MRI-Negative Epilepsy

Evaluation and Surgical Management
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Edited by

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To my parents
– Elson.

To my beloved wife and children
– Philippe.
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MRI-negative refractory focal epilepsy is well known to present major challenges in seizure localization and surgical treatment. Many epilepsy centers around the world are encountering increasing numbers of patients with MRI-negative refractory epilepsy. As a result, there has been a growing number of publications on the topic of presurgical evaluation and postsurgical outcome of MRI-negative surgery. A great proportion of these publications emanate from advances in imaging techniques. The MRI is one of the historically most versatile diagnostic tools, with new techniques still developing decades after its advent. However, other imaging modalities are keeping pace in their development for detecting functional alterations that can serve as surrogates or markers of the epileptogenic focus. At the same time, data have been accruing from electrophysiological and histopathological investigations in MRI-negative patients who have undergone presurgical evaluation and surgical management.

MRI-negative epilepsy is not a single disease entity or epilepsy type, and the global experience with its evaluation and surgery has varied. No one epilepsy center has all the most advanced presurgical diagnostic or surgical techniques at its disposal. Experience or skills in the techniques are expected to vary between centers. Perhaps for these reasons, outcomes of MRI-negative epilepsy surgery are not uniform between centers. Therefore, in developing diagnostic and therapeutic approaches for MRI-negative epilepsy surgery, there is a need for critically assessing surgical outcomes in terms of factors that contribute to postsurgical seizure control and neuropsychological impact.

The editors and authors have developed this book so that clinicians and researchers in epilepsy would find it to be useful because of the following features:

- The book collates and integrates in one medium the fast-evolving state of the art and the science in the evaluation and surgical management of MRI-negative focal epilepsy.
- Content of the book is clearly organized by diagnostic and treatment options and approaches, and by the type of refractory epilepsy.
- Contributors to this book are experts in their respective areas, with recognized research investigations and clinical experience in the areas.
- Each diagnostic technique and surgical approach discussed is critically appraised for its value and limitations.
- Clinical relevance of the materials in this book is enhanced by patient cases, with many images provided to illustrate salient points in each chapter.

Elson L. So and Philippe Ryvlin