

Have you ever wondered whether there might be a neurological connection between chronic upper and lower extremity difficulties? There is one neural tract that has received little attention, yet clearly tends to be part of a long sine wave of progression toward reducing the quality of our lives. It is the neural reflex arc related to C5-6 outlined in the illustration. (1) This relationship can be a co-conspirator in sciatic syndromes along with the same-sided upper extremity, shoulder, and cervical difficulties. In addition to the progression of gall bladder dysfunction described in my last article series, I have observed that the progression of cervical stenosis is implicated in many of the chronic problems that our clients present to us.

The problem begins with a narrowing of the central cervical canal where, most commonly, the vertebral bodies of C4, 5, 6, or 7 may compress the canal, encroaching upon one or both of the foraminal openings for the exiting spinal nerves and eventually pressing on the spinal cord itself. This progressive compression is called stenosis. The simple picture is to visualize the bony spine pinching the spinal cord more and more tightly over a period of years. (2) Congenital predisposition (a narrow central canal at birth), accreted trauma or, a major trauma often advances this progression to show itself earlier in life or in the severity of its expression.

Stenosis can occur anywhere along the length of the spinal cord but is most frequently identified in the cervical region. (3) The segmental levels of L4 - 5, L1 - 2, and T8 - 9 are other areas where my clients report medically identified stenosis. A Magnetic Resonance Imaging (MRI) scan can show the degree of central canal or foraminal compression and any spinal cord pinching. A computed tomography (CT) scan is often also used to determine the extent of bone remodeling, disc deterioration/herniation or the presence and types of osteophytes and spurs. Together these two tests are usually considered definitive in making a medical diagnosis, although additional testing is sometimes used for surgical planning. (4)

I distinctly remember a female client in her early fifties who came to me some 20 years ago and announced that she had been diagnosed with cervical stenosis. Initially, I freaked as my understanding of this problem was minimal and is part of my motivation to write this article. Yet, as I opened my awareness and began working with the layers of connective tissue and muscles of her neck and shoulders, I felt guided by her body's innate sense of what to draw from my library of skills at the time. She felt better and I learned a lot. And, during the past decade I have experienced an increasing number of clients whose chronic problems lead back to this C4-5-6-7 neurological relationship as a significant slice of the body's homeostatic pie.

Each of you has developed your own library of skills. Trust that your clients will evoke from you the best that you have to offer. It is not technique but "intention" that opens the door to using your perception and kinesthetic instincts as therapeutic aides. Extend your awareness to the inside of their body. Centering yourself with them in embodiment, occupancy, congruence, and presence invites their body to guide you. (5)

What I hope you will hold in your awareness at the end of this article, and any that follow, is the prevalence of progressive cervical stenosis and your consideration of it as a likely contributor to your clients' chronic somatic complaints. Also, to consider its possible contribution to diminished sensory and motor function of either the upper or lower extremities and that you will develop a sense of when to refer clients onto physicians.

As in previous articles I will make some speculative leaps into the underlying functional physiology of this degenerative progression. The distillation of information I wish to share will be broad-brush strokes as this diamond has so many facets and thus will be incomplete. But it will be a beginning.

The progression of cervical stenosis is quite similar to the gradual onset of gall bladder dysfunction in its progression toward disease as it tends to fly under the radar of medical detection until more classic symptoms begin to point in its direction. Multiple sources suggest that in the early stages of cervical stenosis it is most often asymptomatic. (3, 4) One reference suggested "symptoms are believed to develop when the spinal cord has been reduced by at least 30 %." (4)

One of the principal factors to the narrowing of the central canal is spondylosis, or osteoarthritis, with its accompanying disc thinning, bone remodeling, osteophyte and/or spur formation. This progression coupled with the effects of congenital and/or accreted traumatic influences such as whiplash episodes or, events involving cranial compression upon the neck can eventually converge to further narrow the central canal and one or both of the foraminal openings for the exiting spinal nerves. Once sensory or motor function is affected then the term Myelopathy is used. So in classic diagnostic languaging Cervical Stenosis progresses to Cervical Spondylotic Myelopathy (CSM).

Myelopathy is distinguished from radiculopathy in that the pain or numbness patterns do not necessarily follow the commonly accepted map of the sensory nerve dermatomes. The pain and numbness of myelopathy tends to be more general, for example, broad areas of the neck, shoulder, arm, hip, or leg is affected. And, radiculopathy can co-exist with myelopathy. (3,4) To quickly review of the body's sensory dermatomes please refer to Netter's Plates 150, 455, and 511.(6)

Quite often the sensory or motor symptoms that do emerge during the progression from mild to moderate Myelopathy do so insidiously. Among these may include:

- *intermittent pain or numbness in one's hands, arm, shoulder or neck
- *intermittent shock-like sensations into either the upper or lower extremities
- *brief episodes of extremity twitching or tightness
- *extremity clumsiness with spine pain
- *intermittent gait "un-coordination" or "weakness"
- *intermittent bladder and/or bowel urgency
- *inability to complete complex motor tasks
- *back-pain with radiation during spinal flexion or extension

*frequent falls

*difficulty walking in the dark

*progressive avoidance of tasks requiring balance / fear of stairs

*wide-based stance

*short, cautious steps during ambulation and looking at feet to improve gait (3)

The insidious part is that these clinical indicators come and go. Clients and their physicians often dismiss them as insignificant because they do go away. Instead of ignoring or denying these signs we need to be part of our clients' early detection team.

Often this collection of somatic complaints is filed away under the general heading of the aging process. The assumption that if something goes away on its own, then, there is no underlying pathological progression is one of my least favorite notions equaled only by the 'oft repeated saw' that children will eventually "grow out of" their somatic aches and pains and functional difficulties. And, sometimes a cigar is just a cigar. Either and both, can be accurate given the mathematical curve of our genetic diversity. The important flag for our consideration is that when clients age, 50 - 55 and older seek us out for assistance with their chronic problems that the progression of cervical stenosis is a possible and more probable part of the symptomatic puzzle.

When CMS is full blown all of the above symptoms become exaggerated, more persistent and may include the muscular atrophy of one shoulder, arm, and/or hand and/or the emergence of an ataxic gait pattern. An ataxic gait pattern can have many expressions yet typically is characterized by taking a step by lifting the advancing leg too high and then slapping it down to the ground. There is often an uneven spacing of steps and tottering or swaying may also occur. I personally observed one of my clients doing the following, "the affected leg is rigid and is swung from the hip in a semicircle by the movements of the trunk; the patient leans to the affected side, and the arm on that side is held in a rigid, semi-flexed position. (7) With obvious haste, I encouraged the client to seek a referral to a neurosurgeon even though they were able to walk out of my office with an improved gait pattern following our session. It is crucial that we recognize our role in referring clients.

It is estimated that approximately 80% of our aging population has some degree of clinical progression toward Cervical Spondylotic Myelopathy (8). Multiple sources note that "it is the most prevalent spinal cord dysfunction of people over 55 in North America." (3, 4) I find it is interesting that in a parallel fashion it has been speculated that 70% of the population over the age of 70 within the United States will experience gallstones and that these stones are estimated to take on average 11 to 25 years to become clinically obvious. (9,10)

Thus, my first speculative leap into functional physiology is to propose that gall bladder dysfunction and cervical stenosis may have an overlapping progression as they share a common neurological junction at C5-6 related to the phrenic nerves, the brachial plexuses, and C5-6 reflex arc's relationship to the same-sided sciatic nerve distribution. (11, 1) My clinical

experiences do not imply any cause and effect relationship in a predictable sequence, but simply reflect the repetitive nature of what I have observed in my client population.

A female client who came to me following surgery for Cervical Myelopathy reported that most of her pre-surgical symptoms, principally left neck, right shoulder/scapular, and same-sided hip pain still bothered her with exception that her right shoulder and arm muscles had ceased their progressive atrophy and that she been able to re-build some of her strength and the general use of her right shoulder, arm and hand.

Over the next year she committed to an extended series of treatment sessions and her somatic complaints reduced considerably and her fine motor control improved. However, digestive complaints began to emerge. I encouraged her to return to her physician requesting that they explore these symptoms. Long story short, her gall bladder was removed.

Her cervical myelopathy surgery was successful as it did stop the progressive atrophy of her shoulder, arm, and hand muscles. However, her cervical and shoulder pain, radicular arm and hand dysfunction and same-sided hip tightness continued unabated until she began treatment with me. Following the removal of her gall bladder, all of the above have diminished to more tolerable levels and she continues to receive periodic care.

Let us reprise; the basics of my intention in this first article is simply to highlight that there exists a little recognized neurological relationship between the cervical reflex arc of C5-6 and lower extremity difficulties. Secondly to theorize that cervical stenosis progressing toward cervical spondylotic myelopathy may underlie many of the chronic somatic complaints that our clients bring to us either as a singular symptomatic etiology or in combination with other subtle progressions such as gall dysfunction/disease. And then third to offer a listing of early indications of this progression so we may refer our clients for appropriate medical testing.

Additionally, I would speculate that as the population over the age of 50 dramatically continues to rise in our country over the next decade that we will have ample opportunity to be of assistance with clients experiencing this progression. I believe our profession will not only, make a significant difference to improving the quality of life for our clients but can also serve to educate our clients about the prevalence of this progression and encouraging them to seek early detection through appropriate medical testing.

A caveat of perspective; 20 years ago an MRI scan cost approximately \$10,000 whereas today it runs approximately \$1600 - 2400 via insurance policies and can be done for \$400 – 700 in certain centers when direct personal payment is made. Encouraging our clients to seek such a diagnostic test may assist them to make important lifestyle choices and/or medical decisions.

In the next article we will delve further into the many facets associated with cervical stenosis and its potential progression toward Cervical Spondylotic Myelopathy.

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