CLINICAL IMAGES

Mesial temporal sclerosis in epilepsy

Vincent R. Spano BMSc(H), David J. Mikulis MD

A 25-year-old man had experienced complex partial seizures since childhood. The seizures, which featured automatisms and dystonic posturing, had started following a febrile illness with a prolonged seizure when he was four years of age. Unsuccessful control of seizures using multiple antiepileptic drugs resulted in weekly seizures, rendering him unable to drive. Neuroimaging showed gliosis and atrophy of the right hippocampus, characteristic of mesial temporal sclerosis (Figure 1).

Nearly 0.6% of Canadians have a seizure disorder.[1] More than 21% of patients with epilepsy experience complex partial seizures, one-half of which are refractory to anticonvulsant therapy.[2] Intractable complex partial seizures are common in temporal lobe epilepsy, which is often associated with sclerosis of the structures of the medial temporal lobes, particularly the hippocampus. This abnormality is one of the most prevalent epileptogenic foci in localization-related epilepsy.[2]

The etiology of mesial temporal sclerosis is unclear. Studies suggest an increased incidence among family members and an association with precipitating insults during the first four to five years of life.[3] For example, the risk of mesial temporal sclerosis developing from childhood complex febrile seizures is 3%.[4] The precipitating event is typically followed by a latent period before the patient presents with epilepsy. Seizures may then undergo remission until the patient's late adolescence.[3]

Patients classically present with complex partial seizures lasting one to two minutes. Preceding auras generally involve epigastric "rising" sensations, fear, anxiety and autonomic symptoms.[3] Arrest (freezing), altered consciousness and automatisms are typical, sometimes accompanied by dystonic posturing or motor symptoms. Secondary generalization is rare; however, disturbances of mood, cognition, language and memory may occur postictally.[3]

Diagnostic findings in mesial temporal sclerosis include interictal anterior temporal spikes on electroencephalography and hippocampal atrophy with increased T_2-weighted signal on magnetic resonance imaging (Figure 1).[2,3] Although mesial temporal sclerosis is generally unilateral, bilateral involvement is occasionally seen.

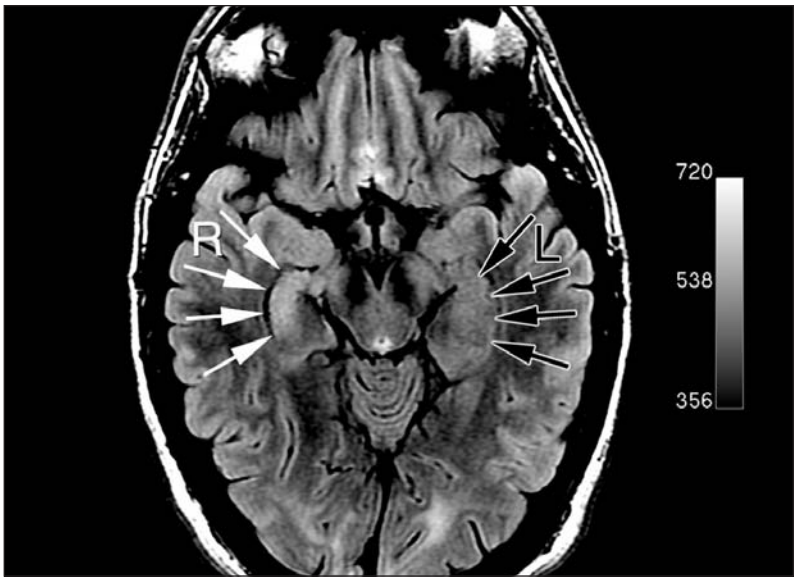

Figure 1: Axial T_2-weighted fluid attenuated inversion recovery (FLAIR) magnetic resonance image in a 25-year-old man with complex partial seizures. The image shows hyperintensity of the right hippocampus with volume loss (white arrows), characteristic of right mesial temporal sclerosis. Black arrows indicate the left hippocampus for comparison. Magnetic resonance–based hippocampal volumes measure 2.12 cm³ on the right and 2.72 cm³ on the left.

Surgery is the standard of care for intractable seizures, with a 70%–90% rate of success.[2] Anterior temporal lobectomies are often performed; however, selective resections have shown similar results.[2] The patient described in this report was referred for surgery.

References

1. Tellez-Zenteno JF, Pondal-Sordo M, Matijevic S, et al. National and regional prevalence of self-reported epilepsy in Canada. *Epilepsia* 2004;45:1623-9.
2. Trieman DM. Management of refractory complex partial seizures: current state of the art. *Neuropsychiatr Dis Treat* 2010; 6:297-308.
3. Wieser HG; Commission on Neurosurgery of Epilepsy. ILAE Commission Report. Mesial temporal lobe epilepsy with hippocampal sclerosis. *Epilepsia* 2004;45:695-714.
4. Chungath M, Shorvon S. The mortality and morbidity of febrile seizures. *Nat Clin Pract Neurol* 2008;4:610-21.

Competing interests: None declared.

This article has been peer reviewed.

Affiliation: From the Joint Department of Medical Imaging, Division of Neuroradiology, University Health Network, University of Toronto, Toronto, Ont.

Correspondence to:
Vincent Spano,
vincent.spano@utoronto.ca

***CMAJ* 2011. DOI:10.1503/cmaj.110089**

© 2011 Canadian Medical Association or its licensors