CASE REPORT

Resolution of Low Back Pain in an 8-year-old Following Blair Upper Cervical Chiropractic Care: A Case Report

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ABSTRACT

Background: The prevalence of low back pain in children has been estimated at 50% and may begin as early as 4-years-old. Chiropractic management is a conservative treatment option.

Method: This is a retrospective case report. The patient presented with intermittent, moderate middle and low back pain, rated 5/10 on a pain scale, with a 2-year duration. She had previously received stretching and massage, but the pain persisted. No traumatic event was reported, and no other health care provider was previously consulted. Examination revealed negative findings in Straight Leg Raiser, Heel/Toe Walk, and Kemps tests. However, there was decreased left lateral flexion with pain and decreased right cervical rotation. Soft tissue static palpation of the cervical region noted rigid paraspinal muscles (superior oblique, inferior oblique, splenius cervicis and levator scapulae) on the right. Foramina Compression test was positive on left. Various indicators for an upper cervical subluxation were found. The Blair upper cervical chiropractic technique was used to identify vertebral subluxations using specific radiographs.

Result: The patient received 5-months of chiropractic care. An upper cervical technique was used to correct the vertebral subluxation. The patient reported resolution of her middle and low back complaint.

Discussion: The increase prevalence of back pain (BP), especially low back pain (LBP) in children has been the topic of many studies in both the medical and chiropractic professions. Reduction of the upper cervical subluxation may result in the reduction of compensatory subluxations throughout the spine.

Conclusion: Significant improvement of the pediatric patient's complaint of low back pain in this case report demonstrates the need for further investigation. The use of a non-invasive, light-force, and highly specific method of correction upper cervical subluxations may prove to be a safe and cost-effective method of care for pediatric back pain in similar cases.

Key Words: *Blair upper cervical technique, low back pain, children, vertebral subluxation, cervical spine*

Introduction

Numerous studies have demonstrated the high prevalence of lifetime back pain (BP), mainly non-specific low back pain (LBP). In western industrial societies, LBP is still a poorly controlled health problem and the cause of great discomfort and economic loss. BP has also become a common problem in children. Epidemiological studies have estimated the lifetime prevalence of LBP in children is approximately 50%.[1] The first pain episodes most often occur between ages 12 to 14 years with incidences increasing with age.[2]

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The prevalence of LBP in children is high worldwide and no gender differences have been found. In a 1999 study of primary school children in Antwerp a total of 392 student age nine were included. All children completed a validated three-page questionnaire and underwent a specific lumbar spine examination. A total of 142 children (36%) reported having suffered at least one episode of LBP in their lives. Of these, only 33 (23%) sought medical help for LBP from a doctor or physiotherapist.[3]

There are various scientific reports that musculoskeletal disorders, such as non-specific LBP, can be successfully managed with chiropractic care. One study evaluated pediatric patients with LBP, between ages 4 and 18 years, under chiropractic management. This study found that pediatric patients responded favorably to chiropractic management and there were no reported complications.[1] Consequently, many LBP cases are seen by chiropractors including pediatric cases with approximately 30 million pediatric visits to chiropractors made in the United States in 1997.[4]

This report will discuss the case presentation and management of pediatric low back pain using Blair Technique. This study was granted an exemption status as a retrospective case report by the Institutional Review Board (IRB) at Life University in Marietta, GA, USA.

Case Presentation

Clinical History

An 8-year-old girl, experiencing middle and low back pain for two years presented to the upper cervical specific chiropractor in January 2014. The patient had not previously seen another health care provider for back pain.

The patient described pain as an achy feeling in mid and low back regions. She ranked the pain severity of 5 out of 10 on the verbally rated pain scale where 0 is no pain and 10 is the worse pain imagined. However, the back pain did not disturb the patient's activities of daily living (ADL). The patient's parents reported that "she has been complaining of nightly back pain for a while" though no traumatic injury was remembered. The patient's father, a personal trainer, had been utilizing stretching and massage to manage her pain with little change.

Physical examination

At the first visit, a detailed case history was taken followed by a thorough examination that included vitals, neurological, orthopedic, cervical static and motion palpation, and range of motion tests. The lumbar examination revealed negative findings for lumbar range of motion (ROM), Straight Leg Raiser, Heel/Toe Walk, and Kemps tests. Positive findings included decreased left lateral flexion with pain and decreased right cervical rotation. Soft tissue static palpation of the cervical region noted rigid paraspinal muscles (superior oblique, inferior oblique, splenius cervicis and levator scapulae) on the right. Foramina Compression test was positive on the left.

Thermography Scan

Cervical thermographic scanning was used to determine pattern according to upper cervical protocols.[5,6] In addition to revealing thermal asymmetry, the patient's scans displayed static thermal differences and therefore a thermal "pattern" was established. A thermography scan that is static and persistent over time is considered to be a patient's subluxation pattern.[6]

Leg length inequality (LLI) procedure

Following Blair upper cervical technique protocol, leg length inequality was noted by performing a modified Prill and Derefield leg checks, utilizing the work of J. Clay Thompson, DC and Clarence Prill, DC.[7] The Thompson/Derefield leg checks were performed with the patient prone and instructed to turn her head right, then back to center and turn left then back center. Any change of relative leg length is considered evidence of upper cervical subluxation. The Derefield leg check noted a right short leg by ¼ inch as well as a right Cervical Syndrome. The patient exhibited a right short leg by ¼ inch when testing for C1 vertebral level with the modified Prill vertical leg check.[7]

Phase I of Case Management

Conservative care of this patient began at the first visit once palpation and leg checks were performed. A light toggle recoil at the right atlas transverse process was performed then the patient was rested prone for 15 minutes. Post adjustment the thermography scan began to straighten and leg length was equal or balance. However, each weekly visit for 3 weeks the patient's back pain returned the day after the adjustment. It was during the third week that the patient revealed that she fell down a flight of stairs at 3-years-old that her father confirmed. Therefore, an upper cervical misalignment due to trauma was suspected and specific upper cervical radiographs were taken according to Blair protocol.

Imaging and Analysis

Standard cervical radiographic views were taken in a seated, weight-bearing position. Once the patient was seated correctly in the chair, head clamps were utilized to keep the patient immobile and to maintain postural integrity during the exposure.

Following Blair protocol, a Base Posterior (BP) radiograph was taken first in order to obtain the occipital condyle convergence angles, which are needed to take the Protracto views.[8,9] Protracto (oblique nasium) radiographs of each atlanto-occipital articulation were taken with the patient turned in a positioning chair at an angle equal to the convergence angle obtained from the Base Posterior and then secured with head clamps. The central ray was directed obliquely anterior-to-posterior along the left then right convergence angles respectively.[9]

Four total lateral stereoscopic views at two different points on the right and two different points on the left were taken. A neutral lateral and an Anterior-Posterior Open Mouth (APOM) were also taken as part of the standard eight cervical

radiographs for the Blair upper cervical technique.[8]

Additionally, anterior-to-posterior (AP) and lateral radiographs of the thoracic and lumbo-pelvic regions were taken in order to rule out pathology of the mid or low back. No cervical, thoracic, lumbar or pelvic pathology was noted on radiographs.[8]

Radiographic Findings

The patient exhibited a kyphotic cervical curve (Figure 1). A chiropractic cervical listing was obtained from the specific Protracto radiographs. A first cervical (C1) anterior-superior right (ASR) misalignment of the right occipital-atlantal articulation at 49º was observed (Figure 2).

Phase 2 of Case Management

When analytical evidence from thermography, palpation and leg checks determined that the patient was in a pattern of subluxation, a Blair adjustment was performed. The patient was placed in a side-posture position on a chiropractic table with a cervical drop headpiece. At the fourth visit the patient was given a Blair adjustment on the C1 vertebra with an ASR (anterior-superior right) listing using the right atlas transverse segmental contact.

The ASR atlas correction (adjustment) was performed by placing the patient on her left side and the doctor's contact hand (pisiform) was placed on the right transverse process of atlas. The doctor stood in front of the patient, and the ulnar of the contact hand was placed 90º from the left slope angle (derived from the left Protracto view). A quick thrust was made with an 180º clockwise torque and just enough force to allow the headpiece to drop.

In accordance to Blair technique protocol, following the adjustment the patient was placed in a post-adjustment resting room for 15 minutes. The adjustment's success was determined by reviewing a post-adjustment thermographic scan following the rest period. This scan revealed dynamic thermal asymmetry, indicating a successful correction. The leg checks were also reevaluated and previously unequal leg lengths were now balanced.

All successive visits began with a thermal scan, palpation and checking for leg length inequality. The patient would not receive an upper cervical correction (adjustment) unless her presenting thermal asymmetry ("pattern") returned and leg length inequality was also present.

The patient returned a week after her first correction and her thermography scan was found to be in "pattern". Leg checks indicated right Cervical Syndrome and a ¼ inch short right leg was also present during the Thompson/Derefield and modified Prill leg check indicated a subluxation/misalignment at the level of C1. The patient complained of continued LBP measuring 4 out of 10 on a verbal pain scale.

At this time the patient was given another ASR corrective adjustment of the C1 vertebrate and rested for 15 minutes. Post thermography scan revealed dynamic thermal asymmetry and leg checks indicated balanced (equal) leg length.

At the patient's sixth visit her thermography scan was again in "pattern" and leg checks again revealed a right cervical syndrome and a ¼ inch short right leg was present during the Thompson/Derefield and modified Prill leg checks. Patient complained of continued low back pain measuring 3 out of 10 on verbal pain scale.

However, at this time an ASR adjustment was administered to the C1 vertebrate using the left transverse process of atlas which according to Blair protocol can be administered when steep occipital-atlantal articulations are present (slope angles >40º).[8]

The patient was placed in a side-posture position on a chiropractic table with a cervical drop headpiece. The ASR atlas adjustment was performed by placing the patient on her right side and the doctor's contact hand (pisiform) was placed on the left transverse process of atlas. The doctor stood in front of the patient, and the ulnar of the contact hand placed 90º to the left condyle convergence angle. A quick inferior to superior thrust was made with a 90º clockwise torque and just enough force to allow the headpiece to drop.

The patient was placed in a post-adjustment resting room for 15 minutes. The post-adjustment thermography scan revealed dynamic thermal asymmetry, indicating a successful correction. The leg checks were also reevaluated and previously unequal leg lengths were now balanced.

At the next visit, one week later, the patient stated that she had not experienced any LBP. Parents confirmed that she had not complained once in the past week. The patient's thermography scan revealed dynamic thermal asymmetry. No cervical syndrome was observed. Thompson/Derefield and modified Prill leg checks revealed no leg length inequality or balanced.

Five more visits occurred over a period of five weeks following her previous visit at which time the patient presented asymptomatic. Her thermography scans did not present in "pattern". No Cervical Syndrome was observed. Thompson/Derefield and modified Prill leg checks were balanced, revealing no leg length inequality.

The patient returned two months later, after, falling backwards in the kitchen at which time the middle and LBP returned. The thermography scan revealed "pattern". Leg checks indicated right cervical syndrome and a ¼ inch short right leg was also present during the Thompson/Derefield leg checks. The modified Prill vertical leg check revealed a C1 misalignment.

At this time an ASR correction at the C1 vertebrate using the left transverse process was administered. The patient was rested for 15 minutes. The post-adjustment thermography scan revealed dynamic thermal asymmetry, indicating a successful correction. The leg checks were also reevaluated and previously unequal leg lengths were now balanced.

Outcomes

Between her initial visit and to date, the patient received a total of six adjustments including three Blair UC adjustments in a 5-month period (Table 1). The patient initially began care with symptoms of middle and low BP ranking 5 out of 10 on a

verbal pain scale (Figure 3). After care she experienced the resolution of symptoms.

When the patient's chiropractic exam findings did not show the need for an adjustment, she was asymptomatic. When the upper cervical area was subluxated, she felt the immediate return of middle and low back pain. Upon correction of the subluxation, she returned to her asymptomatic state.

Discussion

The increase prevalence of back pain (BP), especially low back pain (LBP) in children has been the topic of many studies in both the medical and chiropractic professions. According to a systematic review of the incidence and prevalence of LBP in children, investigators Hill and Keating found that after the first episode of LBP, the probability of further episodes is greater than for those who never experienced LBP. The researchers established that a high proportion of children, up to 72%, experience low back pain between 7 and 14 years of age.[2]

Chiropractors are often sought for musculoskeletal problems like LBP for adults and increasingly for children. By 1997 the American Chiropractic Association (ACA) reported that children constituted 10 percent of the patients in the chiropractic practice.[4]

A 2003 study described chiropractic management of low-back pain in patients between the ages of 4 and 18 years, as well as outcomes and factors associated with outcomes. The study concluded that 90% of the pediatric patients responded favorably to chiropractic management and there were no reported complications.[1]

Chiropractors commonly utilize spinal manipulations/adjustments of the lumbar spine as treatment intervention for adults and children with LBP. Other treatments include passive manual therapy, such as soft tissue therapy, and modalities, such as interferential current and ultrasound.[2]

The rationale in utilizing upper cervical specific chiropractic care in this case is solely to correct the patient's upper cervical subluxation, which was suspected following thermography, palpation, and leg length inequality checks and confirmed with Blair cervical radiographs.

The Blair UC Chiropractic technique developed by Dr. William G. Blair directly addresses the asymmetry of the upper cervical spine in the articulations between the occipital condyles and the lateral masses of atlas. Dr. Blair concluded that a misalignment of a joint occurs at the articulation of the joint; therefore, specific upper cervical radiographs are taken to look at the articulations.[10-13] Specific adjustments were developed to return the atlas to its proper position thus reducing the upper cervical vertebral subluxation.

Conclusions

This case study details the history of an 8-year-old girl suffering from middle and LBP and the effect that administering three specific Blair upper cervical corrections (adjustments) during a five-month time span. Evidence of an upper cervical subluxation was present, according to the Blair UC technique protocols and the correction of the vertebral subluxation was administered.

A retrospective case report cannot provide definitive and conclusive insight into any general conclusion due to its restrictions and limitations. However, the patient reported resolution of middle and low BP following Blair upper cervical chiropractic care. The results of this case warrant further investigation between upper cervical chiropractic and pediatric BP.

Abbreviations

UC: upper cervical, LBP: low back pain. BP: back pain

Competing interests

The author declares she has no competing interests

Author's contribution

The author conducted all initial review of the case, obtained reference literature then read and approved the final manuscript

Author details

The author is in private practice of chiropractic in Alpharetta, Georgia, USA and teaches graduate chiropractic coursework at Life University, Marietta, Georgia, USA

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Figure 1: This is a Neutral Lateral radiographic image of the patient

Figure 2: This is a right Protracto radiographic image showing the ASR misalignment in this patient

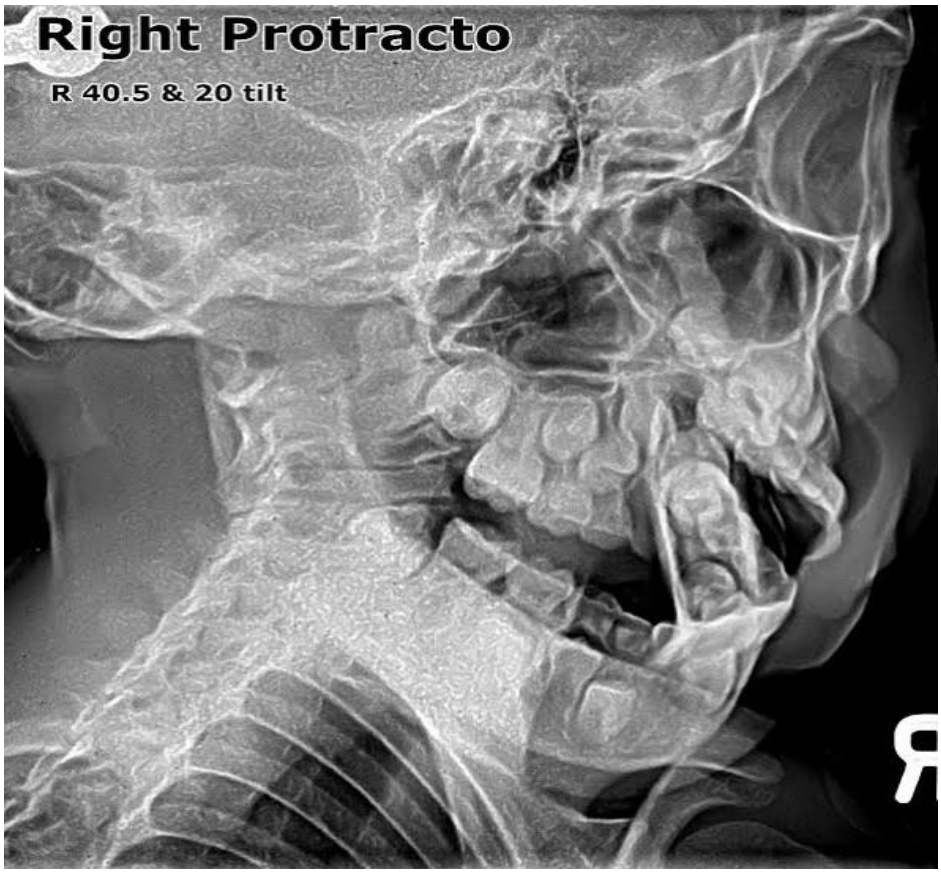

Figure 3: Changes in verbal pain scale per visit

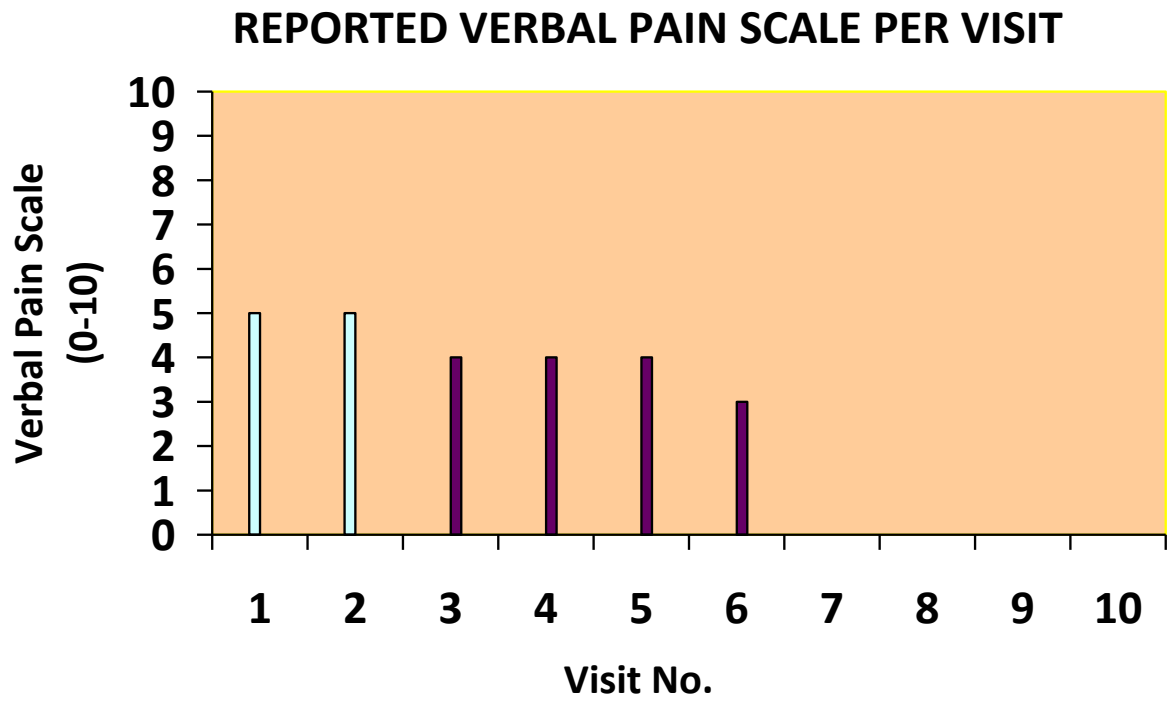

Table 1: Phase 1 and Phase 2 Case Management patient examination results for each visit and when corrections were administered

VISIT NO.	THERMOGRAPY PATTERN PRESENT	PALPATION MUSCLE RIGIDITY	LEG LENGTH INEQUALITY	DEREFIELD LEG CHECK (Y/N)	CERVICAL SYNDROME (Y/N)	MODIFIED PRILL VERTICAL LEG CHECK	ADJUSTIVE CORRECTION GIVEN
1	N/A	YES	¼"	YES	YES	N/A	TOGGLE
2	YES	YES	¼"	YES	YES	N/A	TOGGLE
3	YES	YES	¼"	YES	YES	N/A	TOGGLE
4	YES	YES	¼"	YES	YES	YES	BLAIR
5	YES	YES	¼"	YES	YES	YES	BLAIR
6	YES	YES	¼"	YES	YES	YES	BLAIR (OPPOSITE SIDE)
7	NO	NO	BALANCED	NO	NO	NO	NONE GIVEN
8	NO	NO	BALANCED	NO	NO	NO	NONE GIVEN
9	NO	NO	BALANCED	NO	NO	NO	NONE GIVEN
10	NO	NO	BALANCED	NO	NO	NO	NONE GIVEN