ABSTRACTS

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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:

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 leuk-
cytes 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 FLU-
ORESCENT 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

On 61 occasions, a subject’s own polymorphonuclear leukocytes were rendered fluoro-
resent 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 experi-
ments with histamine leukopenia in rabbits, the blood stream phase was shortened, di-
m-inishing 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

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(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 leucocytes; (c) leukopenia due to marrow aplasia. It is shortened in: (a) polymorph leukocytosis of infection and of acute renal insufficiency; (b) leukemias, irrespective of the number of circulating leucocytes; (c) leukopenia due to marrow aplasia. 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.


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 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.


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.


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 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^-4 stimulates the phagocytic activity of cells from peritoneal exudates and increases their electrophoretic mobility.—M. H. H.


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.


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 secretery 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 intraellular 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 macrocyte 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.
ABSTRACTS

LEUKOCYTES—NONMALIGNANT DISEASES


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.


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.


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 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.


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


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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.