A Case of Severe Strain/Sprain and Segmental Dysfunction of the Cervical Spine

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INTRODUCTION

This is a case study of a patient with severe cervical sprain/strain and segmental dysfunction following trauma of the cervical and thoracic spine with predisposing multiple levels of disc degeneration and herniation.

HISTORY

On Monday, July 25, 2016 a 46 year old Latino male presented himself for examination and treatment. He was cooperative, alert to time and place, and in obvious discomfort; not being able to turn his head to either side. He reported an achy, constant pain. He related that the weekend before he had been playing with his nephews in the swimming pool where they were standing on his shoulders and jumping off into the pool. One of the boys slipped and fell on his head where he reported that he heard several cracking noises and immediately felt pain in his neck. He had severe muscle spasms from the back of his head down to the middle of his shoulder blades. He could not turn his head to the left, right nor up or down. He reported the pain worsened upon standing and eating.

Prior to seeking care in my office the patient self treated with hot and cold compresses, Aleve and used Icy Hot on his neck without any significant improvement of pain or range of motion.

The patient's past history includes two serious auto accidents in which one involved a roll over where he hit his head on the window and was knocked unconscious. The patient was hospitalized for several weeks with head and neck trauma.

His family history reveals both parents deceased from Alzheimer's disease. His mother had a history of high blood pressure, and his father had a history of diabetes. No neck or back pain reported in their history.

EXAMINATION

Examination revealed a positive head compression test, 90% decreased range of motion in left and right rotation, flexion, and left and right lateral bending. The patient reported being right handed. Paravertebral muscles spasms were present from the occipital region to the mid thoracic spine, trapezius muscles, sternocleidomastoid muscles, levator scapulae muscles, and splenius capitus muscles. Tenderness on digital pressure extended from the occipital region to the mid thoracic spine.
Subluxations found on assessment were Occiput, C1, C2, C5, T3 and T7. The patient had radiating pain down to the medial border of his left scapulae. The trauma sustained was a combined cervical axial load with forward cervical flexion.

**IMAGING EXAMINATION**

In lieu of x-rays, an MRI was ordered due to the severity of pain and muscle spasms combined with the seriousness of the patient’s previous auto accident and the mechanism of his current injury. Tanaka et al reported that compression of cervical nerve roots can cause the type of scapular pain this patient was describing and this needed objective findings to support the correlation.

![Figure 1. Sagittal view](image1)

![Figure 2. C2-C3](image2)

![Figure 3. C3-C4](image3)

![Figure 4. C4-5](image4)

**CERVICAL SPINE MRI FINDINGS**

The patient had an MRI of the cervical spine performed on July 29, 2016, due to his previous history. The MRI revealed the following significant findings:

- Cervical lordosis is straightened.
- Multilevel disc dessication seen with the loss of the bright nuclear signal on T2-weighted images, reduced height of the C3-4 intervertebral discs
- C2-C3: Posterocentral protrusion type herniation with annulus tear compressing on the thecal sac & ventral cord
• C3-C4: Broad based posterior/right paracentral disc herniation compressing on the anterolateral cord causing some right neuroforaminal compromise
• C4-C5: Left paracentral protrusion type herniation compressing on the anterolateral thecal sac
• C5-C6: Disc bulge with right paracentral protrusion type herniation & annulus tear compressing on the thecal sac

DIAGNOSIS

Severe sprain/strain injury of the cervico-thoracic spine segmental and somatic dysfunction of the head, cervical and thoracic regions, and muscle spasms of the cervical and thoracic spine complicated by C3 through C5 disc herniations and C5-6 disc bulge/herniation.

TREATMENT

Cox® Flexion Distraction Adjustments using Cervical Protocol 1 (3 sets of five 4-second pumps with trigger point therapy between each set), Impulse IQ Adjustment along with physical modalities of electrical muscle stimulation (interferential current), ice packs and moist hot packs. During the first visit, the patient was given a neck brace and Biofreeze for pain. The patient was also prescribed DISCAT Plus to be taken eight (8) capsules per day for the first three months and then four (4) per day indefinitely. At the 12th visit, when the patient was approximately 50% improved in pain and range of motion, the patient was given the Cox® cervical exercises to be done at home.

The initial course of care was three treatments per week until pain and range of motion is 50% achieved (objectively and subjectively) with a re-evaluation at the conclusion of this plan to determine the patient’s future needs.

Using The Cox8 Table® instrument, three (3) sets of five (5) four second Cervical Long Y Axis Distraction were done making certain not to rest the palm on T1. The patient was seen three times per week for two weeks, two times per week for four weeks, once per week for three weeks then every two weeks. On the 12th adjustment, the occipital strap was used as Cox Technic Cervical Protocol II (long y axis with lateral flexion, rotation, circumduction) was administered during this visit and hereafter. The patient was seen a total of 18 visits in a timeframe of two months before he reached the maintenance level.

TREATMENT GOALS

To reduce the patient’s pain level and muscle spasm and increase range of motion by 50% within one month of care. Due to several complicating history and trauma factors, it was explained to the patient that complete resolution of symptoms might not be forthcoming, but maximum improvement would be sought. Fortunately, the patient reported that he felt 100% recovery after several months of care.

DISCUSSION

This patient presented to our office in obvious stress with one of the more severe cases of strain/sprain we had seen. It was imperative to begin treatment that day. After tolerance testing the patient, it was determined that no radiological issues past his elbow were present. Protocol 1 was used initially due to the severe muscle spasm and history that included head trauma. The patient was extremely compliant to all recommendations and showed signs of improvement almost immediately. Upon his second visit, the patient reported that the neck brace we had prescribed had been helpful
in allowing the cervical and upper thoracic musculature to rest and recover from the extreme spasms. His job is stressful and his long commute added to the complicating factors when determining his recovery time and progression to physiotherapy. The Cox® Technic Cervical Exercises were added to his program at approximate visit number 12 when he was 50% better.

The identification of multiple levels of disc degeneration combined with full recovery of the patient's condition has yielded a patient that is not only happy to feel normal again, but expressed his intention to continue chiropractic care on a monthly basis to maintain and support the treatment provided.

This patient would not have been able to tolerate a high velocity low amplitude adjustment the first month of care. Utilizing Cox F/D and Instrument Adjusting affords the doctor a treatment option that is not only gentle and very well received by most patients with severe pain but extremely effective in the resolution of their particular symptoms and the restoration of normal spinal function.

CASE OUTCOME

The patient reports 100% resolution of pain and muscle spasm and 100% restoration of cervical range of motion. Patient experienced a couple setbacks along the way which were resolved quickly. This patient is currently on a maintenance care plan of once per month and continues his exercises and DISCAT PLUS at four per day.

REFERENCES

- Tanaka Y, Kokubun S, Sato T, Ozawa H: Cervical roots as origin of pain in the neck or scapular regions. SPINE 2006;31 (17): E568-E573
- Cox JM: Neck, Shoulder, Arm Pain: Mechanism, Diagnosis, and Treatment. 4th Ed. p. 57-64

James M. Cox, DC, DACBR - Comments on this case:

Dr. Woods presents an excellent case of multiple levels of disc degeneration and protrusion in a 46 year old man with a history of serious injury to the cervical spine from two auto accidents resulting in long term hospital care. He was unconscious following one automobile accident and we know poorer outcome from cervical spine injury with being unconscious.

Dr. Woods care was exemplary for such a serious injury. A clinical question now is the sequela of such severe past traumas to the neck, especially with the evidence of disc pathology now seen. I would like to propose to Dr. Woods that this man be followed for the next five to ten years in a cohort study of physical, orthopedic, neurological and imaging changes in this spine. The following questions can be answered that will be of great clinical benefit:

1. Will there be advanced disc degeneration in this already degenerative cervical spine?
2. What new incidence of pain and disability will be seen?
3. What will be the clinical outcome of treatment of any incidences of cervico-thoracic spine and radicular pain?
4. Will this patient follow serial chiropractic care and advice for both prevention and treatment of his compromised cervical spine?
5. Will he in fact develop radicular pain?
6. Overall, can we see aggressive degenerative change and clinical symptoms from this spine?

This will require Dr. Woods to maintain a contact either as a patient or as a personal contact study in order to fulfill the above questions. It will be an interesting case for Dr. Woods to teach the incidence and volatility of this spine.