

Preface

One of the last frontiers of science remains the human brain. Despite the vast energy spent understanding this amazing machine, we still know so little. One of the revolutions sweeping neuroscience has been the use of various technologies to peer into the brain noninvasively to discover its inner workings. With ever improving machinery, data collection techniques, and analysis methods, researchers are now being presented with an exponentially increasing amount of data that they must wade through and interpret in the context of existing knowledge.

In the field of neurological movement disorders, this information explosion has been no different, though the causes and pathology of most disorders remain unknown. The use of neuroimaging has been important to unlocking the causes of abnormal motor control, though by comparison to other areas of neuroscience remains at a relatively early stage. Challenges to the use of neuroimaging in this field are further compounded by the very fact that this patient population has abnormal movements that may limit the ability to collect high-quality data. In addition, the field of neuroimaging possesses the double-edged sword of producing both true believers and skeptics at once by generating beautiful results that are all too frequently oversimplified and overinterpreted. These are just some of the challenges that need to be addressed in order to advance our understanding.

This book is not the first to cover the topic of Neuroimaging in Movement Disorders, and will certainly not be the last. Our goal was to bring together an impressive group of leaders in their respective fields from across the globe to discuss current knowledge. Furthermore, authors were encouraged to discuss controversies such as conflicting findings and methodological limitations in order to provide the reader with a comprehensive yet pragmatic understanding of the state of science. Lastly, these experts were asked to provide their insights about where future research is moving or should be directed.

The topics of the book chapters provide both comprehensive reviews of various neuroimaging methods and also more in-depth summaries of the contributions made by neuroimaging in individual movement disorders. Although many of the neuroimaging methods that are discussed have not been routinely used in clinical practice, the authors have done an excellent job of providing the reader with adequate

detail to understand the requirements for using these methods and in some cases even the starting knowledge to begin local implementation.

We are grateful to each contributor for the time and effort invested on this project. Without their devotion to sharing knowledge, the advancement of our common understanding would not be possible. It is also important to recognize the immense contributions made by patients and families to further our shared goal of curing these neurological disorders.

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