Shaw Chiropractic Group

A MEDICAL-LEGAL NEWSLETTER FOR PERSONAL INJURY ATTORNEYS BY DR. STEVEN W.SHAW

Mechanical Low Back Pain

A study in the European Spine Journal caught my attention because of it's relevance to patients with chronic spine pain after trauma. This journal is considered to be one of the most highly regarded spine journals published. The paper was submitted by Dr. Panjabi from the Department of Orthopedics at Yale. He is considered the most respected and published researchers on the topic of human biomechanics with over 263 published articles.

The study was titled **A Hypothesis of Chronic Back Pain: Ligament Subfailure Injuries Lead to Muscle Control Dysfunction.** It was in the July 27th , 2005 edition of the journal. The ligament subfailure he refers to is related to several ligaments of the spine including the disc and facet capsules. He suggests that subfailure (partial tears that are not visible on radiographs) are the source of chronic back pain due to muscle control dysfunction. To me this sounds a lot like a chiropractic lesion.

Dr. Panjabi notes the following sequential steps:

1) Single or multiple traumas result in subfailure of the ligaments and mechanoreceptors that are within the ligaments.(In lay terms, mechanoreceptors are nerve endings that sense mechanical stimulus)

2) The damaged mechanoreceptors send corrupted signals which, in turn, result in corrupted muscle responses.

3) This lack of coordination and recruitment of muscles causes abnormal stresses and strains in ligaments, mechanoreceptors, muscles and facet joints.

4) Poor healing of the spinal ligaments results in accelerated degenerative changes in the disc and facet (spondylosis and arthrosis).

5) Over time, this may lead to chronic back pain via inflammation of the neural tissues.

The important point here is that the entire process begins with ***"abnormal mechanics of the spine"*** that causes abnormal messages to be sent to the spinal cord.

Dr. Panjabi points out that the tissue source for the mechanoreceptors is the spinal column ligaments, facet capsule and disc annulus. This is particularly important in whiplash related injuries because it has been well documented that the primary injury from the trauma is exactly

these structures. Also important is that he points out that the muscles will heal relatively quickly due to the abundant blood supply and therefore are not be the primary cause of chronic back pain. On the other hand, he points out that ligaments heal poorly and will result in tissue degeneration over time. ***"Thus, the ligament injuries are more likely to be the major cause of chronic back pain"*** **.**

I liked this study for a number of reasons.

1) It is published in a highly recognizable journal by a world class researcher from Connecticut.

2) It acknowledges that ligamentous subfailure, the kind not visible by conventional imaging methods, is a significant injury resulting in short and long term pain and dysfunction.

3) It points to a neurological explanation that is now widely accepted in the medical and chiropractic professions.

4) It is particularly pertinent for the traumatically injured population of patients seen in our offices.

5) It suggests that the long term sequella to these injuries is accelerated degenerative changes and worsening of the pain.

6) It supports the chiropractic approaches to management by identifying the primary source of the problem as being mechanical in origin. Thus, the most appropriate treatment will be one that uses mechanical forces to restore function. In other words, CHIROPRACTIC.

It is likely that many more similar papers will be published over the next several years on this topic. Dr. Panjabi is usually leading the field and other researchers follow his lead. Over time, this "hypothesis" will be validated by further clinical trials.

I would like to credit Dr. Dan Murphy for summarizing this complex paper into easy to understand language (or at least easier).