



Misleading of EEG in Epilepsy

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The finding of epileptiform EEG activity plays an important role in classification of epilepsies and epilepsy syndromes. The distribution of IED on the scalp depends on the conductive properties of the surrounding tissue, the spatial characteristics of the generator, propagation pathways and on the spatial resolution of the surface EEG. Consequently, the distribution of interictal epileptic discharges in the scalp EEG can fail to localize or even mislocalize the region or hemisphere of seizure origin. Patients with an epileptogenic zone in the frontal, occipital, insular-opercular and orbitofrontal regions may show falsely localizing temporal IED.

Poor localization of IED in FLE is due to the anatomy of the frontal lobe with inaccessibility of much of the frontal lobe to surface electrodes and the network of projection pathways that allow the rapid spread of epileptiform activity within and outside the frontal lobes. Mesial frontal lesions facilitate secondary bilateral synchrony which is the phenomenon of seemingly generalized IED which can be observed in up to 40% of these patients. In Parietal lobe epilepsy. The IED are usually widespread and multifocal and can be bilateral suggesting an extent of the irritative zone far beyond the epileptogenic zone. Secondary bilateral synchrony can be recorded in up to 30% of the cases especially with parasagittal lesions. The most frequent IED in Occipital lobe epilepsy are spikes and sharp waves in temporal or temporo-occipital regions and even frontal lobe. Rarely, IED can be recorded with highest amplitudes in the contralateral occipital region.