Attachment style and cytokine levels in patients with fibromyalgia: A prospective longitudinal study

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Background & Objectives: The association between attachment style and subjective pain is controversially discussed and the influence of attachment styles on cytokine levels in chronic pain has received little attention in research. In this prospective longitudinal clinical study, we evaluated the relationship between cytokines, attachment style and subjective pain intensity as well as pain-related functioning in patients with fibromyalgia (FM) who underwent a 4-week multidisciplinary pain therapy.

Materials & Methods: The attachment style was determined in 43 patients with FM using the relationship questionnaire (RQ-2) and subjective pain with the German version of the West Haven-Yale multidimensional pain inventory. Serum levels of the pro-inflammatory cytokines tumor necrosis factor alpha (TNF-α) and interleukin 8 (IL-8) and the anti-inflammatory cytokines IL-4 and IL-10 were assessed before and after treatment and additionally once only in 18 healthy controls (Bio-Plex system).

Results: Patients with FM syndrome were significantly more often insecurely attached than healthy controls (p=0.001). Serum levels of TNF-α (p=0.001) and IL-10 (p=0.039) were significantly higher in FM patients compared to controls. Attachment was unrelated to IL-4, IL-8, and IL-10 levels. Insecurely attached FM patients had significantly higher levels of TNF-α (p=0.002) than securely attached patients. Insecurely and securely attached patients did not differ in subjective levels of pain severity, activity or functional interference. Cytokine levels were not correlated with subjective levels of pain severity or functional interference. Multidisciplinary pain therapy significantly reduced cytokine levels, pain severity, anxiety and depression independent of attachment style.

Baroreflex sensitivity – A translational approach for etiopathogenesis and individualized therapy in fibromyalgia

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Background & Aims: Different studies report diminished baroreflex sensitivity (BRS) in fibromyalgia (FM) patients that interferes the signal relay to the nucleus tractus solitaries (NTS) associated with increased peripheral sympathetic stress responses and central sensitization in a hypertensive subgroup of FM. The present study examined central components of pain processing before and after systolic extinction training (SET) that combines operant behavioral therapy with baroreceptor training. SET aims at new-programming of the NTS reflex arc in FM.

Methods: 68 FM patients treated with SET, placebo-controlled, and compared with 32 healthy controls (HC). Evoked potentials (N50, N150, P260 and P390) to electrical stimuli of 3 different intensities were evaluated during either the systolic or diastolic peak of the cardiac cycle. Clinical pain, pain threshold and pain tolerance were assessed pre-, post- and at follow-up.

Results: FM showed a pretreatment attenuation of early evoked potentials (N50, N150) that increased to HC levels after treatment (p<0.01). In addition, in FM both early and late evoked potentials were influenced by stimulus intensity (all p's<0.01) before but not after treatment. At 6-12 months, the magnitudes of potentials evoked by all stimuli were similar to that evoked in HC at baseline. BRS, pain threshold and tolerance significantly increased after therapy and 82% of FM reported pain remission still 12 months after SET.

Conclusions: Cardiac gated peripheral afferent stimulation combined with behavioral treatment may induce changes in central pain processing that lead to pain remission. SET activates both sensory and cognitive-affective brain regions to re-program pain inhibitory mechanisms.