

The Anesthesiologist's Bookshelf

Edited by MEREL H. HARMEL

Body Fluid Replacement in the Surgical Patient
(An International Symposium, 1969). EDITED
BY CHARLES L. FOX, JR., AND GABRIEL G.
NAHAS. New York, Grune and Stratton, 1970.
Pp. 374.

This important monograph represents the proceedings of an international symposium held in May 1969, sponsored by the Departments of Surgery and Anesthesiology of the College of Physicians and Surgeons, Columbia University, in association with the Division of Medical Sciences, National Research Council. The main body of this work deals with the requirements of the surgical patient following operation. In addition, considerable attention is paid to the metabolic and circulatory effects of trauma and hemorrhage in man. Furthermore, an appropriate re-examination of the basic physiologic principles of parenteral nutrition is carried out, with special emphasis on solutions for parenteral feeding of high caloric content. As usual in such symposia, following each presentation or group of presentations there is considerable discussion in which problems not touched on by the speakers are brought out. This frequently results in clarification, differences in opinion, and controversy which enliven the whole enterprise. The volume is divided into four basic sections: I) blood replacement; II) colloid replacement; III) water and electrolyte replacement; IV) long-term parenteral feeding.

In the first section, the alterations in water, colloid and electrolyte distribution, as well as the hemodynamic and renal effects of hemorrhage and blood replacement in both experimental and clinical settings, are explored. The metabolic effects of massive blood transfusion in combat casualties are discussed at length. An excellent chapter on the effect of burns on the erythrocyte and the causes of burn anemia is presented.

Section II deals with the physiologic factors resulting from colloid replacement in the surgical patient as they affect colloid osmotic pressure and body water distribution. The use of natural and artificial colloids for restoration is thoroughly considered. The problem of serum hepatitis as it relates to the use of pooled human plasma and whole blood from professional donors is examined in detail. The effects of synthetic plasma expanders such as gelatin, dextran, and hydroxyethyl starch on blood viscosity, coagulation, and hemostasis are

presented. In addition, there is an excellent chapter on Dextran-40 anuria produced in animal models with hemorrhagic hypotension.

The third section, concerned with water and electrolyte replacement, explores the basic physiologic principles of such replacement and considers the effects of surgery and trauma on the maintenance of water balance, particularly as this relates to vasopressin (ADH) liberation. The role of the renin-angiotensin system and its effects on renal blood flow and function, especially under the stress of hemorrhage, are clarified. The role of electrolyte therapy in the prevention of these changes is covered in detail. The remainder of this section is devoted to the rationale (based on physiologic principles) for the use of balanced electrolyte solutions and their effects on metabolism in the surgical patient.

The important breakthrough in parenteral hyperalimentation utilizing carbohydrates and proteolysates for long-term parenteral feeding is examined in the light of basic principles and clinical experience in Section IV. This therapy has enabled the physician, for the first time, to achieve weight gain, positive nitrogen balance, growth and development in patients. The use of fat emulsions for complete intravenous nutrition, largely abandoned in this country because of untoward reactions, is re-examined on the basis of new data obtained by Jacobson and Wretling from Sweden. An excellent chapter on fluid therapy in the pediatric patient which describes special problems in this group with formulae for their requirements is well documented. While this book admirably brings the reader up to date on body fluid replacement in the surgical patient, it is also clear, as the authors have indicated, that more work is necessary to solve the manifold problems of replacement therapy in man. It is quite obvious that all the solutions to problems of replacement therapy in man have not been found.

This volume is highly recommended to all practitioners of anesthesiology and surgery for it contains a wealth of material, well presented, in an area of great importance.

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