. 137: 513–516,
1948.

At the original time of this report (June 1947) some 35 patients with multiple myeloma had been
treated with stilbamidine, a compound found to be effective in kala-azar, and originally tried in myeloma
because of the common factor of hyperglobulinemia in the two otherwise unrelated conditions. Dramatic
relief of pain is recorded by the author in some cases, and at least partial relief was noted in 80 per cent
of his cases. There was no effect, however, on the underlying disease itself, or on its biochemical altera-
tions (Bence-Jones proteinuria, hyperglobulinemia). As previously noted, the striking finding was the
development in the cytoplasm of myeloma cells—and in these cells only—of granules which consisted of
a conjugate of stilbamidine with the ribonucleic acid of these cytoplasms. The specificity of the stil-
bamidine for such cytoplasm suggested a fundamental characteristic of the plasma cell which distin-
guished it from all other blood cells. The relationship to either the cause or the treatment of the disease,
however, was still to be determined.

S.E.

Observations in Guineas Following Injection of Specific HEMATOPOIETIC SUBSTANCES DERIVED
FROM Urine oF HUMAN LeukEMIC SUBJECTS. A. Sawitsky and L. M. Meyer. From Department of Therape-

Extracts of urines from patients with myeloid or lymphoid leukemia were prepared by chloroform
extraction. These were separated into carbinols and noncarbinols by succination. Ether was used in a
second type of extraction. Guinea pigs were injected either subcutaneously or intramuscularly. Examina-
tion of lymph nodes, spleen, liver, adrenals, kidneys, lung and bone marrow showed varying degrees of
hyperplasia and infiltration depending upon the extract. Carbinol (lymphoid) extracts produced a specific
lymphoid reaction and noncarbinol (myeloid) extracts produced a specific myeloid reaction. The results of these experiments justify further attempts to purify and concentrate the active factors involved.

O.P.J.

Cycloc Agranulocytosis. R. Maratova. From the 2nd Medical Clinic, Charles University, Prague. Čas. lék. čes. 86: 1546, 1947.

In a girl of 15 years, suffering from agranulocytosis following immoderate use of amidopyrine (548 grams within one year), a marked recurrence of fever, leukopenia and appearance of necrotic areas in the gums could be observed in connection with the menstrual periods. Penicillin and transfusion were ineffective, but it was found that folic acid and pyridoxine were followed by a complete disappearance of all signs and symptoms.

M.N.

THE SPLEEN


This is a general review which, for convenience sake, has assembled the splenomegalies into the following groups: Those of circulatory origin, mechanical, metabolic, blood dyscrasias, unknown nature, and finally, neoplastic and cystic splenomegalies. This excellent article has drawn upon material obtained from 2,3,792 necropsies at the Bellevue Hospital during the past 30 years.

O.P.J.


Certain neoplasms, consisting of an abnormal mixture of the normal components of an organ, have been referred to as hamartoma ever since the term was proposed by Albrecht in 1904. Kirkland and McDonald studied splenic neoplasms removed surgically and found 3 cases which seemed to fall into this category. One of the outstanding features of each specimen was the ramifying spaces or channels lined by endothelium. It has been suggested that this is a specific benign tumor and that perhaps some hemangioma of the spleen previously reported actually belonged to this group.

O.P.J.


Since Barcroft’s demonstrations in 1923-1925 that the spleen of dogs is capable of storing large quantities of blood for use in emergencies (exercise, administration of epinephrine), the reservoir function of the human spleen has been considered correspondingly well established. Little experimental verification of this thesis, however, has been offered.

In the present report, Nylin tested whether severe muscular work could be shown to result in splenic contraction and emptying of the postulated stored blood in human adults. He injected blood containing labelled red blood cells (labelled with radioactive phosphorus) into 5 healthy men, and took blood samples in ten and again in fifteen minutes after the injection. The subject was then made to do severe muscular work, and two further blood samples were taken; the first at 25-31 minutes, the second at 27-39 minutes. All samples were subjected to radioactivity determinations in a Geiger-Müller counter. It had previously been shown by the author that the radioactivity of the blood remains constant for at least 60 minutes after such an injection; hence, the volume of the circulating red cells could be measured by the radioactivity of the blood. Presumably, if any reservoir of blood was present which responded to the severe muscular exercise, discharge of red cells from this reservoir would change the radioactivity of the circulating blood.

Nylin found, actually, that there was no change in the specific activity of the blood after exercise within the time studies. For all the patients, the mean circulating cell volume before work was 4,406 ml., as compared with 4,472 ml. after work; and the mean circulating total blood volume before work was 4,934 ml., as compared with 4,855 ml. after work. Since the amount of the red cells was unchanged, it
was concluded that there was no reservoir which empties red cells into the circulation after work. This result is in contrast with the work of Barcroft (on dogs), and with the commonly held opinions that epinephrine contracts the spleen and thereby increases the number of circulating red cells. If verified, these conclusions would be of great importance.

S.E.

BLOOD COAGULATION AND HEMORRHAGIC DISEASES


This is a clinical report of the cessation of severe gastric hemorrhage in two cases following the introduction into the stomach of a solution of topical thrombin.

Especially impressive is the dramatic cessation of repeated massive, almost-exsanguinating hemorrhage in the first case, a 64 year old man with a prepyloric ulcer. This patient bled repeatedly and severely despite rest, sedation (including the desperate use of pentothal sodium intravenously), epinephrine, vitamin K, parenteral feeding. As a final measure, 10,000 units of thrombin mixed with 2.5 cc of isotonic sodium chloride solution were given orally, and repeated three times daily for five days. No bleeding occurred after the first dose of thrombin, and the patient progressively improved.

Although it is impossible definitely to demonstrate cause and effect in a case of this type, the clinical data strongly suggest that the thrombin was responsible for the cessation of gastric hemorrhage, and recommend its further trial in other similar cases.

S.E.


According to the authors, this is the second recorded instance of the development of thrombocytopenia following the use of quinidine. (Less rare is thrombocytopenia following quinine.)

The patient was a 57 year old woman who received 0.6 grams of quinidine daily because of supraventricular tachycardia in hypertensive-rheumatic heart disease. After she had taken 6.0 grams of the drug in 11 days, she began to bleed from the gums, and was found to have petechiae, ecchymoses, thrombocytopenia (4,000 platelets per cu.mm.), increased bleeding time, positive capillary fragility tests, and poor clot retraction. In the bone marrow, megakaryocytes were normal in number and appearance, and the differential count of the marrow cells was normal. A blood transfusion was given, and the patient made a rapid recovery. Subsequently, a test administration of 0.1 grams of quinidine resulted in an identical exacerbation of the syndrome.

S.E.


The authors suggest the feasibility of using reconstituted lyophilized plasma in the emergency treatment of excessive hypoprothrombinemia due to over-dicumarolization.

The prothrombin time of such plasma was found to be normal (12.7 to 15 seconds; control 12 to 16 seconds), and the administration of 500 cc. of such plasma to 13 patients with high prothrombin times (43.0 to 97 seconds) was found to cause a prompt return of the prothrombin time of the patients' plasma to "safe" levels (actually, 22 to 38 seconds). The effect was transitory, however, and in some patients had disappeared by as little as six hours. Since none of the patients in the group had clinical bleeding, any effect on the hemorrhage of hypoprothrombinemia could not be ascertained.

The method may be added to the more conventional ones for emergency treatment of over-dicumarolization; viz., the use of synthetic vitamin K, and the transfusion of whole blood. It would have been of interest to determine how small an amount of plasma suffices to shorten the prothrombin time.

S.E.