

Influence of Pathology on HFOs

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The pathophysiology of HFOs in the epileptic brain is not well understood. Direct brain recordings in presurgical patients with drug-resistant seizures have found HFOs in epileptogenic tissue associated with different types of pathology such as hippocampal sclerosis and focal cortical dysplasia. However, HFOs can also be recorded in epileptogenic tissue beyond the boundaries of an obvious MRI lesion and less frequently in areas distant from the seizure onset zone. Similarly, in animal models of chronic limbic epilepsy, HFOs occur in the lesioned dentate gyrus and hippocampus, but can also occur in hippocampal tissue with little or no cell loss. From these results it seems extensive cell loss is not required for the generation of HFOs and that other non-specific, e.g. gliosis, and/or specific alterations like sprouting and synaptic reorganization could be morphological changes associated with HFO-generating sites.