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BOOK REVIEW

Thrombus and Stroke

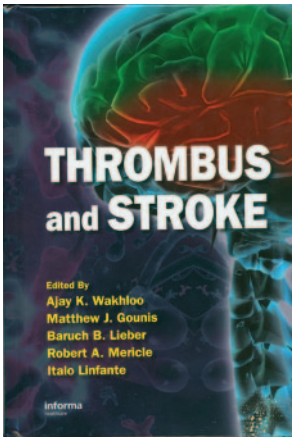
A.K. Wakhloo, M.J. Gounis, B.B. Lieber, R.A. Mericle, and I. Linfante, eds. New York: Informa HealthcareUSA; 2008, 232 pages, $149.95.

This book deals with stroke, the third leading cause of death and the leading cause of disability in the United States, affecting 700,000 individuals every year. The understanding of the pathophysiology of stroke is directly related to a full comprehension of the processes leading to thrombus formation and the dynamic interactions of thrombus with the circulatory system. Understanding these relationships is essential if one is to apply current and future concepts of imaging and intervention in stroke. For these reasons, a book that explores the relationship of stroke and thrombus formation should be of interest to anyone involved in the care of patients with stroke. With this in mind, I reviewed *Thrombus and Stroke*, edited by Wakhloo et al, with great interest.

This is a single-volume 232-page textbook (including the index). The editors of this text are well-established experts, widely known to the neurointerventional community. Also, several contributors are deeply involved in basic and translational research, adding value to this volume.

Overall, 15 contributors helped to create this textbook, authoring or coauthoring 9 separate chapters. The textbook is divided in 2 sections: "Basic Science" (chapters 1–4) and "Clinical Implications" (chapters 5–9).

The first part ("Basic Science") discusses platelet and thrombus concepts: how thrombus forms, interaction of thrombus with blood flow, research models, and implant thrombogenicity. Overall, the chapters of this section are concise and well written, making for a very interesting read due to the simplicity of its organization. The images are very good and labeled clearly, and the text is well referenced. The strengths of this first part are chapters 2–4. These 3 chapters cover the major aspects of thrombus formation and its relationship to blood flow, the literature regarding experimental animal models of ischemic stroke, the assessment and management of vascular implant thrombogenicity, and in vitro diagnostic tests. This first section is a very nice feature of this textbook, one that is not found in most of the other stroke texts.



In the second part ("Clinical Implications"), starting from chapter 5, readers will find topics from stroke imaging to medications and a review of endovascular techniques of which everyone involved in the care of patients with acute or chronic stroke should be, at least, aware.

The "Stroke Imaging" chapter (chapter 5) is well structured and concise. The authors discuss all imaging techniques related to stroke including CT; CT angiography; CT perfusion; MR imaging, including diffusion-weighted imaging, MR perfusion imaging, MR angiography, and MR spectroscopy; and single-photon emission tomography and positron-emission tomography. The images presented in this chapter are good, though a number are just fair. I would think that a chapter on imaging in stroke would have a higher percentage of very high-quality images. Nevertheless, the images provided accomplish the authors' intent and display the information necessary to understand the role of imaging in the diagnosis and treatment of this disease.

Following the discussion on stroke imaging is a chapter entitled "Pharmacology and Clot: Immediate and Chronic Interventions" (chapter 6). In this chapter, the reader will find a very good discussion of medications used to treat blood clots and stroke. The chapter is well structured, easy to read, and well-referenced. As expected, there are not many illustrations, only 2 figures and 1 table. Figure 1 demonstrates the sites of action of agents used in the treatment and prevention of acute stroke, with a large number of arrows and boxes that may look confusing initially, but make sense after close analysis. The color figure provided separately is definitely easier to understand. A weakness of this chapter is the lack of discussion on some of the thrombolytic agents that are being currently investigated and a more complete discussion on glycoprotein IIb/IIIa inhibitors. Of note, a color plate section is found in the middle of this chapter. I would have preferred it in the beginning or at the end of the book.

Chapter 7 covers endovascular techniques for revascularization and reperfusion of acute ischemic stroke. The current devices and techniques are very well described and illustrated. The figures that show the devices are exceptional, because most of them were provided by the manufacturers. The case illustrations are equally good, providing examples of some of the techniques described in the text. This chapter is one of the best in the book; in it, one finds the complete arsenal needed by a neurointerventionalist to perform any kind of revascularization.

The chapter entitled "The Future of Neuroprotection" (chapter 8) basically explores the reasons why, historically, neuroprotective drugs have not shown positive results in human clinical trials, explains the formation of the STAIR criteria for preclinical evaluation of neuroprotective drugs, provides a brief discussion on the SAINT-I and SAINT-II trials, and describes the new recommendations for the clinical trial design for neuroprotective drugs.

Finally, the textbook closes with chapter 9 entitled "Acute Ischemic Stroke: Paradigm for Treatment." This well-illustrated 34-page chapter summarizes the data on treatment-focused imaging for acute ischemic stroke and discusses data available from several important studies that were performed or are still running regarding stroke therapy. A weakness of this chapter is the lack of information regarding the results of studies of the penumbra system (there is a brief discussion in chapter 7). The figures and case illustration are of great quality with good descriptive legends. Figure 1 shows the author's algorithm for the treatment of acute ischemic stroke. Table 1 provides summarized data comparing the NINDS, PROACT II, IMS, IMS II, and MERCI studies in an easy and clear format. This chapter also has several tables describing the multitude of scales used in the evaluation and follow-up of patients

with stroke, including the National Institutes of Health Stroke Scale, the Glasgow Coma Scale, the modified Rankin Scale, and the Barthel Index.

In summary, this is a concise, well-organized, and well-written textbook. This volume is recommended for neurointerventionalists, neuroradiologists, neurologists, neuroscientists, and anyone else involved in the care of patients with stroke. It is recommended if one is looking for a review of concepts regarding clot and thrombus formation, blood flow, and current data and techniques used for acute and chronic stroke treatment, with a heavy emphasis on the endovascular treatment of acute stroke. It also provides simple but valuable basic/translational research information, serving as an introduction for practitioners and scientists who want to venture into stroke research. The reader should be aware, however, that most of the chapters summarize the relevant data available in the literature (with few exceptions as detailed above). As the preface stated, it was not the intent of the editors to fill this textbook with long descriptive explanations because there are several other publications that fulfill those requirements.

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