Resolution of Traumatic Cervical Radiculopathy with Chiropractic Care to Reduce Vertebral Subluxations: A Case Report

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ABSTRACT

Objective: This case report describes a young woman with traumatic cervical radiculopathy which was treated conservatively with chiropractic care to correct vertebral subluxations and spinal hygiene exercises resulting in complete resolution of her radicular symptoms.

Clinical Features: A 23 year old female developed right C8 radiculopathy within three weeks of jumping from a second story window in order to avoid bullets being shot at her during a home invasion robbery. Although the patient did not lose consciousness, she was transported via ambulance to the metropolitan trauma center where she was stabilized and received cervical spine and maxillofacial CT scans. She was treated conservatively with chiropractic adjustments to correct vertebral subluxations and spinal hygiene exercises. She denied the use of any non-steroidal anti-inflammatory drugs.

Intervention and Outcome: The patient’s C8 radicular symptoms resolved after 8 chiropractic adjustments and spinal hygiene exercises over a period of 4 weeks. One year after the patient’s traumatic event, she remains without radicular symptoms.

Conclusion: This case describes an unusual presentation, evaluation, diagnosis, and chiropractic treatment of trauma-induced C8 radiculopathy in a young female who was treated conservatively with chiropractic care to correct vertebral subluxations and spinal hygiene exercises resulting in complete resolution of radicular symptoms.

Key Words: Cervical Radiculopathy; Vertebral Subluxation; Traumatic; Case Report; Chiropractic Care

Introduction

Numerous studies of cervical radiculopathy (CR) and its treatment have been defined and described in the literature.¹⁻⁶ While the majority of the CR publications have focused on the most common causes of CR which include cervical disc herniation and lateral canal stenosis,²⁻⁶ there are less common causes of CR which include trauma-induced CR or traumatic events causing compression, inflammation and/or injury to a cervical spinal nerve root, typically within the vertebral foramina.

One traumatic radiculopathy case report describes a patient’s diagnosis and management after a motor vehicle accident which resulted in multiple cervical radiculopathies from C5 to C7.⁷

The only other trauma-induced CR article found in the indexed literature describes a professional rugby player who developed cervical stenosis after repeated rugby-related trauma over a four month period resulting in C7 radiculopathy.⁸

The most common nerve roots involved in CR are C7 (60%) and C6 (25%).²⁻⁶ In patients up to age 40, CR is typically the result of disc herniation or an acute injury causing foraminal impingement of an exiting nerve. Herniated nucleus
pulposis accounts for 20-25% of the cases of CR. In patients over age 40, CR is often the result of foraminal encroachment from osteophytic growth, diminished vertical intervertebral foramina height secondary to degenerative disc disease, and uncovertebral and zygapophyseal arthrosis. 

Increased risk for CR includes many factors such as tobacco smoking, prolonged exposure to vibrating mechanical equipment, and repetitive lifting of heavy objects (weighing > 25 pounds). Less frequent causes of CR include neoplasms, infections, and vascular abnormalities of the spine. 

The purpose of this case report is to provide information on the unusual presentation, evaluation, diagnosis, and chiropractic treatment of trauma-induced C8 radiculopathy in a 23 year old female college student.

CASE REPORT

The patient is a 23 year old female college student who was forced to jump from a second story window to avoid bullets being shot at her during a home invasion robbery. Although the patient landed on her face, she did not lose consciousness. She was transported by ambulance to the metropolitan trauma center where she was treated per standard trauma protocol to maintain vital signs and decrease excruciating pain via intravenous morphine administration. After the patient was stabilized, she received a cervical spine CT, maxillofacial CT, and plain film x-ray of the chest. No MRI scans were performed.

The extent of trauma from the fall is demonstrated by the patient’s medical records. The cervical spine CT revealed no evidence of acute fracture or dislocation of the cervical spine. There was no abnormal prevertebral soft tissue swelling. The intraspinal soft tissues were read as grossly normal. Multiplanar reformatted images demonstrated normal vertebral body heights and vertebral alignment. The cranovertebral relationship was read as normal. The maxillofacial CT revealed avulsion of the maxillary incisors, with associated fracture of the maxillary alveolar ridge. The fracture was read as a comminuted fracture involving both the anterior and posterior cortex and extending superiorly to the base of the nose. There was also involvement of the upper canine sockets bilaterally with impaction of the right canine tooth. The mandibular alveolar ridge showed a fresh avulsion socket with tooth #26 missing and no associated fracture line of the mandible. The temporomandibular joint was intact bilaterally. The parasanal sinuses, roof and floor of the orbits, and intraorbital fat was read as intact. Intracranial structures were grossly intact, without evidence of hydrocephalus. The plain film x-ray of the chest was read as a grossly negative study.

The patient spent the night in the hospital where she was monitored and maintained until the next day when she was discharged to home. Over the course of the following four weeks, the patient was fitted with mandibular alveolar ridge posts which were used to anchor a partial dental insert and orthodontic appliance to realign the remaining dentition.

Five months after the traumatic event, the patient presented to the clinic with a chief complaint of right medial forearm numbness and associated pain and weakness when picking up objects. The patient stated that the onset of her CR symptoms was approximately three weeks after her traumatic fall. On examination, the patient described right mid-forearm numbness, and pointed to the medial aspect of her right forearm and continued down to her right fifth digit and a portion of her right fourth digit – the classic C8 dermatome distribution. She reported the pain at onset as a 9/10, a presenting pain rating of 3/10, and an average pain rating of 6/10. She described the pain as burning and tingling with intermittent numbness and stated that these symptoms appeared six times per day on average and lasted up to five minutes until the point where she was compelled to massage the area to help alleviate the symptoms. She stated that excessive use (more than one hour) of her right arm, clenching her right fist, and grasping and picking up objects exacerbated her symptoms, while immobilizing her right arm and not handling objects and massage helped palliate the symptoms. When questioned, the patient stated that she has not taken any nonsteroidal anti-inflammatory drugs. The patient also complained of right suprascapular tenderness and pain.

Physical examination revealed a healthy appearing 23 year old non-smoking, normotensive female college student with no history of significant trauma prior to her home invasion traumatic fall, and no history of spondylosis. The patient presented with a 2 cm anterior head translation and a 2 cm left high shoulder. Infrared thermal scan of the patient’s spine revealed significant variance readings to the right at C1, T1, and T2 and significant variance readings to the left at C3, L4, L5, and S1. Static and motion palpation findings revealed a left lateral flexion restriction at C3 with signs of inflammation and hypertonicity from C1 to C4. Tenderness and taut fibers were present on the right from C1 to C4 and T1 to T3.

Orthopedic testing which included Soto-Hall, Valsalva, cervical distraction, Allen’s, Adson’s, and shoulder depressor tests were all within normal limits. Bakody’s sign was not present, however Spurling’s test was positive on the right. As is well known, a positive Spurling’s test is very specific in diagnosing cervical radiculopathy. 

Motor testing, myotatic reflexes, and neuro-tip dermatomal sensation tests were within normal limits. The patient reported a significant tingling sensation that ran down her right medial forearm upon the brachioradialis reflex test, and demonstrated hyposensitivity of the right C8 dermatome. The only other positive physical examination finding was tight hamstrings bilaterally.

At the conclusion of the physical examination, subluxations were found at the following spinal levels: C1, T1, T2, L3, L4, L5 and right ilium. Plain films (APOM, APLC, lateral cervical, and cervical oblique projections) were read as within normal limits with the exception of minimal loss of the cervical lordotic curve and obvious metal dental and orthodontic artifacts (as described previously) present in the maxilla and mandible. The intervertebral foramina appeared to be normal and patent. The patient completed the RAND SF-36 (version 1.0) with pre-treatment scores of Physical Component Summary (PCS) = 39 and Mental Component Summary (MCS) = 43. The standardized norm is 50 for both PCS and MCS.

The patient was treated with high velocity, low amplitude
(HVLA) chiropractic adjustments using Full Spine Protocol to subluxations that ranged from cervical to pelvic segments twice a week over a period of four weeks. The patient was also instructed to perform the Straighten Up America (SUA) Posture Pod spinal hygiene exercises twice a day while under chiropractic care. At the end of her eighth adjustment, the patient reported resolution of her radiculopathy symptoms. A reassessment was performed and confirmed complete resolution of the patient’s CR. The patient reported that her right suprascapular tenderness and pain had also improved, but was not completely resolved. She completed a post-treatment RAND SF-36 with improved scores of PCS = 52 and MCS = 45. One year following the traumatic event that caused her C8 radiculopathy, she remains without any C8 radiculopathy, and remains under chiropractic care.

DISCUSSION

As reported in other publications, the clinical presentation, diagnosis, and treatment of CR depends on many factors, including the nerve root level involved and the extent of nerve root encroachment at that involved level. This case report is significant in that it presents a case of traumatic CR rather than the more common causes of CR such as disc herniation or foraminal stenosis. Also significant is the unusual C8 nerve root level rather than the more common C7 and C6 levels, respectively.

Little is known about the natural history of CR, and equally little is known about effective treatments for CR, mainly due to limitations such as retrospectively designed studies, poorly defined treatment populations, and ill-defined outcome measures. This case presentation describes an unusual trauma-induced C8 radiculopathy which was treated conservatively with chiropractic adjustments to correct vertebral subluxations and SUA spinal hygiene exercises. No studies were found in the indexed literature on therapeutic measures. Little is known about effective treatments for CR, mainly due to limitations such as retrospectively designed studies, poorly defined treatment populations, and ill-defined outcome measures. This case report is significant in that it presents a case of traumatic CR rather than the more common causes of CR such as disc herniation or foraminal stenosis. Also significant is the unusual C8 nerve root level rather than the more common C7 and C6 levels, respectively.

Of interest also is the fact that the patient reported resolution of her CR after eight chiropractic adjustments or treatments over a period of four weeks. Other publications on the frequency of treatments, and the number of adjustments delivered prior to the resolution of a particular problem, have reported as few as six adjustments and as many as 37 treatments. There is a lack of any prospective observational cohort studies of CR to determine the mean number of treatments or adjustments required to achieve resolution of CR. The 8 spinal adjustments over a period of 4 weeks in this case report falls within the frequency range reported elsewhere.

This case report describes improvement of CR with conservative chiropractic care and spinal hygiene exercises. The patient’s post-treatment RAND SF-36 scores were improved compared to her pre-treatment scores.

CONCLUSION

This case report describes the presentation, evaluation, diagnosis, and treatment of an unusual traumatic C8 radiculopathy with resolution of symptoms after 8 treatments of conservative chiropractic care to reduce vertebral subluxations over a period of 4 weeks. One year following the traumatic event that caused the CR, the patient remains without any radicular symptoms.

REFERENCES


