CASE STUDY

Improvement in a Child with Scoliosis, Migraines, Attention Deficit Disorder and Vertebral Subluxations Utilizing the Pierce Chiropractic Technique

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Abstract

Objective: To review the effectiveness of the Pierce "Results System"™ of vertebral subluxation analysis and correction for a 7-year-old female patient diagnosed with idiopathic scoliosis, attention deficit disorder, and migraines.

Clinical Features: The patient is a 7-year-old female born with paralysis to the right side of the face from a difficult birth, and was issued a helmet to help reshape her head due to deformity. She also suffered from attention deficit disorder, difficulty concentrating, vomiting, and light sensitivity from intense migraine headaches since the age of 2. She had scoliosis with a Cobb angle measuring 13°.

Intervention and Outcomes: During the patient's initial examination, evidence of vertebral subluxations were identified using thermographic and radiographic assessments. All assessments and care were performed in accordance with the guidelines of the Pierce "Results System"™. Chiropractic care using a conservative, full spine technique was administered to correct and stabilize the vertebral subluxations. Along with improvement of subjective complaints, the post AP lumbopelvic radiograph showed a 62% improvement in Cobb angle after just one month of care.

Conclusions: The case of a seven year old female with past history of a difficult birth is presented. Dramatic improvement in the patient's scoliosis is noted following the introduction of chiropractic care concomitant with a reduction in vertebral subluxation. Further investigation is warranted to more clearly understand the effects of the Pierce "Results System"™ and chiropractic in children and on scoliosis, migraines, and attention deficit disorder.

Key Terms: *Pierce Results System, chiropractic, subluxation, idiopathic scoliosis, video fluoroscopy*

Introduction

Idiopathic scoliosis (IS) is defined as a lateral curvature of the spine greater than 10 degrees accompanied by vertebral rotation. It is present in 2-4% of children between 10 and 16 years of age.[1-5] Though more research is currently being done on the onset of idiopathic scoliosis in children, it is widely thought that biomechanical, neurological, and postural abnormalities are some of the leading causes of this affliction[1-5] Since chiropractic deals very intimately with these three areas, it is normal to postulate the possibility of scoliosis correction following normalization of aberrant biomechanics, posture, and neurology.[1-5] The Pierce "Results System"™ looks at all three of these issues carefully when deciding where, when, and how to administer chiropractic care to patients.[6,7]

Conservative treatment of IS has been to brace patients with up to a 40 degree Cobb angle. After 40 degrees, surgery is

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typically recommended. This surgery typically consists of the insertion of Harrington Rods into the paraspinal areas to hold the spine upright.[8-10] There is very little literature on alternative methods of care that are non-operative. Pettibon and Chiropractic Biophysics (CBP) are two chiropractic technique groups that have published some research on scoliosis reduction utilizing spinal traction and weighting systems.[11] There was also one other pilot study showing the effects of diversified adjusting on AIS.[12] The Pierce "Results System"™ would be different in that only spinal adjusting is done to restore aberrant mechanics, leading then to a restoration of structural posture.[6]

Case Report

History

The patient was a 7-year-old girl with paralysis on the right side of her face from a difficult birth. The paralysis of her jaw muscles made it difficult for her to rest with the mouth in a closed position. It was also explained that when she was younger, she underwent "helmet therapy" due to a deformation of the skull from birth.

Speech therapy and physical therapy were both utilized during the developmental stages of the child due to inability to meet common standards in speech and physical development. Speech therapy sessions were focused on problems with annunciation. She was also attending occupational therapy for balance and coordination problems.

The child had been suffering from light sensitive migraines since the age of two. These were severe migraines, occurring three times a month and lasting throughout the night. In addition to the migraines, she was also having difficulty concentrating, had attention deficit disorder (ADD), and idiopathic scoliosis (AIS).

The patient's ADD symptoms ranged from aggressive behavior, cutting others in lines, sporadic inappropriate behavior, to extreme impulsivity. The patient also complained of 8/10 pain in the low back, lumbar, and thoracic regions.

Examination

Chiropractic examination included thermal scans, videoflouroscopy, and radiographic evaluation. The initial thermal scan revealed a hyperthermic zone in the lower lumbar and pelvic region. Pierce described a healthy scan as changing from visit to visit, while becoming fairly straight over time, with a 0.0 atlas differential, and a median temperature of 93.5°F. Movement of the graph to the right indicates a hyperthermic zone, while movements to the left would be hypothermic zones of heat given off by the skin (Fig 2-6).

Radiographs were taken and revealed aberrant pelvic biomechanics presenting as an externally rotated ilium on the right side (R-EX). Some lumbar and thoracic rotation and fixation were also noted. The AP lumbopelvic x-ray revealed a spinal curvature that measured 13° degrees using the Cobb method.

The videoflouroscopy exam revealed mild to moderate right spinous rotation with concomitant loss of rotational motion at the T1-3 levels. A similar discovery was found at the L2-5 levels with loss of coupled motion (lateral flexion and ipsilateral spinous rotation) as the patient laterally bent to the right at the waist.

Several vertebral subluxations were detected from the pattern established on the thermal scan and static and dynamic x-ray studies in the thoracic and lumbar regions. Diagnosis also included idiopathic scoliosis, attention deficit disorder and migraines.

Pre X-ray

Intervention

Following the guidelines of Pierce "Results System"™, the patient was assessed and treated each visit. She was seen once a week, for a total of 5 visits over about a 1 month period. Pressure technique (described below) was administered on the majority of the visits. Instrument adjusting was used only on one of the visits. After 4 office visits, radiographs were taken to document progress.

To address the posteriority of the right sacral base found on the AP lumbopelvic view, the patient was placed on the Zenith 230 Hylo (or model 80 stationary) in the prone position. With the pelvic section elevated, the doctor stood on the opposite side of sacral posteriority. With a thumb-pisiform contact half way between the PSIS and S2 tubercle on the posterior side, the doctor performed a "Toggle-Set" (unlike a toggle-recoil, this adjustment is held without recoil after the thrust) activating the "drop" mechanism. The adjustment was made with a high velocity and low amplitude thrust in a P-A and S-I line of drive. If a short leg was detected prior to adjustment, a post evaluation was made to verify leg length equality post-adjustment.

Outcome

It was noted at each visit the thermal scans showed favorable

results. On the 5th scan, however, dramatic changes were noted, which prompted for follow up x-rays. The x-rays revealed a reduction in the Cobb angle by 8°.

Post X-ray

According to the mother, the ADD symptoms she was experiencing, mainly extreme impulsivity, improved roughly 30% during chiropractic care. Migraines resolved as well.

After 6 months of care, the mother decided to discontinue care and returned when her daughter's symptoms reached the original severity, about two years later, at which time a videoflouroscopy was done that revealed a new finding in the upper cervical region between occiput and atlas. Then another year later, the mother repeated the same cycle, and returned and the videoflouroscopy showed similar cervical findings but a complete resolution of the previous thoracic findings and a reduction in the findings at L5.

Discussion

Pierce Results System

The Pierce "Results System"™ is based on two main goals: 1) restore the spine to proper structure, and 2) give the spine proper motion within that structure. From anterior to posterior, the normal spine should be straight with the center of the head directly over the pubic symphysis. The lateral spine should have 4 curves all falling into certain parameters.

Dr. Vern Pierce measured the curves of the spine as arcs of circles. Using an AcuArc ruler (Fig.1), Pierce derived readings in centimeters. The numbers indicated the radius of a circle if the curve of the spine were to be a complete circle. Positive numbers were given for lordotic curves, and negative for kyphotic curves. For example, a perfect cervical curve would be measured as a +17cm curve, and a completely reversed cervical curve as a -17cm curve.[6]

Figure 1. AcuArc Ruler

Pierce was very interested in the normal spine. He spent most of his 35 year career researching and studying the spine and attempting to establish normal values for its structural and functional parameters. The normal values given by Pierce were as follows: a +17cm for the lateral cervical curve, a range of +19-24cm for the lateral lumbar curve, an atlas angle of 18-24 degrees. Pierce also suggested the axis vertebra should be level with the floor on the lateral view, as well as the zygapophyseal angles being within a 35-55 degree range in order for a +17cm cervical curve to be anatomically possible.[6]

Pierce also worked to describe what the normal pelvis should look like. The following are the nine criteria he suggested:
1) a heart shaped pelvic opening, 2) almond shaped obturator foramen, 3) level sacral base, femur heads, and iliac crests, 4) the coccyx sitting 1 ½ inches directly above the pubic symphysis, 5) both ilium the same width from side to side, 6) no lumbar body rotation, 7) a lateral lumbar curve from +19-+24cm, 8) ischial tuberosities same distance from bottom of film, and 9) the film can be folded left over right and superimpose.[6]

Though Pierce searched for normal values with which to compare those people who came into his office, he understood that congenital anomalies occurred from time to time and that his values may not always hold true. However, after 35 years, he felt most people did fit into those parameters.[6]

Aside from his unique x-ray analysis, Pierce was probably most well known for his use of videofluoroscopy, or motion x-ray. Videofluoroscopy (VF) had been used in the medical profession, but never for what Pierce was suggesting it be used for. Pierce, along with Continental X-Ray, developed a VF machine strictly for chiropractors. It had a very low MA setting and therefore was not a high exposure unit. It was perfect for what Pierce felt needed to be done. This being visualization of the spine in motion, without undue radiation, and enough clarity to obtain the information sought. In his review of subluxation theory, Kent discusses the two constants with almost every theory on subluxation: neuropathology and kinesiopathology. It was this kinesiological aspect of subluxation that Pierce felt needed to be assessed more objectively through the use of VF. [6,7]

The Pierce "Results System"™ employs several methods of adjusting, including, but not limited to, 5th Cervical Key, Logan Basic, HIO, Thompson, Nimmo, and also Pierce's own special style of adjusting. The Pierce "Results System"™ is an extremely conservative technique. Very rarely does a patient receive what Pierce called a "heavy-hand adjustment". Most often Nimmo, or similar pressure techniques were used. Pierce felt that if the adjustment was applied properly, any particular subluxation should not have to be adjusted much more than once. Subsequent visits would be made up of lower impact techniques with the occasional heavy-hand adjustment

when needed.[6]

Pressure Technique

Pressure technique as used in the Pierce RESULTS System is a derivative of the Nimmo-Receptor Tonus technique. It is based on the theory that "chronically hypertonic muscles were the cause of most of the complaints that patients presented with."[17] "Receptor-tonus Technique is a systematic approach which uses ischemic compression to remove myofascial trigger points. The doctor is instructed to search for and correct these points which bombard the nervous system and give rise to subluxations by the hypermyotonia they produce in the skeletal system."[17]

This technique also focuses on the fact that trigger points arise from many causes, due to metabolic stasis in the area and therefore allows waste to collect. The waste irritates the nerves, which in turn produces pain. The treatment consists of sustained pressure for a specified length of time, usually five to seven seconds, depending on the trigger point. The pressure is applied to the patient's tolerance.[17]

Pierce was in favor of thermographic pattern work and utilized this to determine when and what kind of adjustment to administer. Pierce developed the first infrared thermographic instrument for chiropractic called the derma-therm-o-graph (DTG). It was a single-probe instrument that measured direct temperature from sacrum to occiput. A graph was produced and used to evaluate for the presence of a pattern.[13,14]

Pierce also developed an adjusting instrument that could deliver specific adjustments to the spine in cases where using the hands might not be optimal. For example, contacting the posterior arch of atlas for a posterior to anterior adjustment. Due to the depth of the posterior arch, this would be extremely difficult. Thus a multiple impulse adjusting instrument was developed to solve this dilemma of specificity.

Conclusion

Aggressive treatment of scoliosis can have negative psychosocial effects and alternatives should be explored. Even patients undergoing bracing have been found to argue more with their parents, usually over not wanting to wear their brace. These patients also reported feeling very self conscious about wearing the brace and stated that other children would treat them differently. Some were also unable to perform sports activities due to the restrictive nature of the brace.[15,16]

Surgical patients report limitations to their daily activities, though admitting they had been properly warned about the high probability of these complications. They also felt students treated them differently having knowledge of their surgery.[15,16]

From a chiropractic perspective non-surgical scoliosis treatment sometimes employs head weighting or traction. A possible concern would be that forcing a curve back into place may not completely correct intersegmental biomechanical aberrancies.

This would therefore lead to an incomplete restoration of proper arthroneurological function.

In this case the reduction in Cobb angle, migraines and ADD provides some evidence that the Pierce "Results System"™ may have a positive effect on these conditions when vertebral subluxation has been seen to be reduced via radiographic, thermographic, and fluoroscopic studies. Further investigation is necessary to reveal the relationship between the Pierce "Results System"™ and improvement in these conditions.

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Figure 2. Thermal Scan

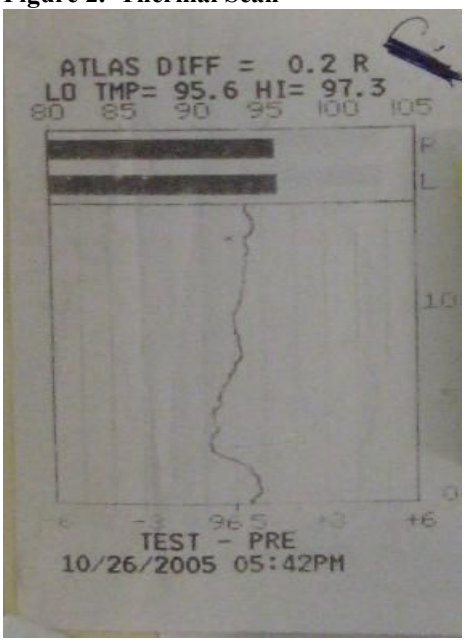

Figure 3.

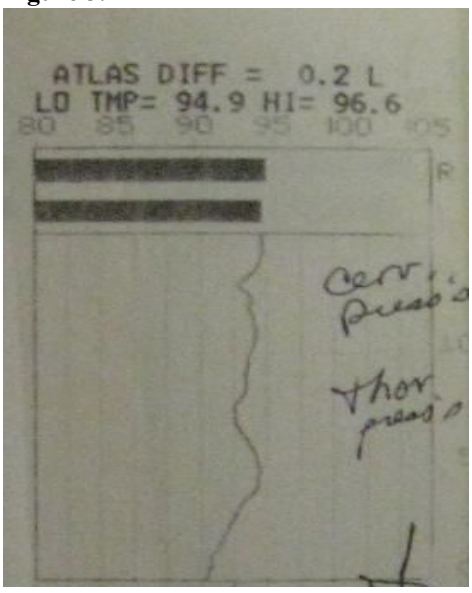

Figure 4.

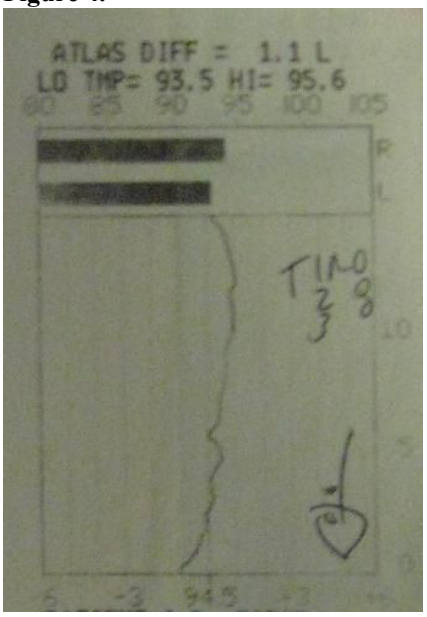

Figure 5.

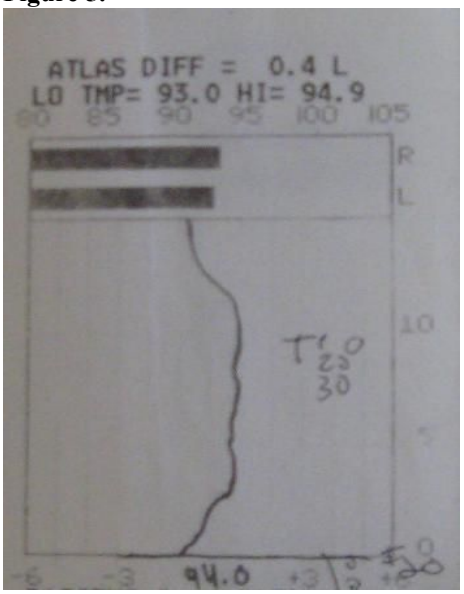

Figure 6.