

Limbic encephalitis (LE) is a potentially devastating neuro-inflammatory brain disease that can result in significant patient morbidity and even mortality if not promptly diagnosed and treated. The diagnosis of LE is dependent on the clinical history as well as ancillary testing, including brain magnetic resonance imaging (MRI). Brain MRI in LE classically reveals T2-hyperintensity of the medial temporal lobes, but similar neuroimaging findings have been observed in patients with recent seizure activity. The management of LE compared to recent seizure activity may differ dramatically; for this reason, the motivation for this study was to identify neuroimaging patterns that might help distinguish between these two entities. Through this study we identified two such patterns (termed "Pattern 1" and "Pattern 2") on a specific MRI sequence (diffusion-weighted imaging, or DWI) that were indicative of recent seizure activity rather than LE. Even in patients with known LE, the presence of these DWI patterns was associated with seizures.

The determination of these neuroimaging patterns that can help distinguish between LE and recent seizure activity has immediate translatable benefit in clinical practice. Recognition of these patterns in patients with medial temporal lobe T2-hyperintensity can prompt expedited evaluation of possible seizure activity, thereby having a direct positive impact on patient care. Even in patients with known LE the presence of these patterns should raise concern for seizure, reflecting their utility in patients with this form of encephalitis. We therefore hope that dissemination of this research finding can improve the care of patients with recent seizure activity, including those with and without LE