Case Study

Improvement in Quality of Life of a 36 Year Old Female with Multiple Sclerosis Undergoing Subluxation Centered Chiropractic Care: A Case Report

Michael Gibson, D.C.¹
Shaun Gallagher, D.C.²

1. Private Practice of Chiropractic, Kanata, ON
2. Private Practice of Chiropractic, East Stroudsburg, PA

Abstract

Objective: To report on the effects of the correction of vertebral subluxations in an adult female with multiple sclerosis.

Clinical Features: A thirty six year old female with multiple sclerosis showed functional and symptomatic improvement during the course of chiropractic care. Objective indicators of vertebral subluxation in this study included surface electromyography, thermographic scans, and spinal radiographs.

Interventions and Outcomes: Patient was given chiropractic adjustments by hand and with the Integrator™ adjusting instrument based on findings elicited with MC² and Thompson technique analysis. These adjustments were given in the cervical, thoracic, and sacral regions and they were directed at reducing vertebral subluxations to improve brain-body communication.

Conclusions: The positive response observed during chiropractic care indicates that correction of vertebral subluxations may have an effect on multiple sclerosis. However, since this paper consists of a single case study, it is not possible to generalize the results to the entire population of those with multiple sclerosis. Additional research investigating the effects of vertebral subluxation correction on individuals with multiple sclerosis is warranted.

Keywords: Multiple sclerosis, chiropractic, neck pain, fatigue, numbness, low back pain, headaches, dizziness, vertebral subluxation, MC², tonal

Introduction

Multiple sclerosis (MS) is a chronic inflammatory demyelinating disorder that affects the white matter of the brain, spinal cord, and optic nerves.¹ Axonal degeneration and reductions in nerve fiber density in the brain and spinal cord often lead to functional loss and permanent disability.¹ Symptoms in MS are wide ranging in severity and duration with sensory deficits usually presenting first, followed by motor abnormalities.² Symptoms may include paresthesias, visual changes, vertigo, pain, dizziness, cognitive impairments, depression, irregular appetite, mood changes, muscle weakness, bowel/bladder dysfunction, gait disturbances, fatigue, speech arrest, seizures, changes in muscle tone, and sexual dysfunction.¹³⁴

Most people with MS experience the relapsing-remitting form of the disease which is characterized by recurrent symptomatic attacks separated in time by periods of relative stability.⁵ Acute attacks in MS are believed to be inflammatory events in the affected nerve tissue.¹ Though some may not experience a marked escalation in severity of the attacks, it is not uncommon for remissions to be accompanied by residual disability.⁵ Some experience the Uhthoff phenomenon which is characterized by a symptomatic exacerbation when the individual is exposed to heat, stress, infection, or prolonged periods of exercise.⁵⁻⁷

The disease affects 250,000 to 350,000 individuals in the United States and a total of 2.5 million people worldwide.¹ The first symptoms usually occur between the ages of 20 and 40⁸ with a peak rate of incidence in the third decade.⁹ Females are affected twice as often as males,³ though at least one source indicates a female predilection 75% of the time.¹⁰ The individuals most commonly affected seem to be white and of European descent. MS is more common in temperate regions such as the United States, Canada, and Europe and rarer in tropical climes.⁷¹¹ Up to 20% of people with MS who dwell in temperate regions report a familial history of the disease.¹¹³
The cause of MS is unknown, but several etiological theories abound in the literature. One theory purports that underlying neuropathological changes like axonal degeneration are due to an autoimmune T-lymphocyte inflammatory cascade with macrophage and microglia involvement. Supporters of this theory believe that axonal injury leads to loss of nerve conduction efficiency and ultimately to some type of progression of the disease. Periods of remission and recovery are at least in part attributable to redistribution of sodium channels in the nervous system and 20% of MS patients experience remyelination of damaged nerve tissue.

After objective clinical evidence of an MS attack has been obtained, a magnetic resonance imaging (MRI) brain scan to visualize white matter lesions customarily follows. More than 95% of people with MS show sclerotic inflammatory lesions (plaques) and multifocal areas of patchy demyelination on (MRI), but visualization of these lesions is not sufficient for a diagnosis. According to diagnostic criteria established by an international panel on MS in 2000, there must be (1) objective proof of two CNS lesions or two symptomatic attacks separated both in time of occurrence and space, and (2) a thorough ruling out or exclusion of all other possible causes for a CNS lesion. Patients exhibiting signs and/or symptoms of spinal cord involvement should also get a spinal cord MRI.

Gadolinium (Gd) contrast may be used with MRI for a more specific insight into the nature of the MS lesions. Enhancement of MS lesions is associated with axonal injury, an important factor in MS that is believed to contribute to progression of the disease. A brain lesion which is shown to enhance the Gd contrast on a T1-weighted image indicates an area where there is active inflammation and a breakdown of the blood-brain barrier (BBB). Lesions reach their largest size over a period of 4-8 weeks and then almost always shrink in size and activity over a period of weeks to months.

Cerebrospinal fluid (CSF) analysis may aid in confirming the diagnosis of MS. Relevant CSF findings include an elevated IgG synthesis rate, oligoclonal IgG bands, and the presence of soluble Nogo-A protein in the CSF. Other diagnostic criteria include abnormal evoked potentials and various clinical findings, none of which are pathognomonic for MS. Evoked potentials are used to measure salutary conduction changes as evidenced by prolonged latency of evoked potentials which indicate demyelination of the nerve fibers being examined.

Because MS is a neurologically-based disease and chiropractic deals with the function of the nervous system as it relates to the brain-body connection, investigation into the effects of chiropractic care on MS patients is appropriate. The purpose of this paper is to report on a case of successful chiropractic care of a 36 year old female with MS. This patient was given chiropractic adjustments to reduce vertebral subluxations and thereby improve the brain-body connection.

Case Report

History

Patient is a 36 year old female who presented with a history of being diagnosed with MS. The first symptoms of MS began in April 2006 and she was diagnosed with the disease in February 2007 by her medical doctor. Initial presenting complaints were fatigue, difficulty sleeping, low back pain, mid back pain, neck pain and lack of mobility of the cervical spine, headaches, dizziness, loss of concentration, nervousness, tenseness, numbness in arms and feet, burning sensation in feet, irritability, and mood swings.

Examination

Chiropractic examination findings included joint fixation, muscle spasm, edema, and tenderness at C2, T5, L5, and sacrum. The Insight Subluxation Station® was used to perform thermal scans (Figures 1 & 2), surface electromyographic (sEMG) scans (Figures 3 & 4), algometry (Figure 5), and cervical range of motion (Table). Thermal and sEMG scans were taken on the first and twelfth visits, whereas algometry and cervical range of motion were only recorded on the first visit.

Radiographic views taken were lateral cervical, AP cervicothoracic, lateral lumbar, and AP lumbopelvic. The lateral cervical x-ray revealed a hypolordotic cervical curve, mild degenerative disc changes at the levels of C2/3, C3/4, C4/5, C5/6, and C6/7. There was mild osteophytic growth on the anterior vertebral bodies of C4, C5, and C6. On the AP cervicothoracic film, a left scoliosis of 16° was visualized from T2 to T6 with the apex at T4, and a right scoliosis of 11° was present from T6 to T12 with the apex at T9. Scoliosis angle were measured with Cobb’s method. The lateral lumbar radiograph showed a hyperlordotic curve and moderate intervertebral foraminai encroachment at L5/S1. The right iliac crest was 3 millimeters higher than the left iliac crest as seen on the anterior to posterior lumbopelvic film. Post x-rays were not taken.

The patient’s history included falling down the stairs and striking her head at age three. She also recalled being struck by a vehicle at age five, after which her face hit the curb.

Intervention

The patient was seen for 12 visits over a one month period (three times per week) and was still under care at the time of this writing. This paper outlines the changes seen after these initial 12 visits. High velocity low amplitude (HVLA) adjustments were given by hand and with the Integrator™ adjusting instrument. The Integrator™ is a FDA approved pre-cocking hand-held chiropractic adjusting instrument that delivers torque and recoil similar to a manual toggle-recoil adjustment, but at a speed of 1/10,000th of a second.

Vertebral subluxations were detected using Thompson technique and the MC2 method of analysis and adjusting as developed by Dr. Steve Hoffman. The MC2 system is based on Holder’s torque release technique (TRT) with the main
difference being that in MC, the upper cervical area (C1 and C2) is analyzed and adjusted first if an upper cervical subluxation is present. This system is a tonal technique model and consists of supine postural analysis and leg checks for upper cervical subluxations and their general segmental listings and biotone analysis for determining specific LOC, prone postural analysis and leg checks for subluxations in the rest of the spine and their general segmental listings, segmental pressure test challenges and their effects on leg length discrepancies for determining general line of correction (LOC) and direction of torque, heel-to-buttock resistance, and Derifield leg checks to determine if dural cord tension and/or pelvic subluxations are present.

Outcome

The patient reported functional changes and improvement of some symptoms after her first visit. At the time of reexamination, the patient reported that she had 60% improvement in neck pain, clearer thinking, more alertness, more energy, a feeling of being more relaxed, better ease with standing, lifting, bending and driving, improvements in balance, more confidence and strength during gait, more ease in falling asleep and improved quality of sleep, and more mobility and increased cervical ROM. On several occasions the patient reported that chiropractic care had helped her most with the symptoms of MS. After 12 visits, objective findings included improvements on thermal scans (Figs 1 & 2), improvement on sEMG scans (Figs 3 & 4), and less muscle tension, inflammation, tenderness, and joint restriction.

Discussion

Approaches to Care

There is no known cure for MS, thus most care rendered from the medical armamentarium is focused on the alleviation of symptoms in the MS patient. Traditional medical therapy usually involves anti-inflammatory medications to reduce the severity and duration of MS attacks. Many chiropractors and other complementary alternative medicine (CAM) providers choose to treat the musculoskeletal symptoms of MS patients. People with MS tend to seek CAM options while still maintaining the care of their conventional medical providers. The chiropractic literature contains a relatively large amount of research showing the positive effects of chiropractic adjustments on symptoms such as low back pain, neck pain, and headaches.

The most used forms of CAM by MS patients are ingested herbs (26.6%), chiropractic adjustments (25.5%), massage (23.3%), and acupuncture (19.9%). In a 2003 survey to discover why people do or do not seek alternative methods of care, nearly 8% of 1,348 respondents indicated that their reason for not utilizing CAM was “My physician advised me against CAM.” This study also found that of 1,792 respondents, 63.4% used CAM in the past or present for its holistic nature. This majority mindset reflects the findings of a 1998 study which showed that people often choose CAM to “prevent future illness from occurring or to maintain health and vitality.”

A retrospective analysis of 44 patients with multiple sclerosis showed that 90% of these patients reported improvement of their symptoms while undergoing a five year course of IUCCA upper cervical care. Twenty eight of these patients (70%) showed improvement with or absence of the majority of their symptoms. No further progression of the disease was reported by any of the 44 patients during the care period.

Chiropractic Mechanism

There are many theoretical scientific models of how vertebral subluxation affects the human body. Mechanically, chiropractic adjustments increase range of motion and reduce stiffness by breaking down fibrous adhesions by causing gapping in the zygapophyseal joint space. The adjustment has also been shown to have hypoalgesic effects. Neurologically, chiropractic adjustments are believed to decrease nerve compression and correct aberrant biomechanical relationships in the spine. Spinal structures are known have rich supplies of sensory receptors which, when stimulated, activate reflex pathways into the CNS. Reflex theory proposes that vertebral subluxation causes malfunction of these reflex pathways which results in improper adaptive responses of the autonomic and somatic nervous systems. Stimulation and normalization of these reflex pathways may occur when a subluxation is corrected.

The National MS Society says that the disease is the most common non-traumatic cause of neurologic disability in young adults, but many MS victims including the patient in this case study, have a traumatic head and/or neck injury in their past. Some sources maintain that such an injury itself would not cause MS, but it may cause symptoms to arise in already susceptible individuals. A 1996 court ruling in the United Kingdom that linked a vehicular whiplash injury to onset of MS was overruled two years later, effectively squashing what some believed to be the first legal victory in a series of many for MS sufferers. It is not possible to show a causal relationship between MS and head and neck trauma, but it remains a possibility that trauma may play a part in the pathogenesis of the disease.

Alteration of the BBB may occur with mild concussive injury to the head, neck or upper back by impingement on the spinal cord. Loss of BBB integrity allows autoreactive T-cells to enter the CNS through the junctions of the capillary endothelium where they recognize CNS antigens and trigger a cascading inflammatory process mediated by the positive feedback mechanism. Chiropractic care has been shown to decrease inflammation and this may explain why adjustments decrease the severity and duration of MS attacks as well as delaying or halting the progression of the disease.

Conclusion

The goal of this paper was to describe the case of a female with multiple sclerosis. Further investigation into the effects of chiropractic care on individuals with MS is warranted because it is not possible to generalize the results of one case study to the population of those with multiple sclerosis. Studies that show how chiropractic adjustments affect inflammation of the CNS may give insight into why MS patients under chiropractic care tend to have fewer attacks and less progression of the disease.
References


34. Poser CM. Trauma to the central nervous system may result in formation or enlargement of multiple sclerosis plaques. Arch Neurol. 2000 Jul;57(7):1074-7, discussion 1078.


Table - Cervical range of motion before initiation of chiropractic care

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<td>93</td>
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Figure 1. Pre Thermal Scan

Figure 2. Post Thermal Scan – One month later

Figure 3. Pre sEMG Scan

Figure 4. Post sEMG Scan – One month later

Figure 5. Algometry