

ABSTRACTS

WILLIAM H. CROSBY, Lt.Col., MC, U.S.A., *Editor*

ABSTRACTERS

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LEUKOCYTIC ACTIVITY

LEUKOCYTES LABELED WITH RADIOPHOSPHORUS: TRANSFUSION TO MAN AND ANIMALS AS RESULTED FROM EXPERIMENTS CARRIED ON FOR THREE YEARS. *B. Maupin, A. Loverdo, R. Chary, R. Theilleux and J. Storck*. *Revue de Pathologie Générale et Comparée* 55: 450-461, 1955.

The fate of transfused leukocytes is a problem which deserves further investigation. An attempt was made to elicit the nature of the organs which take part in their removal from the circulation.

After separation and concentration by a new method, white cells from human blood were tagged "in vitro" by radiophosphorus.

In rabbits transfused with labeled human leukocytes after twenty minutes the maximal radioactivity is present in their lungs, as expressed by the differential absorption rate. In dogs and guinea pigs this selectivity is less definite. In man, the transfusion of tagged leukocytes provides a direct demonstration of the rapid partial sequestration by the lungs. Radioactivity in circulating blood falls off more quickly than when radiophosphorus is injected as an inorganic solution.

Biochemical controls indicate limitations in stability of radiophosphorus labeling of leukocytes in vitro, but the present results appear reliable for a limited space of time.—*J. D.*

STUDIES ON THE "BLOOD STREAM PHASE" OF GRANULOCYTES BY A METHOD USING A FLUORESCENT INDICATOR. THE REGULATING ROLE OF THE LUNG. *J. Lissac, G. Mathe and J. Bernard*. From the Centre de Recherche de l'Association Claude Bernard, Hôpital Herold, Paris. *Rev. franç. Etudes clin. et Biol.* 1: 630-642, 1956.

On 61 occasions, a subject's own polymorphonuclear leukocytes were rendered fluorescent with quinacrine and their distribution in the body followed by blood and organ smears.

Histologic evidence that polymorphs do not remain in the blood stream, but are to be found for part of their life span in vascular pools, was confirmed. The length of the blood stream phase in various species has been established, not exceeding 40 minutes in rabbits, dogs or humans; it is interrupted by a hold-up in the lungs. This hold-up is not prolonged beyond a few hours, leukocytes being found in appreciable numbers only in spleen and liver during the two days after injection.

It appears that the lungs regulate the number of circulating leukocytes. In 10 experiments with histamine leukopenia in rabbits, the blood stream phase was shortened, diminishing with the degree of leukopenia; the lungs are the main, if not the only site of polymorph hold-up during a leukopenia. In 10 experiments with adrenaline leukocytosis

(5 rabbits, 5 dogs), the lungs were an important source of the released polymorphs, particularly during first few minutes.

The blood stream phase of polymorphs was studied in 50 patients with various leucocytic abnormalities.

It is prolonged in: (a) polymorph leukocytosis of infection and of acute renal insufficiency; (b) leukemias, irrespective of the number of circulating leukocytes; (c) leukopenia due to marrow aplasia. It is shortened in splenic neutropenia, splenectomy returning the duration to normal. This effect of the spleen on the blood stream sojourn of neutrophils is not due to a hold-up of cells in the organ, but appears to play an indirect role, probably affecting the hold-up in the lungs.—*J. D.*

THE ROLE OF NEUTROPHILIC GRANULOCYTES IN THE DEFENCE SYSTEM OF THE BODY. *E.*

Fritze. From the Medizinischen Universitätsklinik Göttingen. *Dtsch. Med. Wchnschr.* 81: 601-604, 1956.

Based on a review of recent reports in the medical literature and on his own research the author has attempted to define the role of the neutrophilic granulocytes within the defense system of the body in response to external trauma and irritation. The task of the granulocytes is not restricted to a removal of bacterial and other noxious agents by phagocytosis and intracellular break down. Rather they fill the role of an endogenous activator in the reaction of the organism to external irritations. The hypothesis is formulated that an external irritant, by producing changes within the granulocytes, causes the activation of endogenous enzyme systems. This produces, the release by proteolysis of substances with pyrogenic, leukotactic and similar action on blood vessels. These substances stimulate the body's reactions against the irritant.—*M. H. H.*

THE MECHANISM OF ARTHUS REACTIONS. I. THE ROLE OF POLYMORPHONUCLEAR LEUCOCYTES AND OTHER FACTORS IN REVERSED PASSIVE ARTHUS REACTIONS IN RABBITS.

J. H. Humphrey. From the National Institute for Medical Research, Mill Hill, London, N.W. 7, England. *Brit. J. Exper. Path.* 36: 268-289, 1955.

The Arthus reaction contains two elements, the local combination of antigen with antibody and the introduction of a foreign protein. By using reversed passive Arthus reactions in rabbits made leukopenic by nitrogen mustard, the cellular invasion in the first part of the reaction was studied. Histologic examination showed that rapid minor damage to the vascular endothelium was accompanied by adherence of platelets and neutrophilic leukocytes. This was followed by a massive infiltration of neutrophils which increased vascular damage and impeded lymphatic drainage. Finally there was an invasion of the site by macrophages.—*O. P. J.*

THE MECHANISM OF ARTHUS REACTIONS. II. THE ROLE OF POLYMORPHONUCLEAR LEUCOCYTES AND PLATELETS IN REVERSED PASSIVE REACTIONS IN THE GUINEA PIG. *J. H.*

Humphrey. From the National Institute for Medical Research, Mill Hill, London, N.W. 7, England. *Brit. J. Exper. Path.* 36: 283-289, 1955.

In order to ascertain whether the neutrophilic accumulation at sites of reverse passive Arthus reaction was similar in other species, the guinea pig was selected because its response to acute anaphylaxis is different from the rabbit. Leukopenic states were produced not by nitrogen mustard because of its toxicity, but by antisera developed against neutrophilic leukocytes and platelets. Histologic examination showed that neutrophils are essential for the formation of gross edema at the reaction sites, but not for the rapid anaphylactic increase of capillary permeability. In the absence of platelets, the severity of such reactions was somewhat increased.—*O. P. J.*

MAST CELLS AND THEIR RELATIONSHIP TO ENDOTHELIAL SURFACES. *V. J. McGovern.* From

Fairfax Institute of Pathology, Camperdown, New South Wales, Australia. *J. Path. & Bact.* 71: 1-6, 1956.

It has been shown in rats that the peritoneal surface has a structure similar to that of vascular endothelium, and that, like vascular endothelium, it reacts to injury by the in-

creased production of the surface protein film. More severe injury causes the addition to the surface film of a metachromatic substance which contains a spreading factor. The intercellular cement lines are incorporated into the resulting metachromatic film. After injection of a histamine-release agent there appears in the intercellular cement lines of peritoneal and vascular endothelium, a metachromatic material with spreading properties and this is accompanied by disappearance of the granules of the subendothelial mast cells. In human blood vessels, the disappearance of the granules of the subendothelial mast cells after death is accompanied by the appearance of bubbles of metachromatic material in the intercellular cement lines of the endothelium. These lines then gradually spread in the same way as those induced experimentally in the rat. It is postulated that capillary permeability is partly due to a spreading factor, produced by mast cells, which acts on the surface protein layer of the endothelium.—*O. P. J.*

THE INFLUENCE OF HEPARIN ON NEUTROPHILIC GRANULOCYTES. *E. Fritze and F. Wendt.*

From Medizinische Universitätsklinik, Göttingen, Germany. *Klin. Wchnschr.* **33**: 719-722, 1955.

The ability to engulf heat-killed staphylococci, and the electrophoretic mobility of the leukocytes were measured under standard conditions. Leukocytes were obtained from sterile peritoneal exudates produced in rats by intraperitoneal injection of bacterial lipopolysaccharide or from fresh human blood. In concentrations of about 10^{-4} heparin has no marked influence on leukocyte function in whole blood in vitro or in vivo; large concentrations (10^{-2}) diminish the phagocytic activity whilst the electrical surface properties remain unaltered. Heparin in concentrations of 10^{-3} stimulates the phagocytic activity of cells from peritoneal exudates and increases their electrophoretic mobility.—*M. H. H.*

NATURE OF THE CYTOPLASMATIC NET IN GRANULOBlasts AND EOSINOPHILIC GRANULOCYTES OF HUMAN, NORMAL BONE MARROW. *E. G. Rondanelli, P. Gorini, and G. C. Zorzoli.*

From the Istituto di Clinica Medica e Terapia Clinica, and the Istituto di Anatomia umana normale e istologia, University, Pavia, Italy. *Rivista di istochimica norm. e patol.* **1**: 287-298, 1955.

The presence of a thin net, including the specific granulations, in the cytoplasm of myelocytes, metamyelocytes and eosinophilic granulocytes in the human bone marrow, was previously demonstrated and identified as polysaccharide in nature. The researches presented in this paper further analyze this problem, by applying a number of histochemical reactions. The results obtained indicate that such a net should be ascribed to glycoproteins or mucoproteins.—*P. d. N.*

A CRITICAL STUDY OF THE KURLOFF BODY IN GUINEA-PIGS. *S. K. Sen and B. P. Tribedi.*

From the Department of Pathology, Medical College, Calcutta. *Ind. J. M. Res.* **43**: 201-215, 1955.

First described by Kurloff in 1898 as "a vacuole-like structure in large mononuclear leukocytes" of guinea-pigs, the Kurloff body has since been variously regarded as a specialized secretory substance of the cell itself, as an accessory nucleus, as parasitic body or as a cell inclusion.

The authors studied blood films of 75 normal guinea-pigs and came to the conclusion that the Kurloff body represents a phagocytic mononuclear cell with an engulfed eosinophil undergoing intracellular disintegration. Kurloff body appears to present a variegated appearance and the structural pattern varies widely explaining the five variants described by the authors. Kurloff body in different stages of its evolution is liable to be mistaken for a monocyte or an eosinophil. The authors suggest that in the differential count of guinea-pig leukocytes Kurloff body should be counted as a separate entity.—*J. B. C.*

LEUKOCYTES—NONMALIGNANT DISEASES

INFECTIOUS LYMPHOCYTOSIS. *D. Galbraith*. From The Royal Children's Hospital, Orthopaedic Section, Frankston, Melbourne, Australia. *M. J. Australia 1*: 230-232, February, 1956.

Three cases of infectious lymphocytosis are described. The pattern graphs of the absolute number of lymphocytes show uniformity, and there is a rather dramatic fall which commences within about ten days. The three children were in close ward contact, and the interval of approximately twenty days between the "prefall" lymphocytic peaks suggests that there could have been progressive infection of these three children from one to another at an interval of approximately twenty days. The later occurrence of pertussis in one child in the same ward and of six children in another ward was noted. The author suggests "very tentatively and without sufficient statistical evidence," that there is a relationship between infectious lymphocytosis and "subclinical" pertussis.—*G. C. de G.*

THE EFFECT OF TRANSFUSION OF BLOOD FROM PATIENTS WITH TROPIC EOSINOPHILIA INTO HUMAN VOLUNTEERS. *R. N. Chaudhuri, J. B. Chatterjea, M. N. Rai Chaudhuri, and P. Sen*. From the Departments of Tropical Medicine and Hematology, School of Tropical Medicine, Calcutta. *Bulletin Calcutta School of Tropical Medicine 4*: 112-113, 1956.

Transfusion of 200 to 750 ml. of blood from patients suffering from tropical eosinophilia (total eosinophil count varying from 5,100 to 12,876 per cu. mm.) with lung symptoms into 3 apparently normal subjects failed to induce eosinophilia or signs and symptoms of the disease during a follow-up period of 2 to 7 months.—*J. B. C.*

CLINICAL AND MORPHOLOGICAL FINDINGS IN LEUKEMOID REACTION. *K. Seige and W. Jansen*. From the Medizinische Universitätsklinik, and the Pathologisches Institut der Universität, Leipzig, Germany. *Deutsch. Arch. klin. Med. 202*: 446-458, 1955.

This is an analysis of 87 cases showing leukemoid blood pictures. The underlying diseases were malignant or infective conditions in 40 per cent each; the remaining 20 per cent occurred in miscellaneous conditions such as diabetes, hemolytic jaundice and noninfective renal disease. Some of the cases show a white-cell picture closely resembling a leukopenic type of acute leukemia, but erythropoiesis was not as often impaired as in leukemias. In nine cases extramedullary hematopoiesis was found; these cases were not confined to any single group. In 15 of the 36 neoplastic cases there was evidence of bone-marrow metastasis. The difficulty of differentiating this syndrome from leukemia and possible reasons for its development are discussed.—*M. H. H.*

THE BLOOD PICTURE IN RUBELLA. *F. K. M. Hillenbrand*. From West London Hospital Medical School, London, England. *Lancet 2*: 66-68, 1956.

The studies were chiefly in the Falkland Islands during an epidemic. An initial neutropenia and lymphopenia was seen in rather less than half the cases. At later stages lymphocytosis was infrequent and polymorphonuclear leukocytosis almost absent. The outstanding feature was the regular occurrence of Türk and plasma cells which in uncomplicated rubella were invariably present up to the 10th day and usually persisted for many months. An increase in monocytes occurred. Degenerate lymphocytes, about the size of monocytes, were seen and usually appeared as the Türk and plasma cells diminished. In conjunction with lymph gland enlargement the results of routine white-cell examinations are sufficiently characteristic in rubella to permit a confident diagnosis even if infection is subclinical. This may be very important where it is necessary to protect a pregnant woman, who has been exposed to infection, by passive immunization. If Türk cells or plasma cells are not found there is no need to fear damage to the offspring of a pregnant woman or to consider the advisability of a therapeutic abortion.—*R. H. G.*

The Other Journals of Hematology

Sangre, Vol. 1, No. 3, 1956. Editor J. Guasch, Copernico 68, Barcelona. J. Bousser and P. Boivin: Waldenstrom's macroglobulinemia. I. Gatto: Paper electrophoresis in the diagnosis of the hereditary anomalies of hemoglobin. G. Gelin: Basophilic-cell leukemia. A case report and review of the literature. M. Jamra, T. Verrastro and V. Maspes: Platelet agglutinins. II. Platelet immunoagglutinins. Technique of investigation. Preliminary observations. F. Parreira: Observation of Gaucher's cells by the fluorescence microscope. R. Starcich: Anatomico-clinical contribution to the understanding of the fibrosclerosis of the bone marrow.

Folia Haematologica, Vol. 74, No. 3, 1956. Editor: Prof. Dr. Victor Schilling, Schröderplatz, Rostock, Germany. Symposium on the Structure and Function of the Red Blood Cells. Berlin, January 21 & 22, 1955. Part B: Metabolism of the Red Blood Cells. F. B. Straub: Potassium storage and ATP. S. Mányai: ATP metabolism of the red cells. H. Matthies: Catabolism of cell substrate in red cells. R. Coutelle: The substantia reticulo-filamentosa. R. Lindigkeit: Nuclease activity in the reticulocytes of dogs. F. Jung: True and false reticulocytes in anemia. R. Rind: Kinetics of erythroblast enucleation. K. Smetana: Alterations in vitro of nucleated erythrocyte of the frog maturation of reticulocytes. W. Strassner: In vitro ripening of reticulocytes. H. Gebauer: Prolongation of the life span of the red cell by vitamin B₁₂. S. Rappaport: Respiratory exchange in the maturation of erythrocytes; activators and inhibitors. E. C. G. Hofmann: Hemolytic injury and coenzyme-splitting enzymes. E. Goetze: Studies in glutathione metabolism. H. Matthies: Effect of formaldehyde on methemoglobin formation in red cells. R. Stodtmeister, St. Sandkühler and Th. Fliedner: Pathogenesis of acute bone marrow atrophy in rats after whole body irradiation with fast electrons.

Vol. 74, No. 4. W. Widow: Diverse patterns in myeloid insufficiency (Attempt at classification on the basis of clinical and pathologic findings). G. Galts: Leukosis frequency and leukosis forms. W. Frenger and F. Scheiffarth: Occurrence of leukocyte precipitins in acute leukemia. A. Mörer and W. Krueger: Leukocyte changes during "prophase." H. Zürn: Studies on clotting activity of snake venoms and Tachostytan as contribution to physiology of thrombokinase formation. L. István and P. Jilly: Experiences with hemophilia B (Christmas disease or PTC deficiency).

Blut, Vol. 2, No. 4, 1956. Editor: G. Blumenthal, Föhlerstrasse 2, Berlin N65. G. Blumenthal: Fifty years of the Wassermann reaction. R. Burkhardt: Myelotomy—a new method for routine cytologic-histologic bone marrow biopsy. L. Contier: Vital fluoro-staining of human blood and bone marrow with acridine orange. G. Ruhenstroth-Bauer, K. Schmidt and R. Zeininger: Alteration of erythrocyte volume by digitonin. J. Jungwirth: Value of demonstration of blood types P and K and Rh with subgroups. J. Jürgens: Saline tolerance test for disclosure of latent clotting disturbances. Heparin tolerance test without heparin. H. Weise and H. Lohse: Plasma cells and serum proteins in plasmacytoma. K. Heindl: A bottle and test tube holder for blood collection. E. Gisinger and H. Vetter: Therapy with colloidal iron saccharate (Review).

Revue d'Hématologie, Vol. 11, No. 4, 1956. Editor: M. Bessis, 6, Rue Alexandre-Cabanel, Paris (XV^e). B. Dreyfus: Drug-induced hemolysis. J. Moullec: Weak variants of blood group A. R. J. V. Pulvertaft and J. G. Humble: Bone-marrow culture on revolving slides. S. Piomelli and F. Schettini: Experimental studies of the anticoagulant and fibrinolytic action of trypsin administered parenterally. R. André, B. Dreyfus and Ch. Salmon: Immune antileukocytic antibodies after transfusion; agglutinating, lytic and opsonic properties. A. Delaunay, M. Pelletier, M. Henon and S. Bazin: Agglutinins acting on starch grains and yeast. I. The "natural" starch agglutinin. O. Wartelle: Comparative study of the factors required for thromboplastin formation in the blood of man and rabbit. A. Aeberhardt: A new micromethod for separating the formed elements of the blood. M.

Bessis: Techniques and tricks of photomicrography in color. G. de Brion: The culture of leukemic tissues.

Le Sang, Vol. 27, No. 8, 1956. Editor: F. Émile-Weil, 24 bis, Ave. du President-Wilson, Paris (XVI^e). M. Netoušek and J. Berman: Porphyrinuria and porphyria. P. Chevallier and A. Fiehrer: The plasmal anticoagulants. A. Aschkensay and C. Neveu: Quantitative changes of the blood neutrophils and lymphocytes caused by experimental adrenalectomy. J. Leprat and J. Bernard: Blood disorders and endocrine troubles. J. Bernard, E. Undritz, Bru, G. Mathé and J. Toulouse: Homozygous Pelger anomaly in man. P. Michon, P. Louyot, R. Dornier, J. de Wyn and F. Streiff: Myeloma with lobate nuclei. E. R. Gold: Specificity of hemagglutination by microbial suspensions. P. Michon, R. Dornier, J. de Wyn and A. Peters: Myelogram in metastatic bronchogenic anaplastic epithelioma. J. Ruffié and J. Ducos: A passive hemagglutination reaction in the study of hypogammaglobulinemia and agammaglobulinemia. J. Comsa: Effect of a purified thymus extract on leukopoiesis in thyroidectomized guinea pigs.

Problems of Hematology and Blood Transfusion, Vol. 1, No. 5, 1956. Editor: A. A. Bagdasarov, Institute of Hematology and Blood Transfusion, Moscow, USSR. A. A. Bagdasarov, P. M. Al'perin, M. Ia. Anshevits and R. I. Rodina: Condition of the hematopoietic system in patients subjected to gastric resection. G. A. Alekseev: The problem of the so-called surgical anemias. F. E. Fainstein: Some clinical and therapeutic problems of aplastic and hypoplastic anemias. D. M. Grozdov: Rational use of blood, its components, and blood substitutes in surgical practice. B. V. Petrovskii: Blood transfusion in thoracic surgery. V. A. Negovskii: Arterial forcing of the blood under conditions of hypothermia. F. P. Vinograd-Finkel': Clinical significance of transfusion of blood preserved with substances that enhance its therapeutic properties. A. G. Fedotenkov and F. I. Bolotnikova: Study of the effects of anti-cytolyzing (antihistaminic) substances on mold fungi in tissue preservation. H. M. Karro: Significance of investigation of the stability of skin capillaries in the selection of donors.

Haematologica, Vol. 41, No. 10. Editor: P. Introzzi, Policlinico San Matteo, Pavia. G. Cavalli, C. Cacciari and A. Manaresi: Modification of epithelial tissue; the relation with lymphocytic infiltration. S. Biondi: Leukocytic alkaline phosphatase concentration in experimental subacute benzol poisoning. M. P. Carinci: Several cases of giant follicle lymphadenopathy. U. Salera and G. Tamburino: Iron metabolism in relation to normal erythropoiesis. IV. Plasma iron turnover.

Vol. 41, No. 11. R. Curletto, M. Ciconali and F. Santi: Nucleus of the plasma cell in normal and pathologic conditions. A. Notario and D. Meduri: The effect of ATP on the development of lymphoid organs of the inbred rat. C. Bernasconi: Quantitation of hemoglobins by starch electrophoresis. G. Tamburino, P. Magnanelli and U. Salera: Autoradiographic studies of the incorporation of P³² into RNA of embryonic erythroblasts.

Vol. 41, No. 12. R. Curletto and F. Pellò: The concentration of "plasma reticulum" in agammaglobulinemic syndrome. G. Marinone, D. Meduri, L. Petronio and G. Puricelli: Influence of plasma factors on the bone marrow's erythropoietic activity. G. Musotto and G. De Feo: Experimental transfusion siderosis. M. Baldini, A. Tizianello and G. Cambiaggi: Puncture and forceps biopsy in the diagnosis of lymphadenopathies.

Acta Haematologica, Vol. 17, No. 2, 1957. Secty. H. Lüdin, Burgerspital, Basel. Y. Bounameaux: Studies on the mechanism of formation of blood thromboplastin (Fr). C. Steffen, F. Fessl and H. Schindler: Influence of cortisone on the course of the antigen-antibody and autoantibody reactions (Ger). K. E. Fichtelius: Mechanism of post-hemorrhagic lymphocytosis. K. E. Fichtelius, H. Gisslen and O. Hassler: Mechanism of lymphocytosis following pertussis vaccination. M. H. Hörder and J. Pileggi: Modification of thrombus adhesion by leukocytes of chronic leukemic myelosis (Ger). E. T. Van Der Pol, H. K. Kettenborg and S. I. De Vries: A modification of the "thrombin generation test." P. Pinna

Pintor and V. Grassini: Individual and seasonal spontaneous variations of haematological values in normal male rabbits. Statistical survey.

Vol. 17, No. 3. G. Astaldi and L. Verga: The glycogen content of the cells of lymphatic leukemia. H. Braunsteiner and F. Pakesch: Electron-microscopic observations of the granules of human leukocytes (Ger). B. Lüderitz: Intracellular India-ink accumulation in pathologically enlarged lymph nodes (Ger). Marianne Albrecht: Thrombocyte formation in megakaryocytes in human bone-marrow culture (Ger). A. M. Marmont and S. Giacca: A technical improvement of direct platelet counting by phase contrast microscopy: a special "thin-bottom" counting chamber. Inga Marie Nilsson: Recurrent hypoprotrombinaemia due to poisoning with a dicumarol-containing rat-killer. J. A. Horster: A case of chronic erythroblastophthisis with remarkable suppression of lymphocytes (Ger).

BLOOD CLUB MEETING: The annual meeting of the Blood Club will be held on Sunday evening, May 5, in the Vernon Room of the Haddon Hall Hotel. The topic for discussion will be "Fundamentals and Practical Aspects of Transplantation of the Marrow." All interested persons are invited to attend.