

Neurosurgery Practice Questions and Answers

Mark R. Shaya
Cristian Gragnaniello
Remi Nader

Second Edition



NEUROSURGERY PRACTICE QUESTIONS AND ANSWERS

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Dedicated to those neurosurgeons without the titles of academia or positions in societies, but oftentimes with the most skill, wisdom, and experience: the private practice neurosurgeon.

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Foreword

Dr. Mark Shaya, Dr. Remi Nader, and Dr. Cristian Graganiello have produced a beautiful, balanced and thorough tome that addresses a growing need in neurosurgery. This second edition of *Neurosurgery Practice Questions and Answers* is a valuable tool for continuing education and, more importantly, a tool for board and maintenance of certification examination preparation. They present over 800 prototypical board examination questions and answers featuring in-depth explanations for answers.

With the relentless and endless perpetual increase in the body of neurosurgical knowledge, neurosurgeons are faced with incredible educational difficulties. This book will most certainly serve as a unique and valid mechanism to help address this challenge.

Practicing neurosurgeons can refer to this book as a simple refresher. It most certainly will be extraordinarily useful as a preparation tool for maintenance of certification examinations. Residents in training can similarly use this book as a tool for knowledge acquisition and for board preparation. This book can also effectively serve as a platform for the pursuit of knowledge; the more challenging questions in the book will help the reader to identify knowledge gaps where further study is needed.

The question topics are diverse and cover the entire field of neurosurgery, including all sub-disciplines. In addition, the questions blanket the associated basic science fields—these include pharmacology, physiology, anatomy, and pathology. Finally, imaging and neurology questions broaden the scope of the book even further, thus making it truly relevant to board and maintenance of certification examination preparation.

In summary, this book represents an inexpensive and very valuable tool for neurosurgery education. It belongs on the shelf of every neurosurgeon and neurosurgery trainee.

Edward Benzel, MD
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Preface

I am glad to present to you this second edition of *Neurosurgery Practice Questions and Answers*. This book project originally started in about 2003 when I was a resident. It was a pure labor of love and also a good reason to collaborate with neurosurgery friends and colleagues. Working on this second edition, I am amazed by how far neurosurgery has come in just the past decade. Medications, treatments, and diagnostic studies which were novel and state of the art in the first edition of this book are now routine in this second edition. One can only imagine about the future and wonder what will happen to our field in another ten years.

Neurosurgery is changing not only scientifically but also clinically and administratively. We are entering an era of high regulation, cost-sensitive care, maintenance of certification, and computerized patient documentation. While these things are meant to improve the quality of care, they can at times diminish the art of medicine and surgery. I remember being a student and witnessing a wonderful hand-written neurosurgical consultation by an attending neurosurgeon; beautifully hand-drawn sketches in the margins depicted the patient's symptoms with the surgeon's thoughts numbered at the bottom of the page as a differential diagnosis. I believe this is how most neurosurgeons think when solving a surgical problem. But such neurosurgical problem solving is now being replaced with computerized template notes which, although thorough, do not fully capture a complex neurosurgical situation and the subtle intangibles of our patients. Moreover, the controversial maintenance of certification process takes precious time away from our patients; it is still in a flux and there is significant pressure from the neurosurgical community to lessen its current impact on their practices. All of these are obstacles not only for the neurosurgeon finishing residency but also for the established neurosurgeon both in an academic or private setting. We must not let these matters lessen our motivation to use our surgical instincts nor restrict our creative abilities, since it is with our creativity and imagination that progress in neurosurgery usually originates.

I would like to thank Remi Nader and Cristian Gragnaniello for their assistance with this second edition; also, thanks to Gauri Wable and Sohum Desai for their contributions to this book. I sincerely hope that this work will assist in your examination preparation no matter what level you are preparing for.

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Questions

1. Regarding the pathophysiology of myasthenia gravis, what is/are the possible mechanisms by which acetylcholine receptor antibodies interfere with neuromuscular transmission?
 - A. Binding to the acetylcholine receptor and blocking the binding of acetylcholine
 - B. Cross-linking acetylcholine receptors, thereby increasing their rate of internalization
 - C. Binding of complement resulting in destruction of the muscle end plate
 - D. All of the above
 - E. None of the above
2. All of the following statements are correct regarding the medial lemniscus EXCEPT:
 - A. Near the sensory decussation, its blood supply comes from the anterior spinal artery.
 - B. The medial lemniscus can be found in close proximity to the anterolateral tract in the medulla. Its somatotopy in the pons is such that leg fibers are lateral to arm fibers.
 - C. The fibers of the medial lemniscus arise from the cuneate and gracile nuclei.
 - D. Brainstem lesions involving medial lemniscus fibers usually include adjacent structures, resulting in motor and sensory losses.
 - E. None of the above statements are correct.