Sensory stimulus

A sensory stimulus is any event or object that is received by the senses and elicits a response from a person. The stimulus can come in many forms such as light, heat, sound, touch, as well as from internal factors.

Inhibition of epileptic discharges and seizures by sensory stimulus is an interesting phenomenon, but highly understudied.

Elmalı et al. aimed to investigate the modulation of epileptiform discharges in patients with mesial temporal lobe epilepsy associated with hippocampal sclerosis (MTLE-HS) via photic stimulation (PS), based on a hypothesis that light stimulation may activate thalamocortical networks limiting the propagation of interictal epileptiform discharges. In order to do so, all EEGs performed in patients diagnosed with MTLE-HS were reviewed to include available recordings with definite epileptiform abnormalities. These were reevaluated by two clinical neurophysiologists independently, and spikes were counted in a blinded manner to calculate spike index (SI) (spikes per minute-pm) for baseline EEG, hyperventilation (HV), and PS periods. Our final study group consisted of 30 MTLE-HS patients with a mean age of 34.5 (±12.5) years. Mean seizure frequency was 38.1 per year (±46.6), and the mean disease duration was 16.2 years (±12.1). Mean SI during baseline was calculated as 1.17 pm (±1.4), during HV 2.1 pm (±2.8) and during PS 0.8 pm (±2.5). As a result, SI was significantly lower during PS compared to baseline ($p = 0.001$). The findings suggest that PS has a remarkable inhibitory effect on epileptiform discharges in MTLE-HS patients, indicating the need for further prospective investigations for clinical translation [1)].

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Elmalı AD, Ur Özçelik E, Bebek N, Baykan B. Let there be light: Inhibitory effect of photic stimulation on spike frequency in patients with mesial temporal lobe epilepsy with hippocampal sclerosis. Epilepsy Res. 2021 Jul 27;176:106734. doi: 10.1016/j.eplepsyres.2021.106734. Epub ahead of print. PMID: 34371448.