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Book Review: *MRI Essentials for the Spine Specialist*

By: A. Jay Khanna
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The practice of neurological surgery is a unique challenge that requires a critical evaluation of anatomic pathology in the context of a patient and his or her neurological examination. Faced with new technology and increasing availability of advanced imaging techniques, such as magnetic resonance imaging, the neurosurgical practitioner is increasingly forced to examine pertinent anatomic imaging findings before the examination of the patient. The decision to manage the patient with surgery or with nonoperative management is paramount. Without the skills to properly interpret an imaging study, one can easily make a poor decision.

MRI Essentials for the Spine Specialist by A. Jay Khanna, MD, is an excellent addition to the neurosurgical spine specialist's library. Written primarily for spine surgeons, but also benefitting interventional and noninterventional pain specialists, interventional radiologists, physiatrists, rheumatologists, neurologists, sports medicine specialists, and diagnostic radiologists, the concise and straightforward presentation of the theory behind and use of spinal magnetic resonance imaging (MRI) is an excellent resource for the practitioner at any level of training.

Thoughtfully organized, the book is presented in three sections—core concepts, anatomic regions of the spine, and advanced concepts with special considerations. Furthermore, each section contains chapters that are designed to be either region specific or concept specific. Each region-specific chapter is built from the bottom up, first detailing specialized pulse sequences and protocols. Then, traumatic pathology is discussed, followed by degenerative, infectious, and postoperative pathology. This framework allows the reader to apply the basic concepts of MRI in an organized fashion to the most common pathologies to be evaluated by the spine specialist. This logical and systematic approach for learning perfectly mirrors the systematic approach to the analysis of an imaging study espoused by the editor.

described and thus the redundancy between approach and management of pathologies is appropriate.

The book is subdivided into 9 basic categories: General and Advanced Cranial Approaches, Intracranial Tumor Neurosurgery, Endoscopic Surgery, Cerebrovascular Surgery, Cranial Trauma Neurosurgery, Cranial Infections, Stereotactic Neurosurgery, Functional Neurosurgery, and Pediatric Cranial Surgery. In each of these sections, the authors have done an excellent job of describing the latest advances and current thoughts in both the surgical and medical management of various pathologies. Each of the chapters within these various sections describes not only key elements in performing the procedures but also important details of risks, complications, and management and key elements to optimizing outcomes.

All in all, this is an excellent comprehensive cranial textbook that will serve as a unique reference for neurosurgery practitioners at all levels. The formatting, consistent throughout each of the 151 chapters, provides readers the opportunity to focus on key elements integral to the management of common cranial pathologies.

Disclosure

The author has no personal, financial, or institutional interest in any of the drugs, materials, or devices described in this article.

MRI Essentials for the Spine Specialist

A. Jay Khanna



Thieme

In the opening pages of the book, the author details the methodology and inspiration for the creation of the book. In the Preface, a suggestion is made to the reader to read the book in sequential order, starting first with the “Essentials of MRI Physics and Pulse Sequences” followed by “Normal Spine MRI Anatomy.” There is no question that the sequential review of the book is crucial for a full appreciation of the concepts and lessons in the later chapters. This setup, however, proves somewhat onerous as the first chapter may induce many a PTSD flashback to introductory physics in college. Several excellent illustrations help to lessen the blow of very dense electrophysics that may excite only the most hardcore of radiological scientists.

The second chapter, “Normal Spine MRI Anatomy,” is most likely to be skipped by senior spine practitioners, but serves as an excellent review for spine specialists in training, as well as the nonsurgical specialist looking to increase their understanding of the normal anatomy of the spine. The systematic approach for analyzing a spinal MRI study is first introduced in this chapter and can likely be applied to the future analysis of many imaging modalities, not just MRI.

The evidence cited in the majority of the chapters derives mainly from the orthopedic and radiology literature. Although

many of the studies may be unfamiliar to the neurosurgical spine specialist, the lesson and proof are well conveyed, and the pages of each chapter flow easily without the over-citation that can crowd similarly conceived manuscripts. The author's writing style is clear, concise, and effective, and the length of the book is well thought out to enable it to stay on the desktop of the neurosurgical spine specialist rather than in the top shelf of a sturdy bookshelf collecting dust. Additionally, the end of each chapter contains several well-crafted questions, with easily accessible answers and explanations. This adds to the high-yield content quite nicely.

Although excellent in its organization, there are several shortcomings. Despite the plethora of excellent medical illustrations and demonstrative MRI slides, this book fails to present even a single intraoperative photograph. Although not necessary for the majority of the intended audience, it might serve as an excellent adjunct to demonstrate the correlation between intraoperative findings and the findings on the preoperative MRI study. The section on pediatric spinal anatomy and pathology is a well-thought addition, but lacks in depth of content and seems in need of an update in subsequent editions. Finally, the chapter “MRI Safety Considerations for the Referring Clinician” features an important section listing contraindications for MRI scanning. This list includes aneurysm clips, pacemakers, implantable defibrillators, neurostimulation systems, and brain stimulators. Many patients with 1 or several of these devices are able to undergo MRI if needed, and although these devices are a conditional contraindication, it would have been nice to include a section for the ordering provider on how best to determine the safety of an MRI study in the patient with any of these devices rather than listing them as contraindications.

The quality of this book far outweighs the trivial shortcomings, and *MRI Essentials for the Spine Specialist* would be a worthy addition to the collection of any neurosurgical spine specialist, in either practice or training. The systematic approach to analyzing an MRI study, in addition to the clear and easily understood theory behind why the images appear as they do, makes this a great addition to the neurosurgical tome. Congratulations to the author for the excellent work.

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