Localization related epilepsy

Localization related epilepsy (LRE) is increasingly accepted as a network disorder. To better understand the network specific characteristics of LRE, Marino et al., defined individual epilepsy networks and compared them across patients.

The epilepsy network was defined in the slow cortical potential frequency band in 10 patients using intracranial EEG data obtained during interictal periods. Cortical regions were included in the epilepsy network if their connectivity pattern was similar to the connectivity pattern of the seizure onset electrode contact. Patients were subdivided into frontal, temporal, and posterior quadrant cohorts according to the anatomic location of seizure onset. Jaccard similarity was calculated within each cohort to assess for similarity of the epilepsy network between patients within each cohort.

All patients exhibited an epilepsy network in the slow cortical potential frequency band. The topographic distribution of this correlated network activity was found to be unique at the single subject level.

The epilepsy network was unique at the single patient level, even between patients with similar seizure onset locations.

Thdy demonstrated that the epilepsy network is patient-specific. This is in keeping with our current understanding of brain networks and identifies the patient-specific epilepsy network as a possible biomarker in LRE [1)].

1)
Marino AC, Yang GJ, Tyrtova E, Wu K, Zaveri HP, Farooque P, Spencer DD, Bandt SK. Resting state connectivity in neocortical epilepsy: The epilepsy network as a patient-specific biomarker. Clin Neurophysiol. 2018 Dec 6;130(2):280-288. doi: 10.1016/j.clinph.2018.11.016. [Epub ahead of print] PubMed PMID: 30605890.