CRANIAL NERVES: ANATOMY, PATHOLOGY, IMAGING


Cranial Nerves: Anatomy, Pathology, Imaging is a first-edition, soft-cover, 248-page book that provides a comprehensive yet easy-to-read review of the cranial nerves. The book includes cranial nerve function, anatomy, normal and pathologic clinical and radiographic findings. The intended audience is broad, from the medical student to the practicing skull base surgeon, neurologist, and neuroradiologist and other healthcare professionals (such as nurses and speech pathologists) working with patients that have cranial nerve-related disorders. Two of the authors, Dr. Devin Binder (neurosurgeon) and Dr. Nancy Fischbein (neuroradiologist), are leaders in their respective fields, with many years of experience and numerous publications.

This book provides an accurate and detailed description of anatomy and function of each nerve, approaching the same detail as medical neuroanatomy and gross anatomy review books. Additionally, anatomic diagrams, MR images, and CT scans accurately depict appropriate anatomy. The clinical discussions include numerous clinical syndromes and specific findings to assist in lesion location. There are numerous clinical and imaging pearls scattered throughout.

Few comprehensive review books have been written on the subject of cranial nerves that include detailed radiology information such as this book. Two other books with similar content include Neuroimaging Clinics of North America: Cranial Nerves (2008) by J. Casselman and Cranial Nerves (2004) by Dominique Doyon et al (editors). Unlike these 2 books, Cranial Nerves: Anatomy, Pathology, Imaging has a repetitive and predictable bullet-style format offering the busy clinician a quick review between seeing patients. Also, this book is an excellent review for students, residents, and those preparing for neurology, neurosurgery, neuroradiology, and ear, nose, and throat board examinations.

The text begins with an introduction that includes useful review charts on cranial nerve function, pathology, anatomic diagrams of skull base foramina, and general information regarding appropriate MRI sequences. Each chapter is dedicated to a specific cranial nerve (12 chapters) followed by an appendix that has excellent diagrams, charts, and discussion regarding the anatomy, cranial nerve pathways (including excellent review of the brainstem and cerebellum), autonomic innervations of the pupil, the parasympathetic ganglia, and a detailed chart of the cranial nerve clinical reflexes. Each cranial nerve chapter has the same format: a list of cranial nerve functions; anatomic discussion with diagrams, charts, and high-quality normal MR and CT images; discussion of pathology broken down by location along the cranial nerve pathway and also by category (eg, tumor, trauma, infection); and case presentations. The case presentations have the following format: a brief (2–3 sentence) clinical presentation; imaging findings (pictures with captions); and then diagnosis that includes a brief (<1 page) discussion of epidemiology, typical imaging findings, gross and clinical pathology, and treatment. This is usually followed by a clinical and/or imaging pearl. The cases show an accurate representation of common and some uncommon lesions at different points along each cranial nerve pathway and include high-quality, well-labeled and -described MR and CT images.

For example, chapter 2, titled “Optic Nerve,” begins with listing the function (special afferent for vision). Next comes a detailed anatomic discussion of the optic pathway, beginning with the retina photoreceptors (rods and cones) and ending with the visual cortex. Included in the discussion are the bipolar and ganglion cells of the retina, retinogeniculate, retinopretectal, retinocollicular, retinohypothalamic tracts, and the connection with cortical cell layer IV of the calcarine cortex and secondary visual cortex. This is followed by normal images and a bullet-format discussion of optic pathway lesions beginning with the cornea and progressing all the way back to the calcarine cortex. Clinical syndromes are briefly discussed in bullet format and include amaurosis fugax, retinitis pigmentosa, Usher syndrome, Lawrence-Moon-Biedl syndrome, Cockayne syndrome, Stargardt disease, and Leber hereditary optic neuropathy. Next is a listing and diagram of visual field deficits based on location along the visual pathway. Subsequently, a table shows the imaging differential diagnosis based on location along the visual pathway. Last, 8 cases are shown (retinoblastoma, optic neuritis from acute disseminated encephalomyelitis, unilateral optic meningioma, bilateral optic meningiomas, optic glioma, pituitary macroadenoma, craniopharyngioma, and occipital lobe infarct). Of note, a fairly detailed chart describes CT and MRI evolution of infarcts along with other clinical and radiographic pearls.

Cranial Nerves: Anatomy, Pathology, Imaging accomplishes its specific goal of providing a user-friendly reference book for a broad range of clinicians. This book is fairly unique in that there is the full gamut of anatomic, functional, clinical, pathologic,
and radiologic review of cranial nerves in a rapid-review format. There are no notable grammatical or typographical errors. The only notable error is in a picture in the cranial nerve 6 chapter: the axial anatomic diagram that was supposed to show cranial nerve 6 showed a repeat diagram of cranial nerves 3 and 4. All of the other anatomic figures are very useful and accurate. A suggestion for future additions is to include a diffusion tensor radiology image labeling the optic radiations (although this is well described in the text and diagrams).

In summary, Cranial Nerves: Anatomy, Pathology, Imaging is an easy to read, yet comprehensive reference guide for the busy clinician dealing with cranial nerve pathology and a useful supplement to medical students and resident study. Additionally, the price is very affordable given the amount of material covered and the excellent quality of the diagrams and imaging pictures.

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