High-frequency oscillations (HFOs) and in particular fast ripples (FRs) in the post-resection electrocorticogram (ECoG) have been shown to be highly specific predictors of epilepsy surgery outcome.

Nariaiet al. investigated the spatial correlation between interictal HFOs and neuroimaging abnormalities, and determined if complete removal of prospectively identified interictal HFOs correlates with post-surgical seizure-freedom.

Interictal fast ripples (FRs: 250-500 Hz) in 19 consecutive children with pharmacoresistant focal epilepsy who underwent extra-operative electrocorticography (ECoG) recording were prospectively analyzed. The interictal FRs were sampled at 2000 Hz and were visually identified during 10 min of slow wave sleep. Interictal FRs, MRI and FDG-PET were delineated on patient-specific reconstructed three-dimensional brain MRI.

Interictal FRs were observed in all patients except one. Thirteen out of 18 patients (72%) exhibited FRs beyond the extent of neuroimaging abnormalities. Fifteen of 19 children underwent resective surgery, and survival analysis with log-rank test demonstrated that complete resection of cortical sites showing interictal FRs correlated with longer post-operative seizure-freedom (p < 0.01). Complete resection of seizure onset zones (SOZ) also correlated with longer post-operative seizure-freedom (p = 0.01), yet complete resection of neuroimaging abnormalities did not (p = 0.43).

Prospective visual analysis of interictal FRs was feasible, and it seemed to accurately localize epileptogenic zones.

Topological extent of epileptogenic region may exceed what is discernible by multimodal neuroimaging $^{1)}$.

FR visual marking is time consuming and prone to observer bias.

A automatic and fully unsupervised detection of HFO events matched the expert observer's performance in both event selection and outcome prediction $^{2)}$.

1)

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