ABSTRACTS

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BLOOD GROUPS


According to the author’s definition ABO-antibody is incomplete when it is unable, without centrifugation, to agglutinate red cells of group A or B in a noncolloidal saline medium, even though it combines with the red cells. Activation of incomplete ABO-antibody requires a lower concentration of the colloidal medium than activation of incomplete anti-RH. Umbilical cord serum has approximately the same completing properties as adult serum. Incomplete ABO-antibody is able to agglutinate red cells in a saline medium after centrifugation at 2,000 to 4,000 r.p.m., but the agglutinates thus formed will disperse in about fifteen minutes.

The amount of complete ABO-antibody which passes the placenta is minimal, and the fact that an umbilical cord serum is able to agglutinate A or B cells suspended in saline solution does not prove that it contains the complete type of antibody at all, because umbilical cord serum can activate incomplete antibodies.—M. S.


Platelets and leukocytes from A-group donors contain the heterophil J antigen which is practically lacking in the homologous plasma. The heterophil J, R, and A antigens are found at a level from four to eight times higher than is human antigen A. Adsorption experiments were done with highly purified platelet and leukocyte preparations.—J. D.

INACTIVATION OF GROUP D (RH0) IN VITRO. PART II. B. Friedmann and J. Hoenigová. From the First Medical Clinic, Charles University, Prague, Czechoslovakia. Cas. p. lék. ces. 95:1118-1120, 1956.

Human red blood cells, incubated for one hour with a 0.1 per cent solution of HN2, could not be agglutinated any longer with complete antibody anti-D; they reacted only with an incomplete antibody anti-D in the indirect Coombs test. They behaved like D+ positive red blood cells. If the incubation with a 0.1 per cent solution of HN2 was repeated three times, the indirect Coombs test with incomplete antibodies anti-D became negative; they behaved like rh negative (dd) red blood cells. Methyl-bis (beta-chloroethyl) amine hydrochloride was unable to inactivate the D agglutinogen.
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Of 14 guinea pigs immunized with human red cells possessing the inactivated D (Rh0) agglutinin not a single one produced complete antibodies anti-D; in the control group, 11 out of 12 guinea pigs produced complete antibodies anti-D.

Red blood cells of the Macacus Rhesus monkey were not inactivated by HN, and they still induced the formation of antibodies anti-D.—M. N.


There are at least nine well established blood group systems, and our knowledge about the antigenic properties of the human erythrocyte is well advanced. In contrast, known individual differences outside the "blood groups" in body fluids and tissue cells are rare. The authors stress that this discrepancy may be due to the fact that erythrocytes can be more conveniently used in agglutination tests than tissue cells and secretions.

Sera from certain patients with rheumatoid arthritis agglutinated group O Rh-positive red cells coated with selected "incomplete" anti-Rh antibodies. Human serum could be grouped by agglutination-inhibition tests in this system. The inhibitor was located in the gamma-globulin fraction. The serum group phenotypes were designated Gm. (a+) and Gm. (a-). In 360 healthy Swedish adults about 60 per cent were found to be Gm. (a+), 40 per cent Gm. (a-), whereas in Eskimos 95 per cent of the sera tested were Gm. (a+). These serum groups were found to be hereditary, and the family data presented suggest an autosomal, unifactorial inheritance.—M. S.


The Diego blood factor was found in 8 out of 65 Japanese from various regions of Japan. In 100 Chinese from Canton five were Diego-positive (5%). Other blood systems studied in Japanese are reported. The incidence of the D* antigen found in Asiatic Mongoloids was related with the previous findings in South American Indians. It was pointed out that this factor is rather Mongoloid than Indian. The Diego factor is considered as part of a new blood system (Diego blood system), which could be the tenth group system firmly established.—M. A. J.


In cord blood, Le* and Le° could not be demonstrated, whereas the factor X of Andre sen and Jordal was found to be present. Le(a+) develops during the first postnatal weeks, and thereafter is found in about 90 per cent of infants during the first months of life. The incidence of Le(a+) then gradually decreases until the age of two years, when the same incidence as in adults is found. Le(b+) is relatively uncommon in infants and children under six years of age. Le(a+b+), unknown in adults, is fairly common in infants during the first months of life. According to the author's hypothesis, factor X is an independent factor which either forms part of the Lewis system or is intimately related to it. —M. S.

LEUKOCYTES

AN ELECTRON MICROSCOPIC OBSERVATION OF BLOOD CELLS. Yonosuke Watanabe. From the Dept. of Pathology, School of Medicine, Keio University, Tokyo. Acta Haem. Jap. 19:327-341, 1956.

Various blood cells of animals and man, normal and diseased, were examined by
electron microscopes using ultra-thin section, and the characteristic features of their fine structure were presented in photographs. In the neutrophils of man and guinea pig, two types of specific granules were distinguished, i.e. granules of lower density (A-granule) and those of higher density (B-granules). Besides these granules, there were small empty granules (C-granule) scattered throughout the cytoplasm. In cat neutrophils B-granules were not observed, while C-granules were more abundant than in guinea pig and man. The eosinophilic granules in the eosinophils of man and guinea pig were thought to be spherical or biconvex lenslike bodies, which possessed on their equatorial plain a square plate of various thicknesses and sizes. In the eosinophils of cats, however, the structure of the granules differed apparently from those of man and guinea pig. The electronmicrographs of the cells from the patients with various types of leukemia were also demonstrated.—K. M.


Phase-contrast microscopic studies were made on various blood cells of man and animals in particular reference to the features of plasma cells and myeloma cells. The endoplasmic reticulum of plasma cells was distributed throughout the cytoplasm except the Golgi zone. It seemed to swell, break up into pieces, and make up vacuoles filled with various amounts of protein. The Russel body was thought to be the one of these vacuoles retaining a great amount of protein. The same findings were observed in the myeloma cells. On the contrary, hyaloplasm of all types of lymphatic cells and neutrophilic cells except promyelocytes showed only homogenous structure. The structure of Golgi body in plasma cells was composed mainly of a fine filament-like substance which seemed to be attached to the centrioles, while that in lymphocytes, segmented granulocytes, and myeloblasts was found meager developed.—K. M.


The bone marrow of normal men and of leukemia patients who were treated with P$^{32}$-phosphate, after it was cultured for 24 hours in medium containing one of such isotopes as P$^{32}$-phosphate, C$^{14}$-1-glycine, Fe$^{59}$-chloride, Fe$^{56}$-chloride, S$^{35}$-methionine and others, was studied by the single cell autoradiography. The results were presented as an autoradiographic hemomyelogram with each of the radioisotopes. In general, those isotopes were proved to be taken in all of the bone marrow cells except the reticulum cells, showing some noticeable features of each one. Early uptake of considerable amount of P$^{32}$ was observed in younger cells. Specific high uptake of C$^{14}$ was noted in polychromatic macroblasts, normoblasts, and myeloblasts, while large amounts of Fe$^{59}$ and Fe$^{56}$ was observed in macroblasts and proerythroblasts. However, in lymphocytes including young cells, there was no incorporation of Fe$^{59}$, Fe$^{56}$ and Se$^{75}$. This finding might contribute to the differentiation of young lymphocyte from myeloblast. In addition, it was also shown autoradiographically that the lymphocytes and plasma cells in the bone marrow and the lymph nodes of sensitized rats had special affinity to the $^{131}$ labelled anti-rat bone marrow serum of rabbit.—K. M.


Cellular movements and rate of growth of bone marrow in animals and man with various blood disorders were studied microcinematographically in cultured samples. The
results were presented in special references to clinical diagnosis of leukemia, hypoplastic anemia and allied diseases. The excessive outgrowth with lack of motility of marrow cells in leukemia made up a characteristic appearance of high density of accumulated cells, marking a sharp borderline to the outside zone, while in hypoplastic anemia the growth was meager and the density was of lower grade. Characteristic movements of each blood cell were also demonstrated. After therapeutic splenectomy, megakaryocytes in idiopathic thrombocytopenia regained their motility and function of platelet separation. A simple method for bone marrow culture designed by authors was presented.—K. M.

**Utilization of Sulfate Ion by Eosinophile Myelocytes in the Rat.** R. C. Greulich.

The peak concentration of sulfate accumulation in marrow following a single intraperitoneal injection of 100μC. S₈ had occurred in the epiphyseal cartilages, then the bone matrix, and finally less intensely in the marrow. While all mast cells contained a sulfur-labeled cytoplasmic component, megakaryocyte and eosinophile myelocytes were not uniformly labeled. Differences in morphology between reactive and unreactive megakaryocytes were not apparent. However, eosinophile myelocytes which contained an S₈ label appeared to be immature. When barium hydroxide-saturated formalin was used as a fixative, only eosinophile myelocytes remained reactive. It is interesting that the formation of sulfur-labeled material in eosinophile myelocytes occurs in the cytoplasm of only a part of the total population of these cells. This fact, coupled with the relative immaturity of the reactive cells, suggests that the labeling proceeds during a precise period in the developmental history of the cell, and does not continue after the cell has attained a specific stage of maturity.—O. P. J.


The role of the lymphocyte in normal and experimental hematopoiesis has been debated for over six decades by the anatomists and biologists on the one hand, and the clinical pathologists and hematologists on the other. The existing lack of agreement has been due to differences in the source of material, technics, and the general lack of quantitative methods for the estimation of lymphocytes in blood, lymph, and tissues. The present paper describes a method which shows promise in the latter direction. The number of lymphocytes is determined in a unit mass of bone marrow from guinea pigs having a constant body weight around 400 Gm. The total marrow volume contains 3,000 by 10⁶ lymphocytes, most of which are small in size. They presumably come to the bone marrow from the blood stream. It is interesting to note that, four hours after a single injection of Leukocytosis Promoting Factor (Menkin), there is a discharge of granulocytes and an uptake of lymphocytes from the blood. In this and other experiments, qualitative changes were noted in the lymphocytes, as seen in dry smears, which point very strongly to the small lymphocytes as a stem cell. All of which reminds us that the lymphocyte problem is not a dead one.—O. P. J.


In the last 10 years the author had opportunity to observe 80 cases. According to the Trewartha's nomenclature, the climate of Recife, a seaport in the Northeastern part of Brazil, is classified as “American monsoon rainforest climate.” No influence was observed in reference to age, type of work, or social-economic status. No connection with allergy was suspected in any case. The tropical eosinophilia presented itself as a chronic benign
process characterized by daily nocturnal nonproductive persistent cough with variable amount of wheezing and expiratory dyspnea. The physical signs suggest an asthmatic bronchitis with slight enlargement of the lymph nodes and seldom a palpable spleen. A diffuse motting (15 per cent of the cases) or an accentuation of the bronchovascular striations and a hilar enlargement are the usual x-ray pulmonary changes. In the blood there is an intense eosinophilic leukocytosis. The clinical and blood picture are sensitive to preparations of organic aromatic arsenic compounds.—M. A. J.

LEUKEMIA


In this last paper the author discusses in some detail the evidence for and against the view that leukemia is a malignant disease, and presents his impressions "of the disease as judged from my own experience, and these will include observations on manifestations, diagnosis, prognosis, course and treatment." This is a most interesting survey of leukemia.—G. C. de G.

A CASE OF MYELOID RETICULOSIS. D. E. L. Wilcken. From the Department of Pathology, Sydney University, Sydney. M. J. Australia 1, 204-207, 1956.

This paper reports the clinical and pathological findings of a 25-year old woman with a three years' history of chronic myeloid leukemia terminating acutely in widespread reticulum cell sarcoma. It is considered that this is a case of so-called "myeloid reticulosis," and that it supports the contention that myeloblasts derive from primitive reticulum cells.—G. C. de G.


A diagnosis of chronic lymphocytic leukemia was made and confirmed in a 30-year old woman on the basis of typical physical, blood, bone marrow, and node biopsy findings. The patient lived for seven years, during the course of which she received x-ray and symptomatic therapy during a number of clinical relapses. At the age of 34, during such relapse, the blood and bone marrow showed no evidence of leukemia, and a node biopsy now showed "malignant lymphoma, lymphocytic type." She subsequently developed lytic bone lesions at the skull and vertebral column and died despite supportive therapy and the use of nitrogen mustard. Autopsy showed Hodgkin's sarcoma throughout the body, but no evidence of leukemia. The author could find only five cases of chronic lymphocytic leukemia plus Hodgkin's disease in the literature. Certainly, in this case, there was no initial evidence for Hodgkin's disease and indisputable evidence for lymphocytic leukemia. There was no evidence for lymphocytic leukemia at autopsy 7 years later.—S. E.

CHRONIC MYELOGENOUS LEUKEMIA: UNUSUAL BONE CHANGES IN AN ADULT. D. G. Clements and E. H. Kalmon. From the Department of Radiology, Oklahoma City Clinic and Wesley Hospital, Oklahoma City, Oklahoma. Radiology 67:399-403, 1956.

The patient reported was a 47-year old female with chronic myelogenous leukemia who showed extensive lytic lesions of various parts of the skeletal system for the two years before her death. Such lesions were seen in the femur, ribs, spine, shoulder girdles, pelvis and skull. Pain was the chief symptom and was regularly relieved by local irradiation. Autopsy confirmed the diagnosis and ruled out carcinoma and myeloma. The photographs are very striking; the skull, especially, strongly resembles myeloma. Only seven instances of destructive bone lesions were found in the English literature in adults with myelogenous leukemia.—S. E.
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The smell of the breath was noted by the author and at least one other medically qualified observer in 73 cases of leukemia. A peculiar sweet odour like that of a freshly opened corpse was noted in 12 cases of acute leukemia (9 myeloid, three monocytic). There was no obvious clinical involvement of the gums, mouth, or upper respiratory and alimentary tracts. The cause of the sign is uncertain, but it may be helpful in diagnosis.—R. H. G.


In the last few years various authors have shown considerable interest in the study of the role of indole and its derivatives in the pathogenesis of malignant growth. Special attention has been paid here to 5-oxy-indolylacetic acid and serotonin (the 5-oxytriptamin).

In the present work we have undertaken the study of the contents of indolo-like substances in the blood of patients suffering from leukemia. In all, we conducted 139 investigations of 53 patients.

By means of a color reaction of p-adimethylaminobenzaldehyde with alcoholic extracts from the plasma of patients with different forms of leukemia we discovered indole-like substances with great constancy.

The chromatographic analysis showed that the substance giving a positive color reaction in the test tube is not a real indole. In contrast to indole, it shows on the chromatograms as a yellow-colored spot located comparatively close to the center of the circular chromatogram.

At the present time it is not possible to identify the given substance with this or that derivative of indole. However, taking as our basis the RF indexes we may assume that it is 5-oxyindolylacetic acid or serotonin—A. A. B.


In a group of 35 children with leukemia the authors studied the blood urea nitrogen and uric acid levels, urinalyses and urea clearance. An attempt was made to do the studies at various stages of the disease. In 14 instances a correlation of the results with autopsy findings was attempted. Impaired renal function could not be demonstrated by the methods employed. In 13 of 14 patients was evidence of renal infiltration at autopsy. These findings are in keeping with most clinical experience. Although renal involvement is to be expected in almost all patients with acute leukemia of childhood, detectable evidence of renal failure is unusual although it may be encountered on rare occasions.—N. J. S.


The purpose of our study is to investigate the morphologic manifestations connected with leukemia in the female reproductive organ, with the use of Papanicolaou’s smear technic. The authors have worked out the results of investigations of vaginal cytograms from the women with leukemia. Summarizing the results of their studies they conclude that the leukemic process decreases the existing hormonal function of the ovaries, in the first place giving to the cytograms the appearance characteristic for hypohormonal smears. In the cases of primary distinct hypofunction of the ovaries it deepens the decrease of their activity. In the course of intensification of the leukemic process, the leukocytic component of the cytogram seems to become less abundant, while in the period of remission it is more so.—J. A.
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