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Cerebral blood flow variability in fibromyalgia syndrome: Relationships with emotional, clinical and functional variables.

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Erratum in

Correction: Cerebral blood flow variability in fibromyalgia syndrome: Relationships with emotional, clinical and functional variables. [PLoS One. 2018]

Abstract

OBJECTIVE:

This study analyzed variability in cerebral blood flow velocity (CBFV) and its association with emotional, clinical and functional variables and medication use in fibromyalgia syndrome (FMS).

METHODS:

Using transcranial Doppler sonography, CBFV were bilaterally recorded in the anterior (ACA) and middle (MCA) cerebral arteries of 44 FMS patients and 31 healthy individuals during a 5-min resting period. Participants also completed questionnaires assessing pain, fatigue, insomnia, anxiety, depression and health-related quality of life (HRQoL).

RESULTS:

Fast Fourier transformation revealed a spectral profile with four components: (1) a first very low frequency (VLF) component with the highest amplitude at 0.0024 Hz; (2) a second VLF component around 0.01-to-0.025 Hz; (3) a low frequency (LF) component from 0.075-to-0.11 Hz; and (4) a high frequency (HF) component with the lowest amplitude from 0.25-to-0.35 Hz. Compared to controls, FMS patients exhibited lower LF and HF CBFV variability in the MCAs ($p < .005$) and right ACA ($p = .03$), but higher variability at the first right MCA ($p = .04$) and left ACA ($p = .005$) VLF components. Emotional, clinical and functional variables were inversely related to LF and HF CBFV variability ($r \geq -.24$, $p \leq .05$). However, associations for the first VLF component were positive ($r \geq .28$, $p \leq .05$). While patients´ medication use was associated with lower CBFV variability, comorbid depression and anxiety disorders were unrelated to variability.

CONCLUSIONS:

Lower CBFV variability in the LF and HF ranges were observed in FMS, suggesting impaired coordination of cerebralregulatory systems. CBFV variability was differentially associated with clinical variables as a function of time-scale, with short-term variabilitybeing related to better clinical outcomes. CBFV variability analysis may be a promising tool to characterize FMS pathology and it impact on facets of HRQoL.

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