Elevated serum level of pro-inflammatory cytokines and reduced anti-inflammatory cytokines in patients with chronic low back pain

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Introduction: Recently more investigations concentrated on the role of cytokines in the mechanism of pain. To date, there have been no studies of the production of inflammatory mediators in blood from patients with low back pain. We have therefore analysed levels of pro- & anti-inflammatory cytokines in sera from patients with low back pain, and their relationship to pain dimensions.

Materials and Methods: In this study with a follow-up of six months, serum concentration of IL-4,-6,-8,-10 and TNF-α was measured in 120 patients with chronic low back pain and 84 healthy subjects and the visual analogue pain scale and back function were documented.

Results: At admission, the prevalence of TNF-α was significant elevated among patients with low back pain, while prevalence of IL-8 and IL-10 significantly reduced. Ten days after multidisciplinary pain therapy the prevalence of IL-6 was significantly reduced and prevalence of IL-4 was significantly increased. For the same time the pain intensity correlated with IL-4. At discharge the pain intensity of patients was lowered and back function was improved without changes of cytokine prevalence. IL-6 correlated with back function and sport activity during the study.

Discussion: As far as we know, this is the first analysis of parameters predicting a major clinical connection of cytokines in blood and low back pain. Our findings indicate that elevated serum levels of TNF-α and reduced IL-8 and IL-10 are associated with chronic low back. IL-4 can indicate the pain intensity after multidisciplinary-pain therapy and IL-6 can give a reference to back function and whether the patient is physical active.