A hypothesis of chronic back pain: ligament subfailure injuries lead to muscle control dysfunction

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KEY POINTS

1) The spinal ligaments, disc annulus and facet capsules are innervated with mechanoreceptors.

2) Degenerative spinal disease, single trauma, or cumulative microtrauma causes subfailure injuries of the spinal ligaments, disc and facet capsules, causing abnormal firing of the embedded mechanoreceptors.

3) There is increased nerve ingrowth into diseased intervertebral discs.

4) Subfailure injury of spinal ligaments is defined as an injury caused by stretching of the tissue beyond its physiological limit, but less than its failure point. [IMPORTANT: This is the classic definition of a whiplash injury].

5) Chronic whiplash patients have decreased active neck range of motion, but an increase in passive neck range of motion.

6) Injured muscles heal relatively quickly due to an abundant blood supply and therefore they are not the main cause of chronic back pain. [Important]

7) Ligament and disc injuries heal poorly and therefore lead to tissue degeneration over time.

8) “Thus, the ligament injuries are more likely to be the major cause of the chronic back pain.” [Very Important]

9) The subfailure ligament injuries may heal with scar tissue over time, resulting in long-term or permanent mechanoreception. [The Fibrosis Of Repair]

From the Desk of Dr. Chris Quigley       Director: The Boston Wellness Group
102 Charles Street, Boston Massachusetts 02114
617-720-1992   TheBostonWellnessGroup.com
Dear Dr. Panjabi:


The hypothesis you presented is consistent with the perspective offered within the chiropractic community for decades. In the parlance of the chiropractic profession you have expertly and vividly described what is referred to as a vertebral subluxation. The chiropractic community has been studying, writing about and modifying its perspective on the phenomenon you articulated for more than a century.

Our present hypothesis suggests that the altered mechanoreceptive afferent driven motor mismatch can be corrected by the firing of the mechanoreceptors of the facet joint capsules which are activated by means of a chiropractic adjustment (1). The hypothesis you articulated, explains why chiropractic spinal adjustments have proven to be more effective in treating chronic spinal pain when compared to medication, exercise, and needle acupuncture (2, 3, 4, 5, 6, 7, 8, 9).

Respectfully,

Daniel J. Murphy, DC
Faculty, Life Chiropractic College West

References

9) Reinhold Muller, PhD, Lynton G.F. Giles, DC, PhD, Long-Term Follow-up of a Randomized Clinical Trial Assessing the Efficacy of Medication, Acupuncture, and Spinal Manipulation for Chronic Mechanical Spinal Pain Syndromes, Journal of Manipulative and Physiological Therapeutics, January 2005, Volume 28, Number 1.