

Immune responses following McKenzie lumbar spine exercise in individuals with acute low back pain: A preliminary study

Saud Al-Obaidi and Fadia Mahmood
Kuwait University, Kuwait

Background: The pathophysiology of low back pain (LBP) and disk-related sciatica is not limited to mechanical compression of the neural tissue. Inflammation and inflammatory mediators, has been implicated in the production of acute or chronic pain.

Objectives: This study explores the immune responses following 4 weeks of McKenzie lumbar spine exercise in individuals with acute low back pain (ALBP).

Methods: Participants were 15 volunteered patients with ALBP. Ten ml of peripheral blood were obtained from each patient before and after 4 weeks of McKenzie exercise intervention. All patients underwent subjective and objective assessment. Intervention was custom designed following McKenzie assessment and treatment protocol. For a reference purpose similar blood samples was obtained from 15 healthy individuals. Flow cytometric analysis was used to evaluate the frequencies of CD4+ T lymphocyte sub-populations and the intracellular cytokine expression within this cell population. Pain perceptions were obtained at baseline and following each week of exercise sessions.

Results: There was no significant difference in the frequency of T lymphocyte sub-populations; memory

(CD4+CD45RO+) T cells, helper inducer (CD4+CD29+) T cells, CD3+CD16+CD56+ T cells and naive/suppressor (CD4+CD45RA+) T cells at base line relative to these cell populations after exercise sessions. Pain was significantly reduced after 4 weeks of McKenzie exercise interventions ($p < 0.05$). The percentage of T cells expressing pro inflammatory cytokines IL-8 and TNF- α and anti-inflammatory cytokine IL-4 increased significantly ($p < 0.05$) following intervention. Interestingly, the reduction in pain scores did not correlate with elevated anti-inflammatory cytokines.

Conclusion: McKenzie exercise induced an immune activation state and simultaneously up regulated anti-inflammatory IL-4 cytokines that boost pain relief.

Biography

Prof. Saud received his Master degree in Physical Therapy from Washington University at Saint Louis Missouri in 1987, and his Ph.D. from New York University in 1991. Prof. Saud have over 30 years of clinical experience, in clinical management of pain and musculoskeletal conditions and the subsequent movement dysfunction. Professor Saud research areas include analysis of abnormal movement management of acute and chronic pain and dysfunction, focusing on the consequences of selected biopsychosocial factors including; anticipation and fear of pain, exaggerated pain perception, pain avoidance behavior, and related impact on physical performances. Recently he got interested in immune responses following low intensity exercise performances on pain modulation and immune process. Prof. Saud have published many articles in prestigious international journal and served as a reviewer for many local and international journal including ; Journal of Physical Therapy Theory and Practice, Annals of Human Biology, Physiotherapy Research International, Clinics and Practice, International Journal of General Medicine, Kuwait Medical Journal, and Saudi Medical Journal. Professor Saud have developed and patented 2 devices in his field of practice. Since 2007 Professor Saud works as the Dean of Faculty of Allied Health Sciences, at Kuwait university.

dra1obaidi@hsc.edu.kw

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