Sensory Inhibition and Descending Pain Modulation Deficits in Functional Motor Disorders

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INTRODUCTION

Functional Motor Disorders (FMD) are disabling neurological conditions characterized by motor symptoms that are inconsistent or incongruent with known neurological disease[1].Objective neurophysiological markers are still lacking.

OBJECTIVE

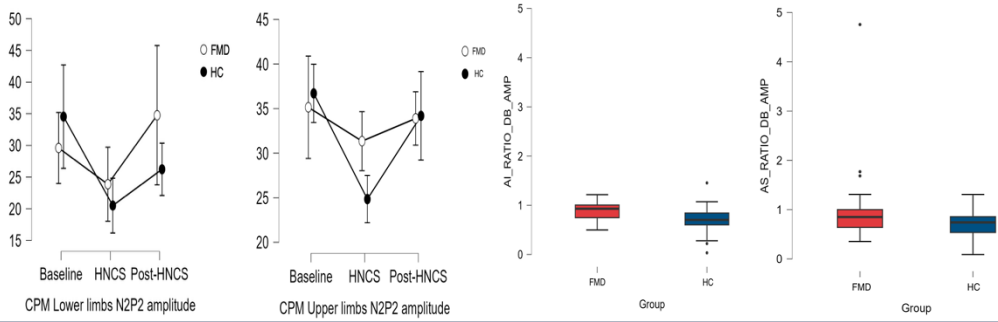
To investigate sensory inhibition and descending pain modulation in FMD patients using Prepulse Inhibition (PPI)[3] of the Blink Reflex and Conditioned Pain Modulation (CPM) protocols[2].

METHODS

59 patients with clinically confirmed FMD (49 females; mean age 42±12 years) and 59 healthy controls (HC; 39 females; mean age 38±11 years) underwent neurophysiological assessments. PPI was evaluated by measuring R2 and R2c areas following a tactile prepulse. CPM was assessed via Laser-Evoked Potentials (LEPs), comparing N2P2 amplitudes at baseline, during heterotopic noxious cold stimulation (HNCS), and post-HNCS. A ratio between HNCS/baseline and post-HNCS/baseline was computed to explore differences between groups.

RESULTS

The two groups did not differ for age nor gender (both $p>0.05$). In HC and FMD, no differences were found between and within groups for both R2 and R2c areas (all, $p>0.05$). For LEPs, HC showed significant modulation of CPM both for upper and lower limbs (all, corrected $p<0.05$). In FMD, CPM modulation was significant only between baseline and HNCS conditions and between baseline and post-HNCS conditions for both upper and lower limbs (all, $p<0.016$), but not between HNCS condition and post-HNCS (both, $p>0.019$). Between the two groups, no significant differences were found in all conditions for both upper and lower limbs (all, $p>0.05$). Regarding the computed ratios, the two groups significantly differed for both upper and lower limbs only at the HNCS/baseline ratio, revealing that FMD patients showed a reduced modulation during HNCS condition in comparison to HC.



CONCLUSIONS

These findings suggest that FMD may involve disrupted brainstem sensory processing and impaired descending pain inhibition. CPM abnormalities may represent an objective biomarkers to support the diagnosis of FMD. Ongoing studies on a larger cohort aim to validate these preliminary findings.

Bibliography

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