

Interictal high frequency oscillations in epileptogenic hippocampus with and without hippocampal sclerosis

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Research abstract

Purpose: To estimate the influence of histopathological finding of hippocampal sclerosis (HS) in epileptogenic hippocampi on interictal high frequency oscillations (HFOs) rate.

Methods: Twenty one hippocampi were investigated in 13 patients with pharmacoresistant epilepsy (9 patients with mesial temporal lobe epilepsy, 4 patients with neocortical temporal lobe epilepsy subtypes). Clinical depth electrodes and automated HFOs detection were used. Interictal HFOs rates were analyzed in 4 epileptogenic hippocampi with histopathologically proven HS (HS group), in 5 epileptogenic hippocampi with proven gliosis only (non-HS group) and in 12 hippocampi not involved in seizure onset zone and without obvious MRI lesion (control group).

Results: The mean rates of both fast ripples and ripples were significantly higher in HS-group if compared with non-HS group. The mean rate of ripples in non-HS group was significantly higher than in control group, but the similar trend in the fast ripple range did not reach statistical significance.

Discussion: Epileptogenic hippocampi affected by hippocampal sclerosis demonstrate an additional increase of interictal HFOs rate, if compared with epileptogenic hippocampi without significant neuronal loss.

