

Central modulation of pain evoked from myofascial trigger point.

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OBJECTIVES: Low-intensity low-frequency electrostimulation delivered within a myofascial trigger point (MTP) has been used as intervention to deactivate MTPs. The therapeutic effect has been suggested to be due to peripheral mechanisms. However, nonpainful stimuli are also known to reduce simultaneous pain through central effects. The primary objective of the present study was to assess if central pain modulation occurs after intervention with low-intensity electrostimulation within an MTP. We hypothesized that intervention induces pain inhibition via the periaqueductal gray (PAG).

METHODS: Twenty-four patients with myofascial pain syndrome participated in the study. During functional magnetic resonance scanning, painful (high-intensity) intramuscular electrostimulation was delivered at random intervals (mean interstimulus interval=10.2 s) within an MTP of the upper left trapezius muscle. In-between scanning sessions, intervention (intramuscular electrostimulation, low-intensity, interstimulus interval=0.5 s) was applied to the same area. Patients were divided into responders and nonresponders according to their change in pressure pain thresholds relative to intervention. In addition to a whole brain search, a region of interest approach was also implemented to test the effect of intervention on PAG signal change.

RESULTS: The main findings were: (1) intervention modulated PAG activity to painful stimuli more in responders than in nonresponders, (2) change in PAG activity from the whole patient population correlated with change in pressure pain threshold, and (3) a network known to regulate affective qualities of the pain experience was (subsignificantly) engaged more in responders than in nonresponders.

DISCUSSION: The applied intervention most likely involves supraspinal pain control mechanisms related to both antinociception and regulation of pain affect.