Dynamic Chiropractic

MUSCULOSKELETAL PAIN

Double Crush Syndrome

Double crush syndrome is not uncommonly seen in clinical practice. It was first described by Upton and McComas and published in Lancet in 1973. They found in 81/115 cases of carpal tunnel syndrome that there was an associated cervical radiculopathic finding as well. They proposed that if a nerve is impaired at one location it makes that patient more susceptible to other entrapments along the same neuraxis. They felt that either nerve compression alone or by itself would not be enough to cause clinical dysfunction. The two or more sites of nerve compression may slow axonal transport, thus creating conduction abnormalities. They concluded it is of vital importance to identify each area of nerve compression or entrapment and treat each one individually.

Experimental research by Nemoto et al., found evidence for double crush syndrome and concluded that two low grade compressions along a nerve are worse than either alone.

In a study of 1,000 patients with carpal tunnel syndrome, Hurst et al., found a statistically significant incidence of bilateral carpal tunnel syndrome in patients with cervical spondylosis. They also found a relationship between diabetic neuropathy and this type of nerve entrapment phenomenon.

In an EMG study, Raps found patients with cervical radiculopathy to be predisposed to a second lesion along the route of the same nerve, and suggested that double crush syndrome is a true entity.

In a study by Osteman et al., it was concluded that double crush syndrome should be suspected in older age female patients who also have paresthesia, and grip strength weakness associated with distal prolonged sensory latencies on NCV studies.

Thoracic outlet syndrome (TOS) is often seen and associated with double crush syndrome as well. In a paper by Naralcas, they found that the proximal neuropathy usually precedes the distal one. They found a high prevalence of TOS associated with carpal tunnel syndrome in 40 cases, TOS associated with ulnar neuropathy in 19 cases, and TOS associated with radial tunnel syndrome in 29 cases.

Conservative care can be helpful in the case of double crush syndrome, but identification of each entrapment site is of obvious importance. In a case report in JMPT by Mariano et al., chiropractic management was found to be helpful in the treatment of double crush syndrome. The patient had both a cervical radiculopathy and carpal tunnel syndrome documented by needle EMG exam. The patient was treated with chiropractic adjustments, adjunctive physiotherapy, and wrist splints with good results.

It has been my experience to occasionally encounter double crush syndrome. It can be often seen posttraumatically after whiplash injuries, as well as in patients who are commonly exposed to repetitive vibration. A positive Tinel's sign at multiple sites (i.e., Erb's point, cubital tunnel as well as the carpal tunnel) in combination with paresthesia, sensory deficits and grip weakness, can be suggestive of double crush syndrome. Clinicians should have a high index of suspicion for double crush syndrome when the patient presents with the above noted symptoms. The clinician should perform

tests such as Wright's hyperabduction test, Phalen's test, Tinel's sign, as well as sensory, motor and deep tendon reflexes.

Since double crush may include two or more entrapments, careful investigation is paramount to successful treatment. It has been my experience, as well as that of Mariano et al., that double crush syndrome can and does respond to chiropractic management that includes: spine and extraspinal manipulation, myofascial release adjunctive physiotherapies and rehabilitative exercises. Many times peripheral entrapments may occur within the myofascial planes of certain muscles (i.e., pronator teres syndrome), and responds well to myofascial release technique as described by Eahey et al.

For further information on this topic or references for this article, please fax your questions or requests to Dr. BenEliyahu at (516) 736-7490.

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