
CASE STUDY

Resolution of Neck Pain, Upper Extremity Paresthesia & Dysautonomia in a 46 year Old Female with Loss of Cervical Curve and Spinal Degeneration Using Blair Upper Cervical Technique: A Case Study & Review of the Literature

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ABSTRACT

Objective: To report on the health outcomes in a 46-year-old woman with neck pain and hand numbness undergoing chiropractic care for the management of upper cervical vertebral subluxation.

Clinical Features: The patient is a 46-year-old woman that presented to the office with neck pain and hand numbness. She was examined and found to have upper cervical subluxation and dysautonomia along with a loss of the normal cervical curve and cervical spine degeneration.

Intervention and Outcome: The patient received specific chiropractic adjustments using the Blair Upper Cervical chiropractic technique protocol. Eight adjustments were administered over a 4-month period. At each visit, the patient was evaluated for subluxation using thermography, palpation and leg length inequality. Neck pain was decreased from 4/10 to 0/10 on a verbal pain scale. There was improvement in her neck pain and hand numbness after her initial adjustment and resolution of neck pain and hand numbness after two months of care.

Conclusion: This case study demonstrated successful management of a 46-year-old woman with neck pain, spinal degeneration, hand numbness and dysautonomia managed with upper cervical chiropractic care. Due to the natural limitations of a case study, more research is needed to examine how upper cervical chiropractic care benefits patients suffering with neck pain and paresthesias.

Key words: *Chiropractic, upper cervical, upper cervical subluxation, vertebral subluxation, dysautonomia, adjustment, spinal manipulation, neck pain, numbness, Blair Technique, thermography*

Introduction

Neck pain and its related symptoms, such as headaches and shoulder pain, have become a common condition affecting many people worldwide. Neck pain is the fourth leading cause of years lost to disability (YLDs).¹ The incidence of neck pain

occurs with 37.2% of the population experiences neck pain that last for at least one year in duration and over 50% of the population having some form of neck pain in their lifetime.²

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The prevalence of neck pain is seen more with women than with men, with middle age being at the peak of occurrence. Chronic pain lasting more than six months was also more common in women.³

Neck pain has been categorized several different ways including type, duration and severity.⁴ Findings have concluded that longer duration of neck pain predicts poorer outcomes for pain while shorter durations have produced better outcomes in the long run.⁵ A significant amount of resources have been devoted to the cure and prevention of neck pain. The annual economic costs of chronic conditions such as neck pain is estimated to be between \$261-300 billion.⁶

There have been several factors identified, including but not limited to genetics, psychological and sedentary lifestyle, that contribute to the development and progression of neck pain.⁷ Obesity has also been linked to neck pain due to the inflammatory changes and damaging structural changes seen with increase in body mass.⁸ Studies have shown that both traditional and conservative methods have been used in the treatment of neck pain.⁹ Chiropractic management has also been reported as a feasible intervention for neck pain.¹⁰ The purpose of this case report is to discuss the management of neck pain and hand numbness with chiropractic adjustments using the Blair Technique.

Review of Literature

Currently, there are several widely accepted methods of treatment for neck pain aimed at mitigating the onset of cervical pain and its associated symptoms.⁴ One of the more traditionally used methods by the medical community includes NSAIDs and/or muscle relaxants while other forms of treatment have included acupuncture, physical therapy, massage and several others. A pilot study of 45 patients with chronic neck pain participated and were categorized in the following treatment groups: non-steroidal anti-inflammatory drugs (NSAIDs) with acupuncture, acupuncture alone and NSAIDs alone. Treatment was given over three weeks where NSAIDs were taken daily and acupuncture was administered three times a week. Pain intensity was measured and there was no distinct difference in size reduction between the three groups. The preliminary findings also showed that acupuncture with NSAIDs provided no greater benefit than acupuncture or NSAIDs alone.¹¹

A randomized control trial study was performed using 72 patients with neck pain. Each received one treatment of physical therapy. Immediate improvements were recorded following the therapy with long lasting improvements seen as much as 96-hours post-intervention. However, short-term improvements showed no clinical significance in terms of long-term outcomes. It was concluded that combined intervention in conjunction with this manual form of therapy may provide better outcomes and should be explored.¹²

The efficacy of massage therapy on musculoskeletal disorders, including neck pain was evaluated in a systematic review that discussed the results of 26 studies. It has been long hypothesized that massage alone can be used to reduce neck pain but the benefits are usually short-lived. Although

massage therapy showed a reduction in pain and improved function in other musculoskeletal disorders, the effectiveness of massage for neck pain remains uncertain and lacks supportive evidence.^{13,14}

A fairly new form of treatment for neck pain has been topical NSAID gels applied to the area of pain. Topical diclofenac diethylamine (DDEA) was used in a randomized control study with 72 participants, half of which received the DDEA topical gel and the other half receiving a placebo gel. Within one hour, pain was reduced by 75% with DDEA use versus 23% with placebo. After 4-5 days of treatment, almost complete pain relief was achieved with DDEA gel.¹⁵ However, no evidence was given for pain levels post-treatment after the fifth day recorded. Studies have shown that although topical gels provide some form of temporary relief, long term and continued use greater than 12 weeks like seen with treatment for chronic pain can lead to adverse effects.¹⁶

Chiropractic care has long been labeled as a controversial form of care for neck pain.¹⁷ A review of randomized control trials studied the effectiveness of cervical manual therapy with neck pain with and without radicular symptoms in comparison to other conservative treatments, placebo treatments and wait-and-see intervention. A systematic review of 41 controlled trials analyzed treatment of neck pain with chiropractic manipulation. The evidence supported that spinal manipulative therapy is recommended in the treatment of both acute and chronic neck pain. No serious adverse events were reported in any of the citations used to develop the treatment recommendations outlined in this study.¹⁸

A review of upper cervical chiropractic care investigated a case series using upper cervical instruments to manage neck pain. 66 patients received an average of 2.7 adjustments with an average of 5.7 office visits over 13.6 days and their post-adjustment radiographic alignments showed improvement along with better outcomes in disability from cervical pain. This noted that upper cervical instrument adjusting might allow for fewer adjustments and a shorter follow-up period to achieve similar outcomes as other techniques for neck pain.¹⁹

Case Report

Clinical History

A 46-year-old woman presented to the chiropractic clinic with chronic neck pain and left hand numbness. The origin of the pain was unknown and the specific initial onset could not be recalled. The numbness radiating into the hand was intermittent with no defined pattern or timing. The patient had not seen any other healthcare provider for either complaint.

The patient described the pain as achy and stiff and was rated as a 4/10 initially on a scale of 0 to 10 where 0 is no pain. The pain worsened after working long hours or traveling for work but no other activities of daily living (ADLs) were affected. The patient reported that her significant other, a licensed massage therapist, had been administering massage to manage the pain but only provided temporary relief. No other forms of treatment or medications were used for this condition.

The patient also presented with low back pain and tingling and

numbness into the toes. The patient was previously diagnosed with a lumbar disc herniation and treated by a physical therapist.

Physical examination

A case history was taken as well as vital signs, range of motion, motion and muscle palpation and relevant orthopedic and neurological exams. The cervical examination revealed negative findings for Shoulder Depression test. Foraminal Compression test was positive on the left. Cervical Distraction test was positive on the right. Neck pain was relieved when this test was performed.

Cervical ranges of motion were performed on the patient, showing cervical flexion of 60 degrees and cervical extension of 30 degrees, both with no pain during active motion. Cervical right lateral extension of 40 degrees and cervical left lateral extension of 45 degrees were pain was noted with active cervical motion. No dizziness, ringing in the ears or blurred vision was reported.

Lumbar ranges of motion were also performed on the patient, showing lumbar spine flexion of 90 degrees, lumbar spine extension of 30 degrees, lumbar spine right lateral flexion of 35 degrees, lumbar spine left lateral flexion of 30 degrees, all which reproduced pain with active lumbar motion.

Motion and muscle palpation of the cervical spine were performed, revealing tenderness and fixation at C4, C5 and C6. Muscle palpation revealed tenderness and spasm in the cervical paraspinal muscles, thoracic paraspinal and left lumbar paraspinals and longissimus muscles.

Thermography Scan

Thermographic scanning of the paraspinals was used to determine the patient's pattern according to upper cervical protocol. The scan revealed a static asymmetrical heat pattern consistent with dysautonomia secondary to vertebral subluxation. A thermographic scan of the spine done at rest that is persistent over time establishes the patient's pattern.²⁰

Leg Length Inequality (LLI)

Leg length inequality was noted using a Modified Prill and Derefield leg check, following the Blair upper cervical protocol.²¹ The Derefield leg check is performed with the patient prone who is then instructed to turn the head to the left, neutral and then right to detect spinal stress related to subluxation in the cervical region.²² The Derefield leg check showed a right short leg by ¼ inch as well as Cervical Syndrome on the left. The patient displayed a right short leg by ¼ inch when performing the Modified Prill leg check testing the C1 vertebrae.²³

Imaging and Analysis

Based on the findings, an upper cervical misalignment was suspected so cervical radiographs were taken. Nine radiographic views were taken with the patient seated, in weight-bearing position. The patient was positioned with the head and neck in neutral.

Using the Blair Technique protocol, a Base Posterior radiograph was taken first to measure the convergence angles of the occiput and atlas that were needed to take the Protracto views. Protracto views were taken to identify the articulation between the occipital condyles and the atlas lateral masses on both the left and right sides.²¹ Head clamps were used to prevent any changes to the alignment of the cervical spine.

Four lateral stereo views, a neutral lateral cervical and an Anterior-Posterior Open Mouth (APOM) were taken to complete the cervical series needed for the Blair upper cervical technique.²¹

Radiographic Findings

The patient's radiographs indicated Stage 2 cervical spine degeneration with moderate disc deformation, disc space loss and disc degeneration at the fourth, fifth, and sixth cervical vertebrae.²⁴ Anterior and posterior spurring was noted at C4 through C6. Some posterior encroachment into the neural canal at C5 and C6 may result in stenosis of spinal canal, which can cause numbness/tingling in hands. Cervical vertebrae from C2-C6 display left rotation. Additionally, the cervical curve is not present which may be putting stress on the spinal column (Figure 1).²⁵

A chiropractic cervical listing was obtained from the Protracto views taken of the patient. The first cervical vertebrae (C1) presented anterior-superior right (ASR) and posterior-inferior left (PIL) misalignment of the right occipital-atlantal articulation based upon Blair protocol (Figure 2).

Case Management

Based on the examination and radiographic findings, the patient was diagnosed with Cervical Facet Syndrome and Cervical Radiculopathy. A Blair adjustment was performed when the evidence from palpation, thermography and leg checks was consistent with the patient's pattern of segmental dysfunction. The patient was placed in a side-posture position on a chiropractic table with an adjustable cervical drop headpiece. At the second visit, the patient was given a Blair adjustment on the C1 vertebrae with an ASR (anterior-superior right) listing using the right atlas transverse process as the segmental contact point.

The ASR-PIL misalignment of atlas was corrected via a manual adjustment with the patient's right side up on the chiropractic table. The doctor's pisiform contacts the right transverse process and performs a pisiform pull using 180° of clockwise torque, allowing the cervical headpiece to drop.

Following the Blair protocol, the patient is rested for 15-45 minutes in a reclined position post-adjustment. The patient received a post-adjustment thermography scan that revealed a dynamic symmetrical heat pattern. This corresponds with the reduction of vertebral subluxation and dysautonomia. A post-adjustment leg check revealed balanced legs, indicating the subluxation was cleared.

All visits began with thermal scanning, palpation and leg length inequality checks. Adjustments were only administered if the patient was in pattern according to the thermal scan

along with leg length inequality.

The patient returned six days after the first correction and the thermography of the cervical scan revealed a static asymmetrical heat pattern. Leg checks indicated ¼ inch short right leg that remained short during the Derefield leg check and a positive vertical Modified Prill leg check indicating misalignment of the C1 vertebrae. The patient presented with cervical pain rated 0 out of 10 on the pain scale.

The patient received another ASR-PIL adjustment according to the Blair technique protocol and was rested for 15-45 minutes in a reclined position. The post-adjustment scan revealed a static symmetrical heat pattern to the pre-adjustment thermograph indicating that the segmental misalignment was cleared.

The prescribed chiropractic plan for the patient was two times a week for the first two weeks and then one time a week for the remainder of the care plan. At the patient's sixth visit, thermography scanning revealed a symmetrical heat pattern consistent with no segmental misalignment. The leg check revealed no leg length inequality, as the legs were balanced during the Derefield and vertical Modified Prill leg checks. The patient was holding her adjustment for the 2nd week and reported that the hand numbness dissipated as compared to the last visit. No post-thermograph were taken since no adjustment was administered.

Four more visits occurred over the course of five weeks in which the patient gradually presented as asymptomatic. The patient presented with asymmetrical thermographic scans and leg length inequality of 1/8 inch. Adjustments were administered when the criteria was met. The patient was rested for 15-45 minutes and post-adjustment thermographs were taken. The leg checks were also reevaluated and previously unequal leg lengths were balanced.

Outcomes

The patient received a total of eight adjustments over a 4-month period using the Blair upper cervical protocol (Table 2). The patient initially began care with symptoms of neck pain and hand numbness rated 4 out of 10 on a verbal pain scale (Table 1). After 2 months of care, she experienced a resolution of pain and associated symptoms of hand numbness.

The patient was considered to be asymptomatic when the examination findings did not warrant a cervical adjustment. When the patient's evaluation showed a misalignment, the patient received adjustments according to the Blair protocol.

Discussion

Neck pain and associated hand numbness has long been the topic of study amongst the medical and chiropractic profession. According to a cohort study on the incidence and course of neck pain in the general population, only 36.6% of people suffering with persistent neck pain have remission of pain annually. The report established that the cumulative incidence of neck pain amongst the general population is high, with 54% of adults suffering from neck pain during any 6-

month period.²⁶

Chiropractic care has been used to manage numerous musculoskeletal conditions including neck pain. Neck pain accounts for 25% of the initial consultations and examinations rendered at chiropractic offices.²⁷

A 2008 cohort study described chiropractic management of neck pain for new patients between the ages of 18 and 65 years, as well as outcomes and findings. The study concluded that 92% of the patients had a favorable outcome, including shorter duration of neck pain with chiropractic management.²⁸

Chiropractors use spinal adjustments of the cervical spine as a treatment intervention for individuals suffering with neck pain. Other treatment options include manual therapy such as massage and modalities such as ultrasound and electrotherapy stimulation.²⁹

The use of upper cervical chiropractic care in this case was for the adjustments of upper cervical misalignments, which were detected with thermographic scan, leg length inequality and palpation and confirmed with cervical radiographs following the Blair protocol.

The Blair Upper Cervical chiropractic technique was founded on the principle that the craniocervical junction articulation of the occipital condyles with the atlas lateral masses is normally asymmetrical. Specific radiographs are taken to view the anterolateral articulation of the craniocervical junction looking for overlap or underlap of the edges, which indicate symmetrical misalignment. High velocity, low-force manual manipulations of atlas were incorporated into the technique to restore proper vertebrae alignment with the occiput.^{21,30}

Conclusion

This case study details the history of a 46-year-old woman suffering with neck pain and hand tingling and the effect of ten specific Blair upper cervical chiropractic manipulations over a four-month time span. There was evidence of upper cervical misalignment using the Blair upper cervical technique and adjustments were given according to the protocol.

A retrospective case report is limited in its ability to provide conclusive insight into any general conclusion based on the data gathered. Improvements were seen with the patient after receiving specific chiropractic care. This case warrants more research detailing the benefits of upper cervical chiropractic and neck pain with associated hand numbness.

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Figure 1: Neutral Lateral cervical radiograph of the patient

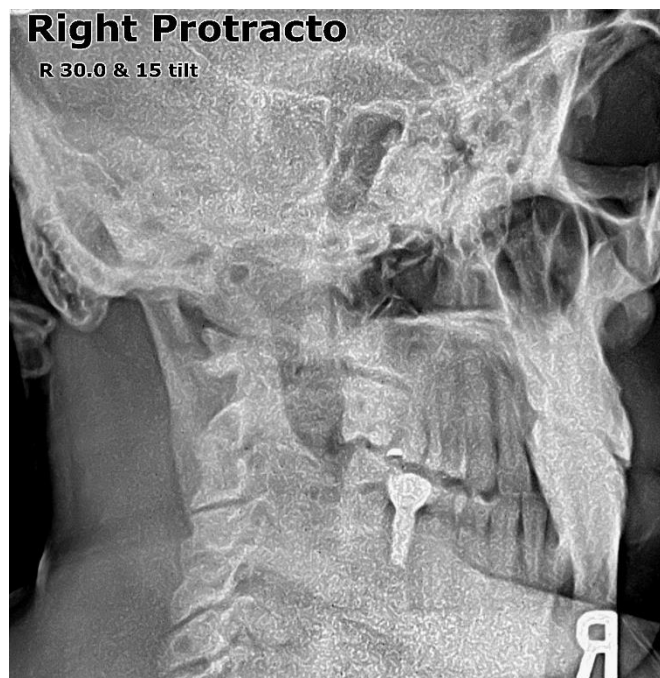


Figure 2: Right Protracto radiograph showing the ASR-PIL misalignment

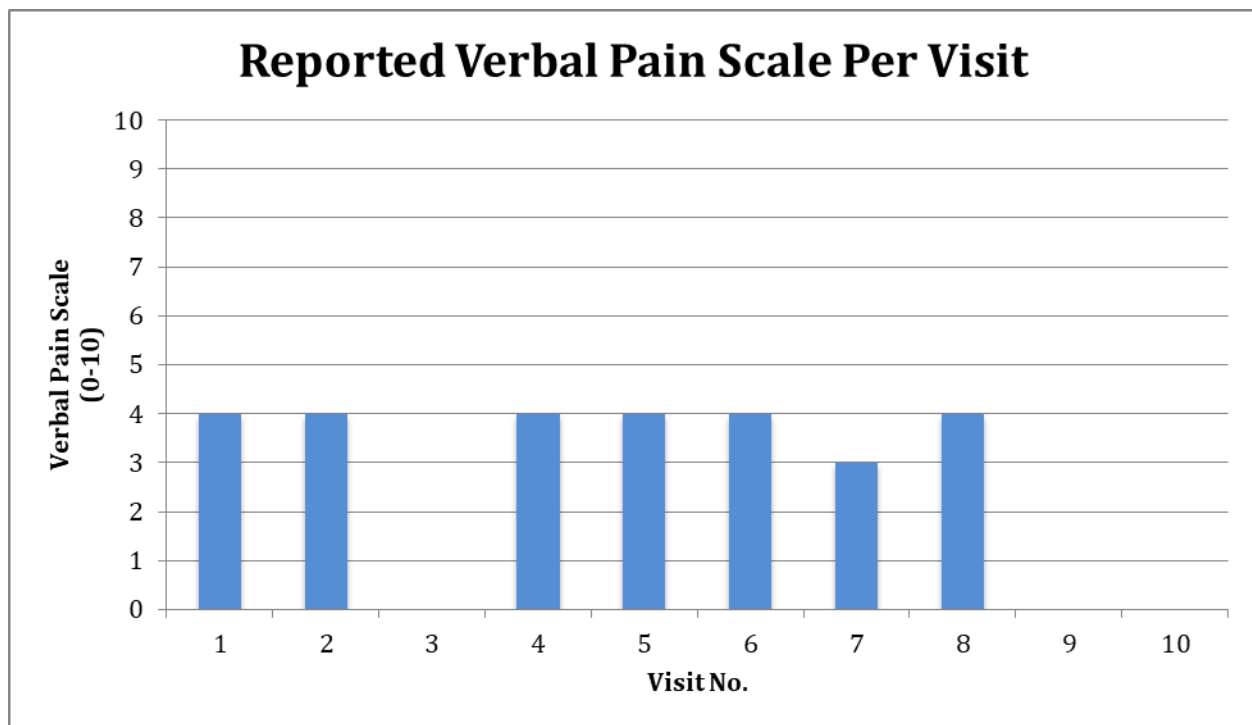


Table 1: Changes in verbal pain scale per visit as reported by the patient

Visit No.	Thermography pattern present	Palpation Muscle Rigidity	Leg Length Inequality	Derefield leg check (Y/N)	Modified Prill vertical leg check (Y/N)	Adjustment Given
1	N/A	YES	1/8"	YES	N/A	NONE
2	YES	YES	1/4"	YES	YES	BLAIR
3	YES	YES	1/4"	YES	YES	BLAIR
4	YES	YES	1/4"	YES	YES	BLAIR
5	YES	YES	1/4"	YES	YES	BLAIR
6	NO	NO	BALANCED	NO	NO	NONE
7	NO	NO	1/8"	YES	YES	BLAIR
8	YES	YES	1/8"	YES	YES	BLAIR
9	YES	YES	1/8"	YES	YES	BLAIR
10	NO	NO	1/8"	YES	NO	NONE

Table 2: Case Management patient examination results for each visit