

REFRACTORY FAMILIAL TLE RESPONDS FAVORABLY TO SURGICAL INTERVENTION

Outcome of Surgical Treatment in Familial Mesial Temporal Lobe Epilepsy

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PURPOSE: To describe postoperative outcome in patients with familial mesial temporal lobe epilepsy (FMTLE).

METHODS: We studied FMTLE patients who underwent surgical treatment for refractory seizures. FMTLE was defined when at least two individuals in a family had a clinical EEG diagnosis of MTLE. Preoperative investigation included magnetic resonance imaging (MRI), interictal/ictal EEGs, and neuropsychological evaluation. We used Engel's classification for postoperative outcome.

RESULTS: To date, 20 FMTLE patients have been operated on, with 1.6 to 9.8 years of follow-up (mean, 5.5 years). Hippocampal atrophy (HA) and other signs of mesial temporal sclerosis (MTS) were present in 18 patients (15 unilateral). Seizures were recorded in 19 patients. Seventeen (85%) patients are in class I. Two patients had normal hippocampal volumes (HcVs): one (5%) is in class II, and the other (5%) in class IV (extratemporal seizures developed after surgery). One (5%) patient had bilateral HA and is in class III. Qualitative histopathology showed MTS with different degrees of severity.

CONCLUSIONS: Refractory FMTLE patients have good surgical outcome when unilateral or clearly asymmetric HA is identified. Preoperative investigation should be the same as that in patients with sporadic refractory MTLE.

who demonstrate magnetic resonance imaging (MRI) abnormalities (e.g., atrophy, increased T₂ signal, and/or architectural disruption) in the mesial temporal region ipsilateral to the ictal electrographic seizure onset have a very high (>90%) likelihood of complete seizure control after surgical resection of the mesial temporal structures. The etiology for mesial temporal lobe epilepsy (MTLE) remains elusive and is likely multifactorial, but the majority of cases fail to demonstrate associated familial occurrence. Recently, though, a familial form of mesial temporal lobe epilepsy (FMTLE) has been appreciated and described—although its exact genetic basis has yet to be determined. Interestingly, in contrast to the typically severe nature of sporadic MTLE, the familial syndrome is often mild or even demonstrates remittance. Perhaps more fascinating, some relatives of affected family members demonstrate seemingly asymptomatic hippocampal atrophy on imaging studies.

The present report by Kobayashi and colleagues describes the clinical outcomes of 20 patients with pharmacoresistant FMTLE who were treated with surgical resection. The designation of FMTLE was made when at least 2 individuals in a family had the clinical and electrographic diagnosis of MTLE. Patients in the series underwent standard presurgical evaluation, with ictal recordings (surface recordings in all and depth electrode recordings in 4) obtained in all but one patient. Unilateral seizure onset was documented in 13 of these 19 patients, and bitemporal onset with clear lateralization in 6. High-resolution MRI showed unilateral hippocampal atrophy in 15 of the 20 patients, asymmetric bilateral hippocampal atrophy in 3, and no abnormalities in 2. The majority of patients underwent anteromedial temporal resection, although selective amygdalohippocampectomy was performed in 6 cases. Surgical outcomes at a mean follow-up of 5.5 years (range, 1.6–9.8 years) were very favorable, with the vast majority of patients attaining complete seizure control. The 3 patients with poorer outcomes had either bilateral hippocampal changes or no abnormalities on MRI. Pathologically, 73% of patients for whom studies were available showed changes of mesial temporal sclerosis of variable degree, whereas 27% demonstrated no significant histopathologic abnormality.

This report establishes the responsiveness of pharmacoresistant FMTLE to surgical treatment, with outcomes similar to

COMMENTARY

Pharmacoresistant temporal lobe epilepsy of unilateral mesial temporal origin is the prototypic epilepsy syndrome responsive to surgical resection. Patients with this condition



those in patients with sporadic mesial temporal lobe epilepsy. Clearly, lateralized mesial temporal ictal onset and concordant unilateral hippocampal atrophy on MRI predict excellent post-operative seizure control—whether in patients with familial or sporadic forms of mesial temporal lobe epilepsy. This may not be particularly surprising, yet without the type of analysis presented in this report, it could not be assumed that patients with an apparent genetic basis for their MTLE would respond in a manner similar to that of patients with the more common nonfamilial form. The genetic basis for FMTLE remains to be determined, but it is intriguing to speculate whether the genetic defect predisposes to a “hippocampopathy,” whether subtle or blatant, because the majority of patients with pharmaco-resistant

FMTLE show hippocampal pathology. Furthermore, patients with more-benign forms of FMTLE often have hippocampal atrophy on MRI, and even a sizeable number of asymptomatic first-degree relatives of patients with FMTLE demonstrate hippocampal abnormalities on MRI. Elucidating the genetic defect and associated pathogenetic mechanisms of FMTLE may very well shed light on the basis for epileptogenesis of the more routinely encountered, sporadic forms of MTLE. In the meantime, it is helpful for clinicians to know that patients with pharmaco-resistant FMTLE can be evaluated and surgically treated by using standard approaches.

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