

**INTERESTING CASE PRESENTATION**

**MESIAL TEMPORAL SCLEROSIS AND HIPPOCAMPAL ATROPHY**

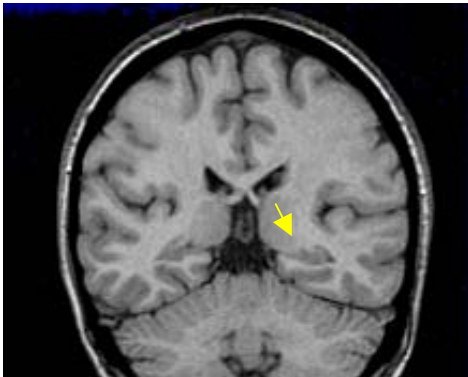


Figure 1

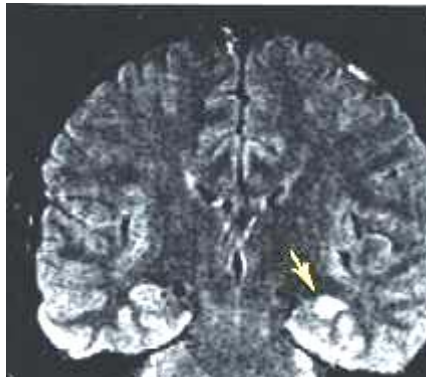


Figure 2

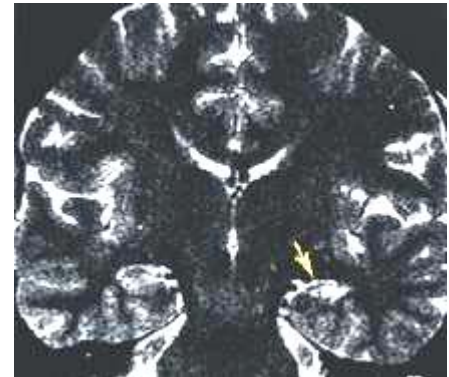


Figure 3

**CLINICAL PRESENTATION:** This 26-year-old patient had a history of intractable complex partial seizures. He was referred to AIC for a high-resolution MRI of the brain, specifically the temporal lobes, in order to determine the presence of mesial temporal sclerosis (MTS) as well as possible hippocampal atrophy.

**MRI FINDINGS:** The above images demonstrate left hippocampal atrophy and mesial temporal sclerosis as indicated by the arrow in each figure. T1-weighted images (**Figure 1**) are best for detecting size asymmetry of the hippocampal gyri, while T2-weighted images (**Figure 3**) and particularly FLAIR (fluid attenuated inversion recovery) images are most sensitive for detecting signal abnormalities (**Figure 2**). MRI detects mesial temporal sclerosis by demonstrating size asymmetry and abnormal signal within the atrophied hippocampus. Thin-section, high-resolution oblique coronal MR images are best for detecting these abnormalities, which can be subtle.

**ETIOLOGY:** The most common cause of complex partial seizures is mesial temporal sclerosis, occurring in 35 to 65 percent of patients who undergo temporal lobe surgery. In mesial temporal sclerosis, the hippocampus is smaller than normal. This usually occurs on one side of the brain, but can occur bilaterally in 10 to 15 percent of cases. The cause of neuronal loss is not known but may be related to repeated seizure activity which places high metabolic demands on neurons and eventually results in their destruction. Febrile seizures are also believed to be a potential cause of MTS.

In addition to MTS, other temporal lobe lesions can cause seizures, including benign and malignant neoplasms, cortical dysplasia, vascular malformations and post-traumatic brain injury. MRI is an excellent modality for the evaluation of these possibilities. Temporal lobectomy can cure seizures in some patients with mesial temporal sclerosis. Patients with MTS that have the best outcome after temporal lobectomy are those who have had preoperative EEG showing seizure activity without associated generalized seizures in the lobe that is to be removed.

For additional information regarding the above or any other questions, please call me at (661) 255-0060.

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