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# Chiropractic management of cervical disc herniations: A case series

Scott Cuthbert

Narrative: The cervical disc syndrome has classic indicators of motor, reflex, and sensation dysfunction. Applied kinesiology Chiropractic techniques may indicate a subluxation when all of the disc diagnostic criteria are not present.

Goodheart postulates that some cervical spine and low back pain, as well as radicular problems from the cervical and lumbar levels, can result from a unique type of lower cervical subluxation, causing laxity of the annulus fibrosis and perhaps an intervertebral disc bulge. His interest in this was piqued by the work of Kabat, who found that lower cervical disc problems often caused low back and leg pain. Kabat went so far to state '*This investigation has demonstrated conclusively that compression of the cervical spinal cord by the herniated nucleus pulposus of the cervical disc is the most common cause of low back and leg pain*'.

Two case reports highlight the Goodheart-AK-chiropractic approach to this disturbing problem for chiropractic patients.

Indexing Terms: Chiropractic; Subluxation; Low Back pain; leg pain; cervical disc

## Introduction

Two cases are presented to demonstrate a clinical association among low back and leg pain and cervical disc presentations.

> *... frequently intense and unremitting low back and leg pain may be discogenic, in particular from the lower cervical discs. These should always be assessed through manual muscle testing and provocation testing in such cases to identify the optimal sites for adjustment'*

## Participants

### *Case One*

A 57-year-old Filipino female presented for treatment of an intervertebral disc herniations in their necks, both at C4-C6. MRI showed that the thecal sac was penetrated by disc tissue approximately 4 mm at the levels of C4, C5, C6 on the right, along with central disc herniation as well as occlusion of the foramina on the right from C4 to C6.

After initial Chiropractic treatment became insufferable, she presented in the office lying on her left side, with her head rotated at least 60° to the left. She was in tears on initial presentation; all other positions created unbearable pain down her right shoulder to her elbow and hand. She had been given *Lyrica*

as well for muscle relaxation yet reported a severity of 10 after a series of chiropractic & physiotherapeutic sessions, with the initial severity being rated as 5.

The pain had been worsening with chiropractic and physiotherapeutic treatment, and she felt pain radiating from her neck, to her shoulder and elbow, along with a progressive weakness in her right hand. She had pain with movement and found that if she sat in one place for more than 5 minutes, the pain would build up and become unbearable once again.

*Case Two:*

A 49-year-old Filipino male presented with left sided body numbness, with severe pain in the left shoulder limiting abduction, flexion, extension, and rotation of the arm. He had pain and limited ROM in the neck and suffered from vertigo. His grip strength was weak in left hand compared to the right, and his left arm felt heavy and numb.

He also had pain in the left pelvic area radiating down his left leg along with numbness. He had a staggering gait with a limp and showed left foot drop. The ROM in his toes on the left were limited, and heel stand was limited on the left. He complained of vertigo. His knee and ankle felt heavy. He had a cholecystectomy in 2018 along with varicose veins in the left leg. He feared that with swift movement he might fall.

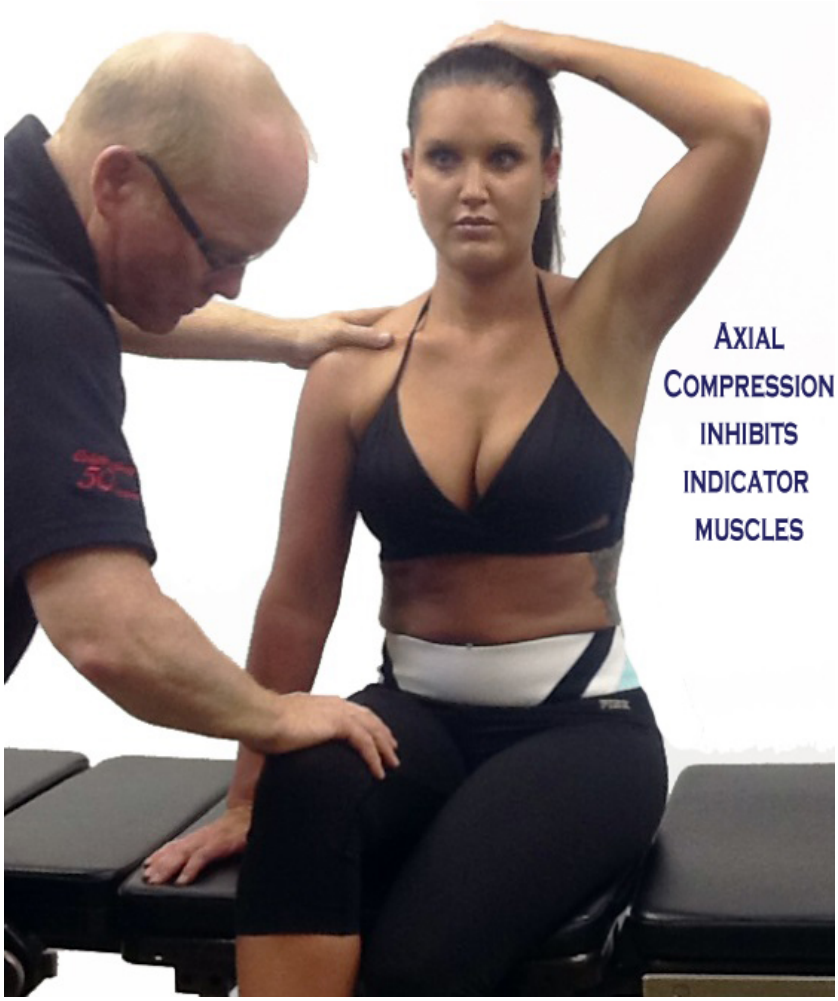
Both patients had consulted their medical doctors who advised them to consider surgery but advised them to seek conservative therapy first.

## Assessment and treatment

The general consideration of cervical disc syndrome has classic indicators of motor, reflex, and sensation dysfunction. Chiropractic applied kinesiology techniques may indicate a lesion when all of these diagnostic criteria are not present. Goodheart (1) postulates that some cervical spine and low back pain cases, as well as radicular problems from the cervical and lumbar levels, can result from a lower cervical subluxation causing laxity of the annulus fibrosis that may be causing an intervertebral disc bulge. His interest in this was stimulated by the work of Kabat. (2)

There were two types of challenge that revealed this disturbance in both of these cases:

1. axial compression to the cervical spine and
2. vertebral challenge.

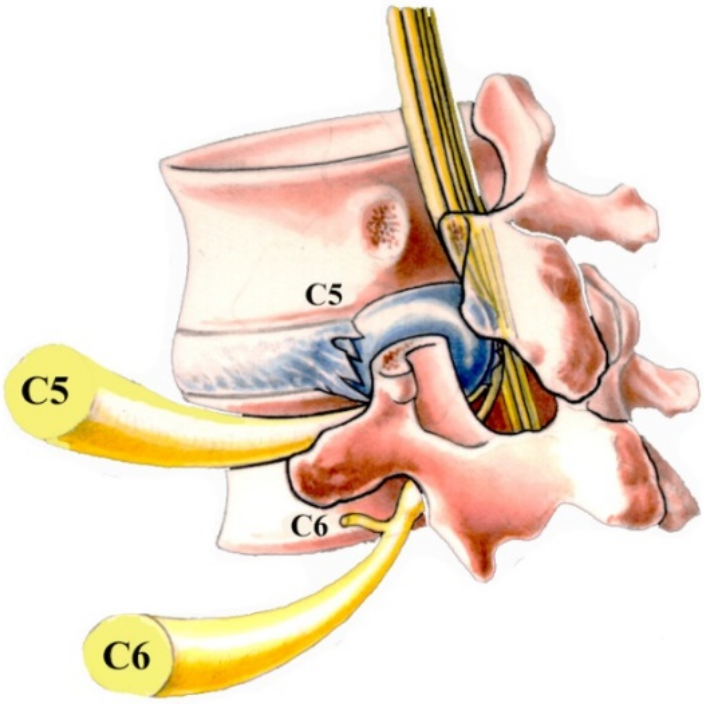

Axial compression was applied by the patient pressing on the vertex of the head in a caudal direction. Any possibly involved muscle can be tested for weakening. Conversely, cervical traction strengthens associated weak muscles, and in these cases the muscles of the shoulder and *rectus*

*femoris* muscles of the leg were strengthened by cervical traction challenge. (3) Goodheart uses the wrist extensors, if strong in the clear, as general indicator muscles for challenging this cervical problem. Often the wrist extensors will be strong when the patient is non-weight-bearing and weak when standing or sitting because of the head's weight on the cervical spine.

The vertebral challenge to locate the level of involvement was to press on the anterior portion of one or both transverse process(es) in a posterior inferior direction in alignment with the facet plane and released. When the vertebra is subluxated and causing dysfunction that may include disc involvement, a previously strong indicator muscle will test weak with this rebound challenge. A muscle weak as a result of the subluxation will test strong when the vertebra is given the same rebound challenge. The challenge may be positive bilaterally or unilaterally. There will be a considerable amount of tenderness on the inferior aspect of the subluxated vertebra's spinous process as is characteristic of anterior subluxations.

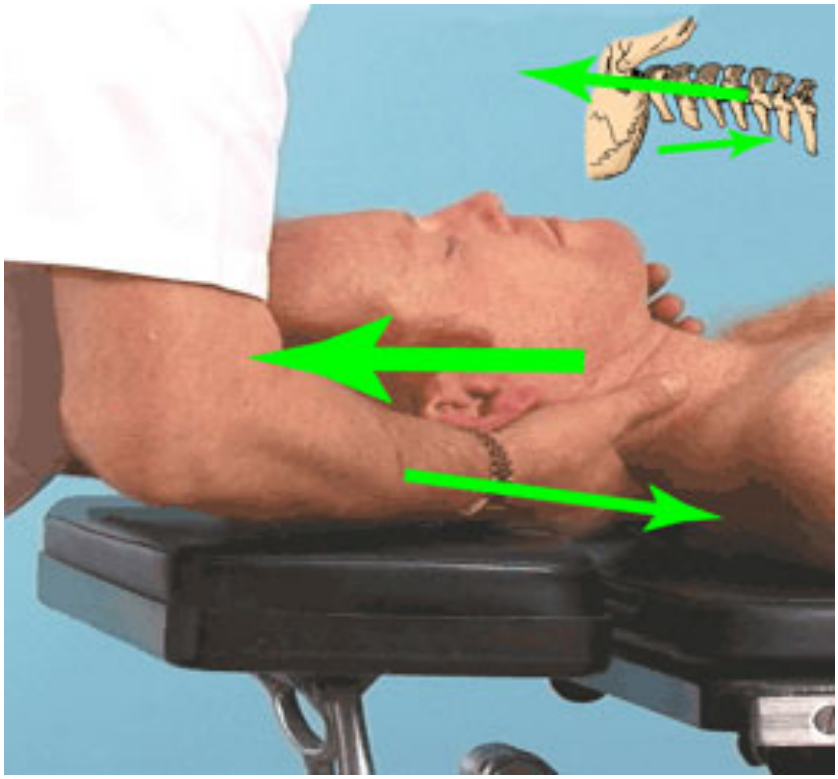
The optimal vector of vertebral challenge indicated the contact and direction to apply an adjustive thrust to the vertebra. It will almost always be in a posterior inferior vector, i.e. down the facet plane.

Specific Vertebral Challenge C5 Anteriority Left



In both cases, two techniques for adjusting the vertebra responsible for the hidden cervical disc were employed. One was with the patient supine, the other with them sitting.

With the patient supine, the physician contacts the spinous process above the subluxated vertebra with the side of their index finger. The proper spinous process can be quickly identified by locating the tender spinous process of the subluxated vertebra and then contact the one immediately above. The physician cradles the patient's head with the forearm of their other arm and the hand wraps around to contact under the chin, enabling the physician to direct traction to the cervical spine while stabilising the vertebra below the disc level. This exaggerated the subluxation allowing the vertebra to rebound down the facet plane.



The segment found by challenge was adjusted with the patient first prone and next sitting. Depending upon the challenge found, one or both sides may need to be adjusted.

Therapy localisation with axial compression and challenge of the disc was performed on each visit to determine if correction was successful. There should also be a reduction of pain at the spinous process above the level of disc involvement.

If pain remains, Goodheart recommends nutritional supplementation in the form of *superoxide dismutase* (SOD) rather than manganese, which is usually given in chiropractic applied kinesiology for other disc involvements. (1) Prior to treatment, SOD will neutralise the positive challenge and therapy localisation when the patient chews the substance. Protection against tissue damage involving muscles, tendons, fascia and the connective tissues is provided by SOD. (4)

In a model of acute disc herniation, nucleus pulposus disruption caused elevation of epidural Interleukin-6 (Il-6), tumour necrosis factor alpha, and Interferon-gamma. This model may prove useful for the understanding of the biochemical processes by which nucleus pulposus induces inflammation-induced nerve root irritation and radiculopathy pain. (5) SOD in the CSF may play an important role in protecting against nerve root


involvement. (6) Both patients had spinous process pain after their first chiropractic adjustment, and both were encouraged to purchase SOD online.

## Ergonomics of sleep

For a more rapid patient recovery from the cervical disc syndrome, the patients were advised on the proper ergonomics of sleep. The use of a pillow of the proper thickness to support the neck and head while sleeping is vital. Using a pillow that is too high or too low will cause muscle discomforts that slows down the recovery of the neck at night. Patients were cautioned to never sleep on their stomachs.

Both patients found that the SOD and their improved sleep ergonomics, as well as their chiropractic treatment, were effective in removing their symptoms and improving their health, within a 5-visit period, one visit per week.



## Intervertebral disc hydration

An area often neglected in the healing of spinal discs is dehydration and drinking much more water. Second only to air, water is a primary physical nutritional need. *The Institute of Medicine* of the *National Academy* reviewed years of research evidence on adequate water intake and offer the following recommendations:

- Men: 13 cups (about 10.5 cups from beverages)
- Women: 9 cups (about 7 cups from beverages)
- Pregnant women: 10 cups (about 8 cups from beverages)
- Breastfeeding women: 13 cups (about 10.5 cups from beverages)

Water acts as a solvent in the body and the purer it is, free from softeners and pollutants and heavy metals, the more toxins can be washed out with it and the more nutrients it can carry to the body's cells, especially the dried (desiccated) herniated cervical disc. It is recommended that people drink at least 6-8 glasses of pure water each day during recovery.

## Discussion

Differential diagnosis of cervical radiculopathy requires consideration of numerous factors. Peripheral nerve entrapment distal to the radix, e.g., thoracic outlet syndrome, median nerve conditions at the elbow, forearm and carpal tunnel, and ulnar and radial nerve peripheral entrapment. Finally, peripheral vascular disease and chest and shoulder pathology should be ruled out, such as rotator cuff tears, impingement syndrome, bursitis, arthritis of the shoulder, and bicipital tendon involvement. A *Pancoast tumour* may also mimic a C8 radiculopathy.

Following trauma, the symptoms can develop immediately or within several hours; maximum delay is usually a few days. Characteristic pain is severe aching or that of a shooting quality. The pain is expected to follow a dermatome; however, it may be widely distributed because each spinal nerve supplies pain fibres to bones, joints, muscles, and blood vessels, as well as to the dermatome. Involvement of the $5^{th}$, $6^{th}$, and $7^{th}$ nerve roots may even radiate pain anteriorly over the chest wall and posteriorly into the back. Even in the absence of radiating symptoms in a dermatomal distribution, nerve root compression may still be present. The presence of upper trapezius or inter-scapular pain may be the extent of the symptoms reported by the patient.

Wang & Meadows (7) demonstrated that chiropractic manipulative treatment of the C5-C6 joints produced improvements in the strength of muscles that externally rotate the shoulder, with the carry-over effect upon muscle strength lasting over 10 minutes. Their review demonstrated that extremity pain and muscle weakness or inhibition often coexist with cervical spinal dysfunction.

Marienthal, (8) in a recent paper in this Journal, showed that applied kinesiology chiropractic manual muscle testing was a useful tool to indicate dysfunction of the cervical spine, and that treatment improved grip strength as measured with MMT and a Camry electronic hand dynamometer, model EH101. A group of 67 females and 38 males were evaluated, and after the full treatment, the females had an average increase in grip strength of 3.48 kg (7.67 pounds) with a standard deviation of 2.64 kg (5.82 pounds) and 17.19% and a p value $< 0.001$. After the full treatment the males had an average increase in grip strength of 4.54 kg (10.00 pounds) and 12.12% with a standard deviation of 3.81 kg (8.41 pounds) and 9.57% and p value of $< 0.001$. The control group was made up of 32 people: 22 women and 10 men. It did not show a statistically significant difference in grip strength and had an average increase of 0.06 kg (0.14 pounds) and average decrease of 0.39% with a standard deviation of 5.53lbs and 9.27% and a p value of 0.89.

Suter and McMorland associated elbow flexor inhibition with chronic neck pain in an electromyographic study. (9) They also found a significant dysfunction in biceps activation in

patients with neck pain. Suter and McMorland also found that the patients with chronic neck pain exhibited more than 5% muscle inhibition in biceps brachii when compared to the individuals without neck pain.

Other studies have investigated the observation made in chiropractic applied kinesiology and the work of Kabat, namely that there are immediate effects on muscle function in the extremity after manipulative treatment to spinal joint dysfunctions. (10, 11, 12) Few of these studies however have associated muscle weakness in the extremity with the clinical sign of a specific joint dysfunction in the spine with the clarity possible in chiropractic applied kinesiology clinical practice. But in a study of 846 patients, Henderson et al, (13) noted triceps weakness due to C7 radiculopathy was present in 37% of the subjects and biceps weakness was present in 28%. Examination of muscle strength in the extremity is recommended in the diagnosis and evaluation of the effect of cervical chiropractic spinal treatment.

In both of these cases, there was dural tension as examined in Chiropractic applied kinesiology. When this is corrected, it may eliminate or help prevent recurrence of cervical spine fixation complexes frequently accompanying cervical spondylosis. Sakai and Iwasaki et al. (14, 15) in two separate reports document cases of cervical flexion myelopathy due to, in the first report, '*a tight dural canal in flexion*', and in the second '*a tight dural mechanism*'. observed by MRI and enhanced CT and myelograms respectively. In this case there was no disc disease or vertebral instability. The cord compression was attributed to a pinching mechanism by the posterior border of the vertebral body and the posterior component of the dura on flexion. This is important in the consideration of chronic neck pain patients after injury. If neck pain can be generated from dural inputs, there may be no definitive pathology in the neck at all to account for the ongoing pain.

## Conclusion

Both patients are now off their medications and feeling much better, with no plans now to consider spinal surgery. Five visits and 5 weeks later both patients were back to full time work with a few cautionary restrictions. They are treated once or twice a month and have active lives again today, where interaction with their family and hobbies resumed to the full.

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### *About the Chiropractor*


Scott Cuthbert, BA, DC practices in the city of Dauin on the island of Negros Oriental in the Philippines and is an Associate Editor with the Journal.


He has served on the Board of Directors of the *International College of Applied Kinesiology USA*. Dr Cuthbert is the author of three textbooks on applied kinesiology (in addition to 15 Index Medicus and over 50 peer-reviewed research papers) on chiropractic approaches to functional health problems.

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