Central nervous system hyperexcitability

Laser-evoked potentials (LEPs) are among the reliable neurophysiological tools to investigate patients with neuropathic pain, as they can provide an objective account of the functional status of thermo nociceptive pathways. The goal of a case-control study of a single medical center in Belgium was to explore the functioning of the nociceptive afferent pathways by examining LEPs in patients with chronic whiplash-associated disorders (cWAD), patients with chronic fatigue syndrome (CFS), and healthy controls (HCs).

The LEPs of 21 patients with cWAD, 19 patients with CFS, and 18 HCs were analyzed in this study.

All participants received brief nociceptive CO2 laser stimuli applied to the dorsum of the left hand and left foot while brain activity was recorded with a 32-channel electroencephalogram (EEG). LEP signals and transient power modulations were compared between patient groups and HCs.

No between-group differences were found for stimulus intensity, which was supraliminal for Aδ fibers. The amplitudes and latencies of LEP wave components N1, N2, and P2 in patients with cWAD and CFS were statistically similar to those of HCs. There were no significant differences between the time-frequency maps of EEG oscillation amplitude between HCs and both patient populations.

EEG responses of heat-sensitive Aδ fibers in patients with cWAD and CFS revealed no significant differences from the responses of HCs. These findings thus do not support a state of generalized central nervous system hyperexcitability in those patients [1)].

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