Paroxysmal slow wave events (PSWE), as a novel EEG biomarker for non-convulsive seizures in Alzheimer's disease patients

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Technology

A growing body of evidence shows that epileptic activity is frequent but often undiagnosed in Alzheimer's disease (AD) patients, with significant therapeutic implications. Epileptic seizures in patients with Alzheimer's disease can easily go unrecognized because they usually present as non-motor seizures, and can overlap with other symptoms of the disease.

Prof. Friedman's technology analyzed electroencephalogram (EEG) data from AD patients and discovered a novel EEG signature of transient slowing of the cortical network we termed paroxysmal slow wave events (PSWE). The occurrence per minute of PSWEs is inversely correlated with level of cognitive impairment. Interictal PSWEs were also found in patients with epilepsy, localized to cortical regions displaying blood-brain barrier (BBB) dysfunction, and in two rodent models with BBB pathology: aged mice and status epilepticus-induced epilepsy in rats. This technology offers a method to determine BBB dysfunction, as a risk factor for early onset of variable acute and chronic CNS-indications

Application

We wish to use PSWEs as a novel EEG biomarker for non-convulsive seizures in AD patients. We also claim BBB pathology as an underlying mechanism and as a promising therapeutic target.

Advantages

- A fast and easy diagnostic tool: Transient shifts in activity of the cortical network can be identified and quantitatively assessed using merely scalp EEG.
- A mean of using BBB dysfunction for the treatment of diagnosed patients in these indications. In particular, PSWEs can serve as an affordable diagnostic biomarker for brain diseases and as a pharmacodynamic biomarker for BBB targeted therapeutics or anti-epileptic drugs.

Patent

Provisional application was filed