

Cervical Myelopathy: A Clinical Overview

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Cervical myelopathy is defined as compression of the spinal cord in the cervical spine. There are many reasons why a case of cervical myelopathy could present in your office. Spinal stenosis, either degenerative or genetic, is a common reason. Of course, tumors and conditions such as syringomyelia would be part of the differential diagnosis. Even ischemic events could present symptoms related to spinal-cord compression. The greater likelihood, however, is that those serious conditions mentioned already would have been diagnosed and assessed due to the other inevitable symptoms that would be associated with them. Let's cover some anatomy and physiology to lay the foundation for why this often-missed condition can contribute to unremitting back pain.

Exiting the foramen magnum, the spinal cord traverses the length of the spinal column, encased and protected in the spinal canal - a fact we all learned in the first trimester of our educations. The spinal cord in the cervical spine, in particular, contains the neurological information for both the upper and lower extremities. Thus, a cervical-spine injury can be particularly devastating in its repercussions. The anatomy of the cervical spinal cord is broken into the anterior, lateral and posterior sections. The lateral horn of the spinal cord contains the cortico-spinal pathways, as well as the anterolateral system. Both these systems have a laminar distribution of their integrated nerve fibers; that is to say the pathway itself can be divided into sections such that the legs are the most lateral, the trunk is medial, and the upper-extremity nerves are on the inner aspect of the cervical corticospinal pathway.

The spinal canal itself is not free and open: not only does it contain the spinal cord proper, but it also contains arteries, veins, fat tissue and other supporting structures that help maintain the viability of the cord itself. In chiropractic neurology, there is the possibility of what we term *venous ballotment*. In those cases, either because of a neurological imbalance in the intermediolateral cell column (IML), which controls sympathetic arterial vascular tone, or because of an actual space-occupying lesion, we will have a "ballooning" of the vein at a particular level such that there is actual compression of the spinal cord. When this phenomenon occurs in the cervical spine, we have the presentation common to cervical myelopathy.

The most common presentation of clinical cervical myelopathy in our chiropractic offices will be not of neck pain but low back pain. When we have venous ballotment in the cervical spine - let's say on the right side - the spinal-cord compression will first affect the spino-cerebellar pathways with the great likelihood we will see discoordination of the patient's extremities, primarily on the same side as the compression. There also may be compression, if the swelling is great enough, of the lateral cortico-spinal pathway such that there will be weakness of the lower extremities before there is any weakness of the upper extremities. This can, understandably, be a difficult concept to grab since we would expect to see substantial neck pain with any spinal cord swelling or injury.

Yet when it comes to venous ballotment, we must remember that there is little to no nociceptive innervation of the venous system. A slow but steady compression of the cervical spine will cause dysfunction without pain. Based on the laminar distribution of the cortico-spinal pathways and the most common location of compression, we could well envision the probability of a cervical myelopathic condition causing weakness of both anterior and posterior musculature of the

ipsilateral lower extremity as to the spinal cord compression.

These patients most often will present with low back pain that has been resistant to all forms of treatment. They would have undergone therapy, adjusting, traction, acupuncture and every other treatment they could think of. They will have flexor and extensor weakness of the lower extremity. I often will find rectus femoris weaknesses and quadriceps weakness. It should go without saying that any major muscle weakness of the lower extremity will wreak havoc with the biomechanics of the pelvis and the spine, thus leading to chronic imbalances and pain. When these very powerful muscles present themselves as weak, it can be due to a space-occupying lesion in the gut (causing direct femoral-nerve compression) or the above-described scenario. Many of these patients eventually will opt for surgery. The interesting part is that they often will experience relief, not because any such disc was affected originally, but because the act of opening the spinal canal diffuses the cervical cause of the condition. Regardless, I have still had patients present post-surgery with the exact same scenario. Sometimes what we can do is what truly will work long-term.

The treatment must focus on the cervical spine to improve this particular condition. Due to the fact that the most common etiology is related to venous ballotment and the likelihood of decreased IML function on the same side as the lesion, the adjustment is performed on the opposite side of the compression. Sometimes the weakness and compression have been present for such a long time that it is not logical to expect an immediate change in symptoms. What should be immediately apparent is that the weak leg should show a marked and permanent strengthening, secondary to the correct adjustment. Following this strengthening, it becomes a matter of proper rehabilitation and patience as the nerves that were compressed begin their process of re-myelination and normal firing rates.

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