

Parietal lobe epilepsy: a combined scalp-intracranial EEG study

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Ever since the implementation of invasive EEG recordings in the clinical setting, it has been known that a considerable number of epileptic discharges present in the neural tissue are not visible at scalp EEG recording. The object of the present case presentation is to illustrate the relationship between an electrical event recorded by intracerebral electrodes and its scalp correlate. We present a case of a 24 years-old who started having seizures from the age of 20. During a typical seizure he smiles (sometimes with a mirthful feature) then presents hypermotor automatisms mainly involving the lower limbs, tonic left upper limb and genital automatisms with upper limb. Scalp-EEG revealed interictal epileptiform discharges and seizure onset that involve the right parietal and temporal regions. The patient was explored using stereo-electroencephalography during which simultaneous scalp-intracranial recordings were acquired. Comparing these two, it is noted that the seizure onset is much earlier visible on the intracranial trace with a better spatial definition over the inferior parietal lobule and a fast spread to the right temporal pole. Therefore, simultaneous multi-scale recordings provide a new framework for obtaining a view on brain signals that is both local and global, thereby overcoming the inherent SEEG limited spatial sampling.