Therapeutic Uses of Botulinum Toxin

Edited by

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Dedication

For Ana.
Justinius Kerner, a German medical officer and poet, was the first to realize that botulinum toxin potentially might be useful for therapeutic purposes. Kerner made this observation in 1822, but he did not call the toxin “botulinum toxin.” Instead, Kerner called it the substance in “wirkenden stoffes,” which translates to “bad sausages.” Kerner realized that there was a “fat poison” or “fatty acid” within sausages that produced the toxic effects that we now know as botulism. Nearly a century would pass before the bacterium producing the toxin would be isolated and the toxin ultimately renamed “botulinum toxin.” As farsighted as Kerner was, it is doubtful that even he could have predicted just how much potential therapeutic punch was packed within his wirkenden stoffes. It was not until 1978, more than a century and a half after Kerner’s prediction, that Dr. Allan Scott received Food and Drug Administration approval to test botulinum toxin type A in human volunteers.

We do not yet have a comprehensive understanding of precisely how botulinum toxin works in the human body or how our bodies fully respond to the toxin. We do know that it temporarily paralyzes muscle by inhibiting the release of acetylcholine, and it also appears to inhibit the release of other neurotransmitters. Botulinum toxin’s unique ability to temporarily paralyze muscle and potentially inhibit nociceptive neuropeptide release has stimulated physicians and scientists from a wide range of medical disciplines to seek to exploit it with the purpose of benefiting their respective patient populations. Although the temporary nature of the effects of botulinum toxin means that the injections must be repeated periodically, it also minimizes the impact of potential side effects.

The idea for this book occurred to me gradually as I continued to speak with colleagues from various disciplines, many of whom were, or had heard of, using botulinum toxin within their respective specialties. It is rare indeed to find one drug that can simultaneously help people suffering with headaches, speaking and swallowing difficulties, vision problems, back pain, spasticity, urinary problems, gastrointestinal problems, foot pain, shooting leg pains, and profuse sweating. Botulinum toxin does all of this while, at the same time, is able to help people get rid of unwanted wrinkles. This book aims to define our current state of knowledge of botulinum toxin and, in particular, how the use of this novel compound fits into the various overall treatment algorithms. There are still many questions related to botulinum toxin. Will resistance develop and become widespread with increased usage? Will the toxin be a cost-effective treatment in the long run? Will more subtypes of the toxin find therapeutic use? Clearly, as research continues and as we learn more about how botulinum toxin works, its role in current treatment algorithms will become better defined. At the same time, new algorithms for its use are likely to emerge.

I hope you find Therapeutic Uses of Botulinum Toxin enjoyable to read and useful for your practice. If you are a spine and musculoskeletal medicine doctor like me, ideally, you will be able to sit with this book over a cappuccino or a glass of wine and read about how our colleagues in other disciplines are using botulinum toxin for their patients. Similarly, I hope that no matter which medical or scientific discipline you practice, you will take the time to read all of the chapters. I encourage you to do so because first, each chapter is fascinating in its own right, and second, because learning how a drug is used in one patient population may awaken you to explore its use in novel ways in your own patients. It is my sincere hope that one of the benefits of this book will be to stimulate responsible research into how botulinum toxin can be used for the benefit of more patients in the future.

Grant Cooper, MD
This book has been a true team effort. I would like to first acknowledge and thank its contributing authors. This book required the hard work of leading physicians from a broad range of medical specialties. It is their selfless dedication, experience, and expertise that made this book possible. I would like to also give a special acknowledgement and thank you to Humana Press, an outstanding publishing company to work with. Patrick Marton, Amy Thau, and Melissa Caravella are important team members that have made this book possible. Don Odom was instrumental in putting this book in motion. Richard Lansing has been a joy to work with and has ensured this book’s success as it has passed through its different phases of development.

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