Low back pain inflammation detection from the peripheral blood

NEWS

Pain Management

As chronic low back pain has a significant impact on a patient's quality of life, it affects the ability to work and undertake everyday activities. The identification of a specific biological marker for this condition is an extremely important goal. Its attainment can help to prevent the development of chronic pain in many patients and enable scientists to better understand its pathophysiology and identify new therapeutic targets.

Though imaging studies have been performed and characterized the numerous pleomorphic presentations of lower vertebral changes in low back pain, there are no peripheral biomarkers that can predict predisposition of disease or disease progression. Biomarker for prediction of development of low back pain, and disease progression in chronic conditions are virtually non-existent.

Therefore, to examine the evidence of inflammation in the peripheral blood and demonstrated significant changes in neuro-inflammatory markers in chronic low back pain in comparison to control, a study was conducted. It was performed using peripheral blood from subjects with chronic low back pain and age-matched control subjects. Biochemical methods like western blotting, real time RT PCR, cell culture and in vitro assays were also performed during the study.

An evidence was obtained that the balance between pro-inflammatory and anti-inflammatory cytokines was misaligned with decreased in interleukin-10 (IL-10) expression with increased interleukin-6 (IL-6) expression. Further, an increased CD 16 monocyte expression was also observed. To generate M1/M2 macrophages, cells were cultured under differential conditions. Diminished capacity of opioid secretory was seen in macrophages. Key transcriptional inhibitor of IL-6 expression of Dragon guidance molecule was shown to be diminished.

Finally, on completion of the conducted study, it was demonstrated that the expression of Dragon, a key repulsive guidance molecule that negatively regulates IL-6 expression is manifested in M1 macrophages obtained by differentiating peripheral cells from subjects with low back pain. Results also indicated that the wider pro-inflammatory environment is existent in low back pain subjects. These biochemical and cellular alterations in chronic low back pain served as potential bio markers for assessing disease initiation, intensity and progression.

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