BOOK REVIEW

BLOOD PLATELETS: STRUCTURE, FORMATION AND FUNCTION. Series Haematologia
Available from:
Williams and Wilkins Company
Baltimore, Maryland 21202
Pages: 181
Price: $11.00

Series Haematologia is a journal edited in Denmark and published simultaneously in that country and the United States. Each issue features comprehensive articles on a given subject of hematologic interest. The volume here under discussion contains five papers on blood platelets by well-known authorities in the field.

The first of these is a detailed review of blood platelet ultrastructure by Dr. Torstein Hovig. Dr. Hovig's contributions to platelet physiology in recent years have been of great significance. An exceptionally well-illustrated survey of the ultrastructure of normal platelets is followed by a section on electron microscopy of platelets in hemostasis, thrombosis, coagulation, and in response to aggregating agents. Interesting correlations between structure and function are presented throughout the text, and the bibliography is extensive.

The second article, by Dr. Shirley Ebbe, contains an analysis of current theories of megakaryocytopoiesis and platelet turnover. Megakaryocytes have now been studied by a number of technics—including electron microscopy, labeling with tritiated thymidine, observations on stem cell behavior following bone marrow transplantation, and measurements of DNA on a microscale. All of these have provided new and interesting information on the production and maturation of megakaryocytes. A working model of megakaryocytopoiesis is presented, and the characteristics of the stem cell pool, the committed stem cell, the polyploid cell, and actual platelet production are discussed. The latest information regarding platelet survival time, platelet depots, and the regulation of platelet concentration is also presented. Finally, possible clinical implications of this recent knowledge are elucidated. For example, the myeloproliferative syndromes may represent a proliferation of the pluripotential stem cell compartment. On the other hand, aplastic anemia may result from an underproduction of hematopoietic cells based on a stem cell defect. The bibliography is up-to-date and critically selective.

A detailed discussion of platelet adhesiveness by Dr. Arvid Hellem ensues. Dr. Hellem's early contributions to the study of platelet adhesiveness and aggregation literally opened a new area of research: he and his colleagues were able to show that adenosine diphosphate (ADP) is the principal substance involved in platelet adhesion-aggregation reactions. The first part of the present article surveys the various methods currently employed in the study of platelet adhesiveness. The literature on the uses and results of these tests is then reviewed. There have been numerous studies on the mechanism of platelet adhesion and aggregation reactions. A large variety of drugs have been tested in the search for an inhibitor of platelet aggregation; and such tests have also been used to study patients with hemorrhagic and thrombo-embolic disorders. It is pointed out that our general knowledge of platelet adhesion-aggregation reactions has vastly increased during the past decade. While it appears that there is an increase in platelet adhesiveness in disorders associated with thrombo-embolic complications, the search for an ideal therapeutic agent to reduce platelet adhesiveness and possibly the tendency to thrombosis must continue. An excellent bibliography follows this chapter.

The next contribution is a presentation of the screen filtration pressure method in platelet research by Dr. Roy L. Swank. This interesting technic appears to be an alternative method for measuring platelet adhesiveness and aggregation. It is sensitive to such
drugs as ADP and serotonin but probably offers no particular advantages over standard methods currently employed.

The final article contains a discussion of platelet phagocytosis by Drs. Mustard and Packham. Some years ago Dr. Mustard’s group showed that platelets in platelet-rich plasma are capable of engulfing polystyrene particles. They actually demonstrated the presence of particles within platelets by electron microscopy. In addition, they have shown that during the phagocytic process platelets release ADP and other intracellular components. This process is further enhanced if the particles are first coated with gamma globulin; under these conditions the release reaction is even more prominent and platelet degranulation occurs. Furthermore, the platelets release a factor which increases blood vessel permeability. The recent finding that platelets contribute to the rejection of kidney transplants is also discussed. Drugs which inhibit the response of platelets to antigen-antibody complexes such as cortisone and phenylbutazone appear to be capable of reversing the rejection process.

In conclusion, this volume of Series Haematologica is a comprehensive and informative summary of recent knowledge in the field of platelet physiology and biochemistry. It is highly recommended to all those seeking such information.—Aaron I. Marcus, M.D.

BOOKS RECEIVED FOR REVIEW

1. Vascular Diseases by M.J. Tsapogas, V.V. Kakkar and E.N. Gleave
   Available from: Charles C Thomas
   301-327 East Lawrence Ave. Pages: 178
   Springfield, Illinois Price: $8.50

2. Surgery of Acquired Vascular Disorders by Benjamin B. Jackson
   Available from: Charles C Thomas
   301-327 East Lawrence Ave. Pages: 479
   Springfield, Illinois Price: $22.50

3. Selective Arterial Catheterization, Diagnostic Therapeutic and Investigative
   by Howard Richard Bierman
   Available from: Charles C Thomas
   301-327 East Lawrence Ave. Pages: 602
   Springfield, Illinois Price: $15.75

4. Relocation of DNA in Micro-Organisms (Vol. 33)
   Available from: The Cold Spring Harbor Laboratory of Quantitative Biology
   Cold Spring Harbor, New York Pages: 884
   Price: $20.00

5. Macrophages and Immunity by D. S. Nelson
   Available from: John Wiley & Sons, Inc.
   605 Third Avenue Pages: 333
   New York, New York 10016 Price: $35.00

6. Direct Blood Transfusion by John A. McLean
   Available from: Australasian Medical Publishing Co. Ltd. Pages: 61
   Sydney N.S.W. 2037, Australia Price: None Quoted