

Degenerative Discs and Pre-existing Pain

We have all heard the argument that a patient's post traumatic spine pain is related to some pre-existing degenerative changes. It's an argument that attorneys and doctors have battled time and time again. The argument often comes from poorly informed people, many of which are primary care doctors that are not current with the literature related to spine pain. The argument is also part of the training for those whose interests are served by this fallacy. Generally speaking, the argument comes from being uninformed, misinformed or selectively informed. This newsletter will address this topic.

A medical colleague from the Spinal Injury Foundation recently sent his electronic newsletter to me covering this topic. His newsletter sparked me to write this condensed version on the topic. Since the majority of information used in this newsletter came from his work, I feel it appropriate to acknowledge Dr. Chris Centeno. He is a physician who has contributed greatly to the science of whiplash and is the energy behind the annual International Whiplash and Trauma Conference.

The premise of this newsletter is the following: **When evaluating patients with imaging studies a doctor must be careful not to give too much weight to the existence of degenerative changes in otherwise asymptomatic patients.** This is best appreciated by examining the literature.

Several studies have been done, the oldest of which is a study published in the journal of Neuroimaging in 1991. In this study patients without low back pain underwent an MRI. Thirty-nine percent of this normal group had evidence of Degenerative Disc Disease (DDD). A New England Journal of Medicine Article in 1994 found similar results. It demonstrated that of 98 subjects without low back pain, 52% had DDD on MRI. Similar findings were discovered in the thoracic spine (upper back) by Wood in the Journal of Bone and Joint Surgery in 1995. Thoracic MRI's were performed in 90 asymptomatic adults. 73% of these patients had DDD at least one level. Similar findings have been found in radiographic analysis of asymptomatic cervical spines with the prevalence of DDD increasing with age. In addition, MRI has been found to have high false negative and positive rates for predicting painful discs in this area. In summary, there has not been a single study published to date that convincingly shows that DDD seen on MRI or x-ray is a painful condition. The correlation of MRI demonstrated disc degeneration and spinal pain is extremely weakly linked in the literature.

While earning our masters degree, Dr. Michael Yoel and I studied this exact subject. We looked at people using x-ray and graded the existence of degenerative joint disease (DJD). We found no difference in the presence and degree of DJD in the trauma and non-trauma populations. We then correlated VAS pain ratings to trauma and non-trauma populations. We found that the degree of pain in the trauma DJD patients was significantly greater than the non trauma population. While we never published the paper it correlates well with the studies mentioned earlier. It also raises the question of why DJD is a confounding factor in trauma.

The answers have not been well defined in the literature but here is what most of us believe, given the available science. First, degenerative joints have substantially lessened ranges of motion. The ranges of motion which remain do not follow the normal biomechanical patterns of a healthy joint. When trauma occurs, the motion limits of the degenerative joints are exceeded resulting in damage of the bone and its connective tissue structures. The second confounding component concerns the microscopic anatomy of the spinal discs. It has been well documented since the late 1980s that degenerative discs develop nociceptive nerve receptors (as well as other types). Nociceptive nerve receptors are those that transmit pain sensations. Prior to this discovery, the discs were considered absent of nerve supply. Lastly, normal pain modulation requires input from normally functioning joint proprioceptors that constantly tell the brain the joint's position. A degenerative joint, with less movement and proprioceptive input, has a lowered threshold for pain.

Taken in combination, we can extrapolate that an injured degenerative disc, with decreased range of motion, increased population of pain receptors and lessened ability to modulate pain will result greater disability and greater medical treatment needs.

I would be remiss if I didn't comment on the significant role a chiropractor can play in helping this patient population. Chiropractors specifically work with the spine to restore normal movement. We do this with spinal manipulation, physical therapy and exercises. By improving biomechanical integrity to a injured joint we are more likely to bring a patient back to functional levels. This is done by improving joint motion, thereby helping the bodies normal pain modulation systems work their magic. It's a long overdue explanation of why patients respond so favorably to chiropractic management approaches.