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EEG in pre-surgical evaluation of epilepsy surgery

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Scalp Electroencephalogram (EEG) recording is first step in the evaluation of patients being considered for Epilepsy Surgery. Most of these patients have undergone more than one EEG recording and due to intractable seizures are being considered for epilepsy surgery. The yield of a routine first EEG record is usually 40-50% which however, after the third to fourth EEG increases to up to 80%. Overall, standard EEG with 10–20 system provides limited coverage of the temporal regions detecting only about 58% of temporal spikes or interictal epileptiform discharges (IEDs) in temporal lobe epilepsy (TLE). Additional electrodes help in increasing this yield including zygomatic, mandibular notch, nasopharyngeal (NP), sphenoidal (SP), and foramen ovale (FO) electrodes also help similarly. Preoperative interictal EEG abnormalities commonly observed in TLE are focal arrhythmic slowing (either theta or delta) and focal IEDs that are often restricted to the anterior temporal areas. In majority, these abnormalities correlate well with seizure onset zone and the structural abnormalities seen on magnetic resonance imaging (MRI). In TLE, single or serial outpatient EEGs demonstrate strong correlation of interictal abnormalities with areas of surgical resection and postoperative seizure outcomes (90% for IEDs and 82% for focal slowing). Such strong correlations may obviate the need for mandatory ictal recordings during presurgical workup in patients with unilateral hippocampal atrophy (HA) and congruent clinical and neuropsychological data, However, ictal recording becomes essential to rule out the possibility of concurrent psychogenic nonepileptic seizures (PNESs). Moreover, bilateral TLE, coexisting extratemporal epilepsy, or generalized epilepsy. A number of illustrative cases will be reviewed.

Biography

Sajjad Ali completed his training in Clinical Neurophysiology from the West Midlands Denary, UK in 2009 and then worked as a Physician Consultant at the Queen Elizabeth Hospital Birmingham (QEHB), where he gained experience in the clinical and electrodiagnostic evaluation of peripheral nerve disorders and developed his special interest in single-fiber electromyography, under the mentorship of Prof. Erik Stalberg (Uppsala, Sweden). Currently, Dr. Ali works in one of the largest healthcare organization in KSA, at the National Neurosciences Institute, King Fahad Medical City, Riyadh. Other research and special interests include EMG-guided Botox injections for spasticity, neuro-intraoperative monitoring and sleep studies.

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