Are your MRI contrast agents cost-effective?
Learn more about generic Gadolinium-Based Contrast Agents.
FRESENIUS KABI
caring for life

AJNR

Thrombolytic Therapy for Stroke

AJNR Am J Neuroradiol 2002, 23 (6) 1059-1060
http://www.ajnr.org/content/23/6/1059

This information is current as
of April 8, 2024.

Thrombolytic Therapy for Stroke
Edited by Patrick Lyden, MD. Totowa, NJ: The Humana Press; 2001. Price, $125.00, 410 pages.

According to the scientists at the National Institute of Neurological Disorders and Stroke, we should be able to prevent 80% of all strokes by the end of the decade if we continue to reduce risks and develop new therapies. Stroke remains a significant public health problem in the United States as the third leading cause of death and the primary cause of neurologic disability. The American Heart Association estimates that approximately every 53 seconds, someone in the United States suffers a stroke; every 3.3 minutes, someone dies as a result of a stroke; and more than 3 million survivors suffer severe disabilities. Stroke affects victims of all ages, and the staggering cost of care and loss of productivity places a heavy financial burden on society, with an estimated $43 billion spent annually in the United States.

In his multi-authored book, *Thrombolytic Therapy for Stroke*, Lyden addresses state-of-the-art stroke treatment modalities and results. The book also includes basic research in understanding stroke and thrombolytic therapy. Those chapters are comprehensive and easy to understand for non-superspecialized readers and scientists.

The book is composed of four parts that are divided into 18 chapters focusing on thrombolysis for stroke treatment as currently practiced nationwide. The first part of the book introduces the reader to the mechanisms of thrombolysis, pathogenesis of atherosclerosis of the cerebrovascular system, and the current concept of ischemic penumbra written by world-renowned authors such as G. del Zoppo and L. Caplan and by the editor. It is very comprehensive and yet easy to understand for non-basic scientists. Although its concept is addressed to practicing clinicians, it reads easily without falling into a simplistic approach to this very complex disease. The illustrations, including the changing concept regarding ischemic penumbra, well support the text, and the references are comprehensive.

The second part of the book, which is subdivided into eight chapters, addresses the rationale and itemizes the results for past clinical trials, including the National Institute of Neurological Disorders and Stroke study, IV thrombolytic therapy, and the basic concept of neuroprotective agents and their limitations in the clinical setting. Numerous detailed tables in each chapter summarize the text and serve as practical reference tools. This part also introduces the reader to more recent attempts at intra-arterial thrombolysis in cases of acute stroke (Prolyse in Acute Cerebral Thromboembolism I and II) and to a combination of IV and intra-arterial thrombolysis. Inadvertently, as with other multi-authored books, this part has some degree of overlapping, although not distracting, material.

The third part of the book is outspoken and is the most instructive for the practicing physician. The editor, who is in favor of thrombolytic therapy, and L. Caplan, who is opposed to the current practice of thrombolytic therapy, engage in a lively debate. Controversial issues, such as the therapeutic window for IV tissue plasminogen activator therapy for middle cerebral artery occlusion, are discussed. The limitations of fully understanding the spectrum of stroke and the mechanism of thrombolytics for stroke are discussed. This part also covers "how to run a code stroke" and how to establish a stroke service for the community neurologist. It provides a very short synopsis regarding future direction in stroke treatment, including neuroprotective agents, hypothermia, and control of cerebral edema.

The topic of imaging in cases of stroke, as expertly addressed by R. von Kummer, focuses on a detailed understanding of CT in cases of stroke. It beautifully summarizes, for our MR imaging generation, the still important role of an x-ray-based tool.

The last part of the book presents a compendium of 21 patients who presented with stroke and were treated with IV tissue plasminogen activator, many of them beyond the window of 3 hours for middle cerebral artery occlusion, resulting from the National Institute of Neurological Disorders and Stroke trial. Most of the patients did well.

The editor's background as a neurologist will make this book a must for everyone who is interested in treating stroke. However, although the prevention and treatment of acute stroke with minimally invasive intra- (endo)vascular therapies is one of the leading emerging medical fields, alternative therapies, such as combined intra-arterial thrombolysis and mechanical clot removal, and acute endovascular treatment, such as angioplasty and stenting for stroke and underlying occlusive disease, have not been sufficiently addressed. The editor does recognize the importance of intra-arterial thrombolysis by including the summary presented by Furlan et al of the Prolyse in Acute Cerebral Thromboembolism II trial study, which unfortunately did not show the excellent results expected by the investigators.

Nevertheless, alternative therapies, especially in cases of large vessel occlusion and in patients who do not meet the National Institute of Neurological Disorders and Stroke criteria and in patients presenting more than 3 hours after the onset of stroke, should have been addressed in a more aggressive fashion either by the editor or the invited authors. This shortcoming is reflected in the Illustrative Cases section at the end of the book, where not a single case of intra-arterial thrombolysis or mechanical clot removal, which would have been an acceptable alternative or even the right way to go for one case or another because of large vessel

occlusion, is addressed. On the contrary, after reviewing all the illustrative cases, IV thrombolysis for cases of acute stroke and even for patients presenting after 3 hours seems to be a standard treatment with associated minor complications. Albeit a few cases with complications and fatal outcomes are presented.

Another shortcoming of the book is that neurosurgical colleagues were not provided the opportunity to address surgical issues with stroke patients, such as decompression for improved perfusion, or the opportunity to address hematomas. It would have been helpful for readers to hear from some neurosurgical specialists. Sufficient experimental and clinical data are available, especially from Europe, regarding some of the benefit of decompressive surgery.

The third and the last weakness of the book is that the topic of how functional MR spectroscopy (diffusion/perfusion-weighted imaging) is playing an increasing role at major stroke centers because of the growing understanding of imaging is neglected.

In summary, this book can be highly recommended for anyone who deals with patients with stroke, including primary care providers, emergency medicine physicians, internists, (neuro)radiologists, and intensivists.