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Pre-existing degeneration leads to more injury with less trauma

By Christopher J. Quigley

My 18-year-old son and his 74-year-old grandfather are sitting in my car, a Lexus GS, at a stop light here in Boston. A lovelorn taxi cab driver, approaching quickly behind my son and his grandad, is having a heated texting session with his significant other while cruising to his next pickup. He doesn't see my car and slams into the rear of it without hitting the brakes.

Who do you think will get injured more: grandpa or my son?

Grandpa of course. Why? Because his spine is stiffer, less elastic and has much more arthritis than my 18-year-old son. The stiffer, less elastic and arthritic spine is a risk factor for more injury with less trauma.

The literature is packed with references that confirm the influence of pre-accident degenerative joint disease making your clients sustain more injury with less trauma.

Historically, the insurance industry practice of ascribing whiplash injury to degenerative, pre-existing arthritis is akin to someone repeating the same deception over and over again, to later believe that is the truth. It is especially wrong if those changes were not problematic prior to the injury.

This article highlights a small sampling of references, but there are many in the scientific literature.

One of the first to recognize this principle was Ruth Jackson, MD. Dr. Jackson was a whiplash injury expert and pioneer in the study of many aspects of injury to the spine. In a 1964 article titled "The Positive Findings in Alleged Neck Injuries,"[1] based on her evaluation of 5,000 injured patients, she notes: "Pre-existing pathological conditions of the cervical spine, when injured, result in more damage than would be anticipated in a so called 'normal' spine."

Samuel Turek, MD, clinical professor from the Department of Orthopedics and Rehabilitation at the University of Miami School of Medicine and author of the reference text "Orthopaedic Principles and the Applications"[2] in 1977, writes:

"The injury may be compounded by the presence of degenerative disease of the spine.

"With advancing age, especially in the presence of degenerative disease, the tissues become more inelastic and are easily torn."

Rene Cailliet, MD, professor and rehabilitation specialist from the University of Southern California and author of the book "Neck and Arm Pain"[3] in 1981, writes:

"The pre-existence of degeneration may have been quiescent in that no symptoms were noted, but now minor trauma may decompensate the safety margin and symptoms occur."

One of my personal favorite articles was published in the prestigious British Journal of Bone and Joint Surgery, titled "The Prognosis of Neck Injuries Resulting from Rear-End Vehicle Collisions."[4] Written by the team of Norris and Watt in 1983, an orthopedist and a radiologist from the Bristol Royal Infirmary in England, this was the most elegant report on the topic for many years. In the article they report on a series of 61 patients who they evaluated and divided into three groups.

- Group I: patients complaining of symptoms related to their injuries but with no exam findings
- Group II: patients complaining of symptoms and reduced range of movement of the neck
- Group III: patients with symptoms, loss of range of motion, and evidence of neurological loss

They write:

"Factors which adversely affect prognosis include the presence of objective neurological signs, stiffness of the neck, and pre-existing degenerative spondylosis (arthritis).

"Entirely normal radiographs were found in 30% of patients with no objective findings and 13% of patients with reduced cervical range of motion and all radiographs in patients with neurological loss were abnormal [showing degenerative changes].

"Degenerative spondylosis was detected in:

- 26% of patients with no objective findings
- 33% of patients with reduced cervical range of motion
- 40% of patients with neurological loss

"This indicates that cervical spine degenerative changes are associated with greater injury and worse prognosis for recovery.

"This study suggests that prognosis is predictable on the basis of the initial presentation of the patients. Two features on plain radiographs seem relevant:

- Pre-existing degenerative changes in the cervical spine, no matter how slight, do appear to affect the prognosis adversely.
- Abnormal curves in the cervical spine are more common in patients with a poor outcome."

In a paper titled "Whiplash Syndrome Fact or Fiction?"[5] published in the Orthopedic Clinics of North America in October 1988, Stuart Hirsch, MD, and colleagues reported several important conclusions:

"Pre-existing structural changes and degenerative changes are 'frequently associated with a more difficult, more prolonged, and less complete recovery.'

"The films should be inspected especially for evidence of pre-existing structural changes or for alteration, which are frequently associated with a more difficult, more prolonged, and less complete recovery.

"These changes may include the presence of osteophytes, foraminal encroachment on the oblique projections and the presence of intervertebral disc space narrowing.

"When hyperextension injury occurs in the presence of pre-existing osteophyte formation, there is further narrowing of the spinal cord which increases the potential for injury to the nerve roots or cord."

Another excellent article was published in the journal Spine by Jerome Schofferman, MD, and his colleague Shelley Wasserman, MS, in 1995. The article, "Successful Treatment of Low Back Pain and Neck Pain after Motor Vehicle Accident Despite Litigation,"[6] described the evaluation and follow-up for 39 patients with low back pain or neck pain that resulted from a motor vehicle accident who had litigation pending. They noted:

"Pre-existing degenerative changes on initial x-rays, no matter how slight, had a worse prognosis."

In 1995, Webb in the Journal of the Australian Chiropractic Society, in an article titled "Whiplash: Mechanisms and Patterns of Injury,"[7] notes:

"Degenerative joint disease is recognized as a major influence on subsequent tissue damage both in severity and pattern.

"In any individual where changes consistent with degenerative joint disease are present, one can expect the injury to be more severe or a very minor injury to produce severe symptoms requiring prolonged treatment."

Neurologist Bernard Swerdlow, MD, in the reference text "Whiplash and Related Headaches,"[8] (1999) makes the following points:

"Risk factors that may lead to chronicity include pre-existing degenerative osteoarthritic changes.

"Other conditions that may pre-exist the accident that may contribute to a chronic state following the accident are osteoarthritis, degeneration of vertebral body joints, disc degeneration and inflammatory processes.

"Studies indicate that pre-existing osteoarthritic changes contributed to alter the prognosis adversely.

"As we get older there is degeneration of the intervertebral disc. This degeneration affects the height of the disc. When there is loss of disc height, then this may cause a decrease in motion of the posterior facets and lead to restriction of motion at that level. Therefore the biomechanical function of these vertebrae are affected.

"If there is restricted motion and a cervical acceleration/deceleration accident takes place, an insult to the facet joint and disc is more probable and can lead to the chronicity of the pain."

In 2002, Steven Forman, D.C., DABCO, and Arthur Croft, DC, MS, DABCO, wrote in their reference text on whiplash injuries:

"Degenerative processes can alter the structural integrity of the cervical spine. ... Degenerative processes can affect both the biomechanics and the neurological function of the area."

They also quote Norris and Watt:

"The presence of pre-existing degenerative changes, no matter how slight, appears to alter the prognosis adversely."[9]

In the Journal Acta Neurochir 2005 supplement 92: 25-27, Carlo Schenardi, MD, published a study titled: "Whiplash Injury, Thoracic Outlet Syndrome and Double Crush Syndrome, Forensic Medical Aspects."[10] In the article he writes:

"A substantial percentage will have painful symptoms for much longer especially the elderly or those with pre-existing neck problems who may develop chronic long term problems which may never resolve."

The final paper I would like to quote is from the Journal of Bone and Joint Surgery written by orthopedic surgeons Gordon Bannister, MD, FRCS, and Martin Gargan MA, FRCS. These two authors are probably the most published individuals in history on long-term

recovery outcomes of whiplash injuries. The article titled "Whiplash Injury"[11] was published in the July 2009, Vol 91B, no.7, pp 845-850. It is a free article you can find online. They write:

"In the general population, neck pain is not associated with cervical spondylosis or with advancing age." (This means that it is not appropriate to ascribe a whiplash-injured patient's neck pain to pre-injury spondylosis.)

"Pre-accident spondylosis doubles the probability of developing neck pain from a motor vehicle collision." (Important: This suggests that pre-accident spondylosis reduces the ability of joints to handle the imparted forces, increasing injury and symptoms.)

"Patients whose necks are spondylotic at the time of their accident have an incidence of pain of 53% after two years.

"Patients who sustain a whiplash injury in their third decade and undergo radiography ten years later show a level of cervical spondylosis which is typical of necks 15 years older." (This is very important! Whiplash injury accelerates spondylosis by 15 years.)

MRI disc degeneration rates are the same in symptomatic and asymptomatic populations. (Again, this indicates that it is not appropriate to ascribe a whiplash-injured patient's neck pain to pre-injury spondylosis.)

Professor Daniel Murphy, D.C., D.A.B.C.O., writes:

"In conclusion, for the last 50 years published studies, primary research and reference texts pertaining to whiplash trauma have evaluated the significance of pre-injury cervical spine degenerative joint disease. The consensus from these publications is that:

- Pre-existing degenerative joint disease renders such joints less capable of adequately handling and dispersing the forces of a new injury.
- Therefore, injury to these joints and the surrounding soft tissue is greater.
- There are more long-term subjective, objective and functional residuals.
- It appears that the traumatic event, not only adversely affects the pre-injury degenerative joints, but places greater stress on adjacent normal joints, altering their neuro-biomechanics as well. This probably becomes an additional factor in post whiplash chronic pain syndrome requiring prolonged treatment to achieve maximum improvement."[12]

These references in a demand package can protect the rights of those injured in whiplash injuries and offset potentially one-sided defense examinations and reports.

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Endnotes

[1] Jackson, MD, "The Positive Findings in Alleged Neck Injuries," Am J Orthop, 1964 Aug-Sep; p. 178-87

[2] Turek, Samuel, "Orthopaedics: Principles and Their Application," Lippincott, Third Edition, 1977, p. 740

[3] Cailliet, MD, "Neck and Arm Pain," 2nd edition 162 pp, F.A. Davis Co., Philadelphia, PA, 1981, p. 103

[4] Norris, SH, and I. Watt, "The Prognosis of Neck Injuries Resulting from Rear-End Vehicle Collisions." The Journal of Bone and Joint Surgery, 65-B.No5 (1983): 608-11

[5] Hinch, S, "Whiplash Syndrome Fact or Fiction," Orthopedic Clinics of North America, October 1988 vol. 19, No. 4 p. 791-785

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[9] Foreman, Stephen M., and Arthur Croft C., "Whiplash Injuries: The Cervical Acceleration/Deceleration Syndrome," Baltimore: Williams & Wilkins, 2002, Third Edition p. 504, 505

[10] Schenardi, Carlo, "Whiplash Injury, TOS and Double Crush Syndrome, Forensic Medical Aspects," Advanced Peripheral Nerve Surgery and Minimal Invasive Spinal Surgery Acta Neurochirurgica (n.d.): p. 25-27.

[11] Bannister, G., R. Amirfeyz, S. Kelley, and M. Gargan, "Whiplash Injury," Journal of Bone and Joint Surgery, 91-B.No. 7 (2009): p. 845-50.

[12] Murphy D, Seminar Notes, February 2016

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