BOOK REVIEW

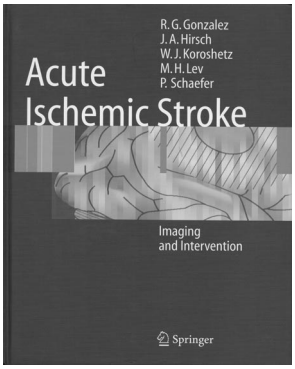
Acute Ischemic Stroke: Imaging and Intervention

R.G. Gonzalez, J.A. Hirsch, W.J. Koroshetz, M.H. Lev, and P. Schaefer, eds. Berlin/Heidelberg: Springer-Verlag; 2006, 268 pages, 107 illustrations, 59 tables, $129.

In the United States every year 700,000 people suffer from a new or a recurrent acute ischemic stroke, and approximately 15% die. The projected number of strokes for the year 2025 in the United States alone is close to 1.2 million. Currently, acute stroke is the third leading cause of death, the leading cause of severe disability, and a major socioeconomic problem. With the aging of the population and the higher expectations of quality of life, a concerted effort is needed among neuroscientists, emergency department physicians, neurologists, diagnostic neuroradiologists, interventional neuroradiologists, and neurointensivists to master the complex nature of acute ischemic stroke. Public education and awareness have to be an integral part of the effort, and training of physicians is critical. The incorporation of clinical findings and better understanding of neuroimaging will help to determine the treatment technique, which includes local or systemic drug delivery to dissolve the clot, devices to remove or bust the clot, and neuroprotective agents to prolong the treatment window and reduce the risk for reperfusion injury.

Although this field is moving fast with newer imaging techniques and therapeutic concepts being introduced, a publication of a book on this topic is timely. This book provides comprehensive up-to-date information, including references on acute ischemic stroke with emphasis on neuroimaging. Written by 22 diagnostic and interventional neuroradiologists and neurologists from the Massachusetts General Hospital (MGH) and faculty from the Harvard Medical School, the book reflects years of experience in the day-to-day management of a large number of acute stroke patients, as well as integration of some basic and clinical research, into a practical guide. The book is well organized into 3 parts: Part I: Fundamentals of Acute Ischemic Stroke; Part II: Imaging of Acute Ischemic Stroke; and Part III: Intervention in Acute Ischemic Stroke.

"Ischemic Stroke: Basic Pathophysiology and Neuroprotective Strategies" and "Causes of Ischemic Stroke" are the titles of the first 2 chapters of the first part of the book. The basics of the ischemic cell death and the concept of neuroprotective therapy are discussed in detail. Because the message is meant for those scientists and clinicians who are frequently involved with ischemic stroke, for nonbasic scientists and readers without sufficient background in molecular biology, these chapters would be difficult to read. Unfortunately, the few illustrations are not helpful to improve the understanding, because the legends lack suitable descriptions. A few poorly illustrated oversimplified figures also do not help the reading in the second chapter. The interested reader is referred to other more comprehensive sources on the basics and etiology of ischemic stroke.



In contradistinction, the second part, subdivided into 7 chapters, is well written and well illustrated. It covers in depth all of the currently used imaging techniques in ischemic stroke, with the exception of sonography. The first chapter, which is marked as the third chapter, in continuation to the first 2 chapters of the first part, sets the stage for imaging modalities. It outlines the techniques of CT and summarizes all of the critical imaging findings in hyperacute ischemic stroke. The second and third chapters inform us on the growing importance of CT perfusion (CTP) and CT angiography (CTA), inevitably replacing digital subtraction angiography and probably MR angiography (MRA) in ischemic stroke. Although some of the images represent brain aneurysms, which are less relevant for ischemic stroke, well-documented and -illustrated cases support detailed technical information. Advantages of CTA and CTP with the introduction of newer multidetector scanners into clinical practice and limitations, as well as pitfalls, are discussed in a well-balanced fashion. Again, some of the figures and tables are wrongly and poorly labeled. Nevertheless, this part can be highly recommended to any reader who deals with ischemic stroke in daily practice. The next 3 chapters are dedicated to MR imaging, MRA, diffusion, and perfusion MR in acute stroke. Different stages of stroke (hyperacute, acute, subacute, and chronic), including hemorrhagic transformation, are described with case examples. All of the important aspects of MR, including technical details, basics of diffusion and perfusion imaging, role of MR and MRA for treatment, and integration of an MR dataset for prediction of clinical outcome, are discussed in the most comprehensive way. The second part concludes with a short chapter on single-photon emission CT, positron-emission tomography, xenon CT, and MR spectroscopy. As outlined by the author, cost, the need for specialized equipment, and clinical limitations may all prevent their widespread use in acute ischemic stroke.

The first chapter of the last part of the book is a brief overview on the clinical management of acute stroke, including a description of the National Institutes of Health Stroke Scale. Again, the interested reader who expects more in-depth information is referred to other sources on management of acute ischemic stroke. The last chapter summarizes the current strategy in endovascular treatment of acute stroke at MGH. The authors' approach is partly based on previous data from randomized trials (Prolyse in Acute Cerebral Thromboembolism, Emergency Management of Stroke, and Interventional Management of Stroke trials), which are summarized, or is based on their own experience. Some nicely illustrated cases support the need of further development and improvement of devices for rapid revascularization. The book concludes with an epilogue from the senior author discussing the role of CT versus MR in acute ischemic stroke. Addition of some illustrative cases would have been helpful to make the case for one or the other technique.

Being one of few comprehensive and affordable books on acute ischemic stroke, I personally enjoyed reading it, especially the imaging sections. Proper and more descriptive legends, as well as a better layout of tables, would have made the

reading easier. The book predominantly addresses neuroradiologists, neurologists, and emergency department physicians and has a place in the hands of a general practicing physician who wants to better understand the evolving role of CT and MR imaging for triaging patients with acute ischemic stroke.

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BOOK REVIEW

High Grade Gliomas: Diagnosis and Treatment

G.H. Barnett, ed. Totowa, NJ: Humana Press; 2006, 495 pages, $95.00.

This is a good book if you are interested in high-grade gliomas, as many of us are who practice at cancer hospitals. It is the latest offering of the Humana Current Clinical Oncology series. Glioma imaging also happens to be the laboratory in which many new CT, MR imaging, and nuclear medicine techniques are developed and perfected (MR spectroscopy, CT and MR perfusion, and positron-emission tomography), so examining these entities in detail makes sense.

For neuroradiologists, the most interesting parts are the 5 chapters on diagnostic tools, with separate sections on CT, MR imaging, MR spectroscopy, imaging tumor biology, nuclear imaging, and magnetoencephalography. In each there is a focus on relating the imaging findings to the tumor biology, with many chapters authored not only by neuroradiologists but also coauthored by neuropathologists. This gives new meaning to radiographic-pathologic correlation, and it turns out to be important and achievable with every imaging study that can be performed. The ultimate goal seems to be preoperative, in vivo neuropathology. This notion is fully explored in Chapter 8, "Imaging Tumor Biology," with in-depth analysis of just how this in vivo neuropathology will probably emerge from our current anatomic imaging focus.

The rest of the chapters outline the current thinking on all aspects of glioma diagnosis and treatment. One of the most enlightening chapters is the first, "Histologic Classification," which basically confirmed what we had always thought, specifically: even first-rate neuropathologists do not always agree on exactly what to call a tumor on histologic examination. In fact, even the most useful and venerable of the classification schemes, that of the World Health Organization, is subject to constant modification and sometimes even complete revision. Details of classification mechanisms other than anatomic and histologic are included for Ki-67, glial fibrillary acidic protein, epidermal growth factor receptor, and phenotypes. So, in one place, and succinctly presented is information that is particularly pertinent for those who are too impatient to wade through a full neuropathology text. The point is also made, again and again, that specific new imaging techniques increasingly play a part in this overall concept of glioma grading.

New therapy schemes also are part of the text. If you have not yet heard of intracavitary chemotherapy wafers, brachytherapy, convection therapy, nonconformal stereotactic radiotherapy devices, and all of the new chemotherapy agents, you will someday soon, and this is a good place to find that information. Each chapter is clearly written with a consistent style and not burdened down with technical jargon, but each is up to the minute and authoritative. The book is a recommended addition to the neuroradiologist's reference library.

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BOOK REVIEW

The Physics of Clinical MR Taught Through Images

V.M. Runge, W.R. Nitz, S. Schmeets, W.H. Faulkner, N.K. Desai, eds. New York: Thieme; 2005, 240 pages, 385 illustrations, $49.95.

There are a large number of books and journal articles that allow one to gain an appreciation and an understanding of the basics of MR physics. Drs Runge, Nitz, Schmeets, Faulkner, and Desai have added one more to the list, and to this reviewer's eye, *The Physics of Clinical MR Taught through Images* is certainly one of the quickest and least painful ways of achieving that goal.

In this readily portable, 240-page soft-cover publication, 103 separate topics dealing with the implementation of MR are summarized and accompanied by a few appropriate images for each topic (2 pages per topic). There are many advantages to this approach; one simply has to realize that this is not an in-depth treatise, nor are there references listed. Further reading would be necessary for those desiring more than a basic working understanding of MR physics in their daily work. For most clinical radiologists, however, the information contained in this book would be either adequate or would be a good initial publication from which to build one's knowledge of MR physics.

There is, as one would expect, more than neuro-MR contained in this publication, but neuroradiology images do predominate the pages. Although the sequencing of chapters seem a bit arbitrary (eg, chapters on section thickness or number of averages appear midway through the book, whereas more advanced topics, such as diffusion tensor imaging or blood oxygen level-dependent imaging, precede those more fundamental chapters), one can easily find the item of concern by consulting the table of contents or the index. This book covers hardware (magnets, gradients, and coils), safety (very limited material), newer coil