Contribution ID: **350** Type: **Talk in simposio**

Interacion Information in fibromyalgic patients: an high-order analysis of EEG connectivity in response to Laser-Evoked Potentials

Monday, September 23, 2024 11:20 AM (20 minutes)

Laser-evoked potentials (LEP) are widely used to investigate the nociceptive pathway in patients with Fibromyalgia (FM). Since FM causes widespread pain and cognitive impairment, it presents diagnosis and treatment challenges. Quantifying the interaction Information (II), a higher-order information theoretic quantity, on laser-evoked potentials can provide an analytical measure of its neuronal effects. This analysis may improve our understanding of the complex neurophysiological mechanisms underlying FM, potentially informing more personalized treatment strategies and enhancing patient prognosis. Ninety-three subjects were enrolled and subsequently assigned into four groups according to the results of the skin biopsy (controls n. 14; normal skin biopsy n. 19; proximal denervation n. 53; distal and proximal denervation n. 7). LEPs were recorded with a 64 channel EEG headset in three different sites (hand, knee, and feet). The exams consisted in 30 stimulations per site, after which the the perception of pain intensity was estimated through the Visual Analog Scale (VAS). We looked at the temporal interactions at the Cz electrode where the LEP is generally expressed. The EEG data were transformed via the Gaussian copula normalization and then, Information-theoretic quantities were calculated based on the transformed data. Statistical significance of the information-theoretic quantities was approached by cluster-based permutation testing, which corrects for multiple testing on all possible time point combinations without comprising power. This methodology represents a novel approach in the study of FM, highlighting the application of advanced information-theoretic analyses in the study of complex chronic conditions.

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Beyond Neural Connectivity: Exploring Higher Order Interactions in the Brain

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?

No

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