
CASE STUDY

Upper Cervical Chiropractic Care of a Female Patient with Multiple Sclerosis: A Case Study

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ABSTRACT

Objective: To describe the upper cervical chiropractic management of a female patient with Multiple Sclerosis (MS).

Clinical Features: A female patient with Multiple Sclerosis presented to the office with neck pain, numbness, ringing in the ears, fatigue, balance problems, and dizziness. This was the patient's second experience with chiropractic. An atlas subluxation was detected from leg length evaluation, postural analysis, and radiographic measurements. She was adjusted using an upper cervical technique.

Intervention and Outcomes: The patient received orthogonal-based, upper cervical low-force (UCLF) chiropractic care based on the National Upper Cervical Chiropractic Association (NUCCA) technique protocol. At the patient's 30th visit she reported having a 90% improvement in her neck pain, 90% improvement in her numbness, 70% improvement in her fatigue, and a 90% improvement in her balance since her initial visit.

Conclusion: The positive response observed in the case suggests that atlas subluxation may have a positive effect on the symptoms of patients with Multiple Sclerosis. However, follow up to this case is needed due to the nature of exacerbations and remissions in MS. The need for further investigation of the connection between atlas vertebra subluxations and Multiple Sclerosis is indicated.

Key Words: *Upper Cervical, Subluxation, Multiple Sclerosis, NUCCA, orthogonal, neck pain, fatigue, and numbness*

Introduction

Multiple sclerosis (MS) is considered an inflammatory, demyelinating, and neurodegenerative disorder of the central nervous system (CNS). It is characterized by a recurrent or a chronically progressive neurological dysfunction.¹ MS is caused by periventricular inflammatory foci in the white matter of the central nervous system. These recurrent

inflammatory episodes result in its characteristic widespread demyelinated sclerotic lesions called plaques. The plaques settle indiscriminately throughout the brain, optic nerves, and spinal cord.^{1,2} After the plaques settle, destruction of the myelin takes place, which leads to sluggish or blocked nerve transmission, which can end in reduced or lost function.²

MS can be found at almost any age. Its peak of onset is between 20 and 40 years of age with an average of 30.³ There were approximately 350,000 people suffering from MS in the United States at the end of the 20th century.² Approximately 80% of MS patients suffer from the relapsing-remitting form of the disease. The economic impact of MS is widespread and

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occurs over a relatively long period of time. The annual cost of MS in the US has been estimated at 2.5 billion dollars and the cost per person for a relapse can be as high as \$12,870.⁴ Both primary and secondary symptoms of the disease have significant economic costs.⁴

MS is the foremost disabling neurological disease among adults in this age range. Caucasians are affected more frequently than any other ethnic groups and the occurrence of MS is greatest in northern temperate zones. The majority of the literature states that women are affected twice as often as men, but new research suggest that the ratio is even higher female to male.¹⁻³

The most common clinical signs and symptoms include sensory disturbance of the limbs, partial or complete visual loss, acute and sub acute motor dysfunction of the limbs, diplopia, and gait dysfunction.¹ These symptoms may occur in isolation or in combination and can be extremely variable since any part of the CNS can be affected. The most common course of the condition is a relapsing and remitting pattern over many years. This relapsing and remitting pattern varies significantly from patient to patient and can be severe or mild. In most cases as the disease progresses, the remission state becomes less complete.¹⁻³

There are four clinical phenotypes of MS which are: relapsing-remitting MS, primary progressive MS, progressive relapsing MS, and secondary progressive MS.¹ Pain syndromes in MS can be divided into three categories: acute; subacute or paroxysmal and chronic.⁵

MS is usually diagnosed with a series of tests including finding abnormal levels of myelin, protein, and white blood cells in the cerebrospinal fluid. Visual evoked potential (VEP) is done to determine the speed of impulse transmission between the brain and visual stimuli.² Slowing is a sign for demyelination. Another test used is Magnetic resonance imaging (MRI). MRI is considered one of the best tools to use for MS.^{1,2} MRI can help a doctor distinguish old lesions from new lesions and it is also helpful for seeing areas of recent disease activity.^{1,2}

Medications used to treat MS have been shown to decrease the clinical relapse rate and the accompanying inflammation within the CNS. They have no known effect on the course of MS over time and many of the medications have serious side effects and carry significant risks. These medications include adrenocorticotropic hormone, prednisone, prednisolone, methylprednisolone, betamethasone, and dexamethasone. Various medications are utilized for symptomatic treatment of pain, muscle spasms, fatigue, depression, sexual dysfunction, and bladder and bowel dysfunction.¹ Currently there is no known cure for MS.

Preliminary findings in the literature suggest that chiropractic may represent one treatment alternative. The purpose of this paper is to report on a case showing improvement of symptoms following upper cervical chiropractic treatment of an adult female with MS.

Case Report

History

A middle aged female presented with pain and numbness from her MS, neck pain, ringing in the ears, and right knee pain. Her history showed that she was in a motor vehicle accident one week prior to her initial visit. During the accident she was rear ended at approximately 25 mph. She reported having had another accident previously in 2001 at approximately 40-50 mph and suffered a brain injury.

She began to develop neck pain after her motor vehicle accident in 2001 and saw a chiropractor and massage therapist for it. She currently had numbness from her MS and stated that she also falls frequently due to her balance issues from her MS. She struck her head while in the shower two months prior to presentation. She is a 911 evidence supervisor and her job requires prolonged sitting. She also had breast cancer in 2003. She was taking the following medications: Sertraline, Detrol LA, Omeprazole.

Examination

The attending chiropractor used NUCCA protocols and procedures for managing this patient. This orthogonal-based, upper cervical low force (UCLF) chiropractic technique is based on the Grostic model of analysis for adjusting the spine. UCLF makes corrections to the upper cervical subluxation with a minimal force using a specific vector to restore structural balance and optimum function to the body.⁶

According to upper cervical theory, the brainstem controls muscle tone and displacement of the atlas affects the brainstem, which can result in spastic contractures of the postural muscles. Hence, postural distortions indicate the presence of an atlas subluxation in NUCCA analysis. This results in postural imbalance and the deviation of the spinal column from the vertical axis of the body.

At each visit leg length measurement and postural analysis are used to determine if there is an atlas subluxation and to assess the effectiveness of the adjustment.^{6,7} During the first visit when the patient was in the supine position the functional leg length inequality with a left leg appearing shorter than the right by ¼". Postural analysis in the upright position indicated that the patient had a right cervical translation, left head tilt, right low shoulder, and right low hip. Paraspinal muscles along the left thoracic and lumbar regions were hypertonic.

The radiographic analysis of the cervical region used by this practitioner was from Grostic/orthogonal based techniques. Specific x-ray equipment is used that is specifically designed for upper cervical techniques and alignment. This analysis gives a three-dimensional view of the atlas and a system to obtain the specific vector needed to correct a misalignment of the atlas. Three radiographs of the cervical spine are needed; anterior to posterior, superior to inferior, and a lateral. Specific patient placement procedures are required to get results within one-fourth of a degree of atlas displacement.¹

Intervention

The patient was seen for a total of 44 visits and was still under chiropractic care at the time this paper was being written. The patient was seen two times a week for three months and then one time a week for the following 5 months. Thermographic instrumentation was performed 6 different times during the course of care.

Outcomes

This case study follows the patient's first 8 months of care. After the patient's first adjustment her legs balanced and her posture had improved. On the eleventh visit, the patient reported an 80% improvement in her neck pain, a 60% improvement in her numbness, a 60% improvement in her fatigue, and a 50% improvement of her overall balance. On the 14th visit there was no sign of neurological or musculoskeletal abnormal findings or leg length discrepancy in the supine position that would suggest an upper cervical subluxation.

A thermographic scan of the cervical spine demonstrated equality in heat when comparing left and right skin temperatures. The ilia were level in the standing position and cervical range of motion was unrestrictive. At the patient's 20th visit she stated that her neck pain had improved 90%, numbness had improved 70%, and fatigue had improved 90% since her initial visit. At the patient's 30th visit she reported having a 90% improvement in her neck pain, 90% improvement in her numbness, 0% improvement in the ringing in her ears, 70% improvement in her fatigue, and a 90% improvement in her balance since her initial visit.

Discussion

Positive outcomes using chiropractic treatment for neck pain has been considerably documented in the literature² while chiropractic management for MS symptoms has minimally been documented.

The literature consists of several case studies that describe chiropractic care along with improvement of symptoms in patients with MS. A case study by Lerner reported on a fifty year old female with a history of multiple sclerosis and GERD along with neck pain, back pain, and jaw pain. This patient received Pettibon chiropractic technique along with manual diversified chiropractic adjusting for the reduction of cervical, thoracic, and pelvic subluxations. Lerner also implemented a lead detoxification program and dietary modifications. This case reported the patient having dramatic improvement with her MS symptoms after receiving chiropractic care.²

In a similar case study by Merik, a 32 year old male presented with numbness from his lower trunk to the distal lower extremities and a family history suggestive of MS. Multifocal demyelination lesions were confirmed by a medical neurologist with magnetic resonance imaging (MRI). The patient was treated with conservative chiropractic manual adjustive therapies to remove spinal segmental dysfunction (subluxation). After the treatment the patient reported complete the absence of symptoms.⁸

Several studies of upper cervical chiropractic care and MS have been reported in the literature. Elster has documented 6 case studies on the positive effects of chiropractic care for reducing an atlas subluxation with favorable results in two separate journal articles.^{9,10} And in a similar study Kirby also reports positive results in symptoms of an MS patient under upper cervical care.¹¹

The largest MS chiropractic study was also done by Elster to examine the role of head and neck trauma as a contributing factor to the onset of MS or Parkinson's disease (PD), and to assess the correction of trauma induced upper cervical injury using the International Upper Cervical Chiropractic Association (IUCCA) protocols. Seventy-eight of the 81 MS and PD patients could recall a head or neck trauma prior to the onset of the disease that had taken place within two months to 30 years of onset. Upper cervical subluxations were found in all 81 cases. After treatment, 40 of the 44 MS cases and 34 of the 37 PD cases showed symptomatic improvement with no further disease progression during their period under care.

Elster suggested that there is a causal link between upper cervical injury and the disease onset for both MS and PD. In this article Elster hypothesized that MS and PD both can be induced as a result of head and neck trauma and the resultant injury to the upper cervical spine. Dr. Elster suggests also, that this injury can be diagnosed and corrected through the administration of IUCCA upper cervical chiropractic care. With the correction of this injury, Dr. Elster hypothesized that it may arrest and reverse the disease processes involved in MS and PD.¹²

Mechanism

There are several theories in the literature about the possible etiology for MS. Two of the considerations of a possible cause of MS are by an autoimmune disorder and/or trauma.

The CNS has developed strategies to limit the entry of immune elements as well as to limit the appearance of immune activation with the tissue itself.¹³ The immune system in the CNS is in part reliant on the blood-brain barrier (BBB), which is designed to limit the entry of solutions and ions into the CNS.¹³ Alteration of the BBB has been established as preceding the formation of MS lesions.

There is also evidence that the BBB is more vulnerable in MS. There also exists a large body of clinical evidence that shows that trauma, in particular mild concussive injuries to the head, neck or upper back, thus impinging on the brain and spinal cord, may result in an increase in BBB permeability.^{13,14} It would be logical then to think that when such mild trauma to those parts of the body affects MS patients, the resulting alteration of the BBB leads to the formation of new lesions or the enlargement and activation of old ones.¹⁴

Along with the BBB astrocytes and microglial cells play a major role in regulating potentially damaging immune responses.¹³ Models of Traumatic Brain Injury invariably show activation of microglial cells. Many neurodegenerative diseases such as MS share chronic immune activation as a common feature. Microglia invade the brain early in development and take on a resting 'protective' function and

are speckled uniformly throughout the CNS forming a system of potential effector cells.¹³ Although innate responses are considered protective, there is a fragile balance between the innate immune system and the adaptive immune system in mediating either pathogenic or repair processes under these circumstances. There is evidence of chronic activation of immune responses leading to problems.¹³

The driving force of the chronic inflammation is not fully clear in most cases. There is the possibility it is the alignment of both innate and adaptive responses against certain stimuli, that may contribute to a final pathogenic pathway.^{13,14}

Causes of immune system dysfunction can be from nervous system dysfunction.¹⁵ Disturbances in the nervous system can be caused by subluxations and subluxations can be the result of emotional, chemical, and physical stresses on the body. It is when these types of stresses exceed the body's ability to adapt that a cascade is initiated that leads to a subluxation.¹⁵ The result of a subluxation can cause the nervous system to be hyperactive.

A hyperactive nervous system may overrun the periphery with excessive chemical messages that drastically alter the homeostasis of the body causing abnormal changes in growth and activity.¹⁵ When the sympathetic nervous system is hyperactive over long periods of time it will tend to produce the development of abnormal conditions and disease process in the organs and/ or tissues to which it supplies information.

Chiropractic theory hypothesizes that removing the nervous system interference with spinal adjustments can help the correction of immune system dysfunction.¹⁵ It is believed that an abnormally functioning nerve which is either hyperactive or hypoactive returns to normal function upon proper stimulation. It is also believed that a spinal adjustment to correct a subluxation can eliminate these adverse effects¹⁵.

Conclusion

This report described the use of orthogonal-based upper cervical chiropractic management of a female with Multiple Sclerosis. MS is difficult to study since the clinically relevant outcomes are subjective and because the natural history follows an exacerbation and remission course.

Dramatic improvements in symptoms were noted following the introduction of chiropractic care in this case. These improvements may suggest that correction of the atlas subluxation through UCLF techniques may have helped improve the patient's condition. The variable course of MS's progressions and remissions makes it challenging to attribute benefit to any treatment in the absence of a control group. The connection between atlas subluxation and MS should be further studied.

References

1. Pagon RA, Bird TD, Dolan CR, Stephens K, editors. GeneReviews [Internet]. Seattle (WA): University of Washington, Seattle; 1993-.2006 Jan 10 2006 Jan 10 [updated 2010 May 11].

2. Lerner B, Lerner S. Improvement in multiple sclerosis and Gerd in a female with vertebral subluxations undergoing chiropractic care: a case study. *J Pediatr Matern & Fam Health - Chiropr.* 2010;2. 41-50. Online
3. O'Brien JA, Ward AJ, Patrick AR, Caro J. Costs of managing an episode of relapse in multiple sclerosis in the United States. *BMC Health Services Res.* 2003 3(17) Online
4. Standbrook, M MD PhD, Herbert P MD MHSc. Access to treatment for multiple sclerosis must be based on science, not hope. *CMAJ.* August 2010 10;182(11):1151-1152. Online
5. Dougherty, P. Lawrence, D. Chiropractic management of musculoskeletal pain in the multiple sclerosis patient *Clinical Chiropractic.* June 2005 8(2):57-65
6. Thomas MD, editor. *NUCCA protocols and perspectives.* 1st ed. Monroe (MI): National Upper Cervical Chiropractic Research Association; 2002.
7. Gregory RR. Some biomechanical aspects of chiropractic. *The Upper Cervical Monograph.* 1987 4(4):8-9. Online
8. Stude DE, Mick T. Clinical presentation of a patient with multiple sclerosis and response to manual chiropractic adjustive therapies. *J Manipulative Physiol Ther.* 1993;16. 595-600.
9. Elser EL, Upper cervical protocol for five multiple sclerosis patients. *Today's Chiropr.* Nov/Dec 2000. 29(6):76-88
10. Elster, EL. Upper cervical chiropractic management of a multiple sclerosis patient: a case report. *J Vert Sublux Res.* June 2001. 4(2): 22-30. Online
11. Kirby, S. A Case Study: The Effects of Chiropractic On Multiple Sclerosis. *CRJ.* 1994 3(1): 7-12
12. Elster E. Eighty-one patients with multiple sclerosis and parkinsons disease undergoing upper cervical chiropractic care to correct vertebral subluxation: a Retrospective analysis. *J Vert Sublux Res.* August 2004. 1-9. Online
13. Amor S, Puentes F, Baker D, van der Valk P. Inflammation in neurodegenerative diseases. *J Immunol.* 2010 Feb 129(2):154-69. online
14. Poser, Charles. The role of trauma in the pathogenesis of multiple sclerosis: a review. *Clin Neuro and Neurosur.* May 1994 96,(2):103-110. online
15. Cohn, Ari DC. Chiropractic and the Neuroimmune Connection. *J of Vert Sublux Res.* September 2008. 1-5. online