Understanding stress comprising changes in muscle excitability, hormones and the nervous system.

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ABSTRACT

Background: Negative stress is very common, always affecting brain and body resulting in different symptoms often called psychosomatic. To better understand stress, it is important to overcome the mind-body dichotomy and explore how they are connected.

Objective and Method: We will present in children with recurrent stress related pain, some hormonal changes and electromyography (EMG) data, showing a novel and a missing link, regarding central and peripheral neurophysiological changes of significant importance for better understanding recurrent multiple psychosomatic pain (1).

Results: During high acoustic signals, the startle reaction was shown, via EMG, to be potentiated, more easily and more often elicited in several muscles related to the pain, in 19 children with recurrent stress related pain in the head, neck and abdomen, diagnosed according to strict defined criteria (2), and compared to 21 matched controls. Also, higher resting muscle activity was found in these children as well as increased cortisol and decreased oxytocin.

Conclusion. Stressors evoke stress response for example in the amygdala, which can trigger and potentiate the startle reaction with amplified muscle excitability and tonus. These reactions and the increased cortisol and decreased oxytocin in those children are in accordance with findings of the right dominance of stress in the bi-cameral brain (3). These neurophysiological facts can be of importance for the understanding of clinical manifestation of psychosomatic pain and must be heeded in the treatment of patients with pain related to stress.

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