

CASE STUDY

Improvement of Chronic Sinusitis, Constipation and Pharyngitis in a Child Following Chiropractic Care: A Case Report

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Abstract

Objective: This case report describes the evaluation and management of a child who presented for chiropractic care with complaints of chronic sinusitis, constipation, and pharyngitis (sore throat).

Clinical Features: A nine year old female presented with chronic symptoms of sinusitis, constipation, and sore throat. The mother was concerned that the child was no longer responding to her prescribed antibiotic medication and was concerned with her chronic illness. The child was sick at least one time every two months and had problems falling asleep due to her complaints.

Interventions and Outcomes: A course of conservative management was performed which consisted of 12 chiropractic visits over a three month period. Chiropractic techniques utilized included Diversified, Activator and Applied Kinesiology. Upon reassessment, the child was found to have better bowel movements and was no longer taking antibiotics. She was also able to sleep through the night and reported less nasal congestion.

Conclusions: The conservative chiropractic care of a child with chronic sinusitis, constipation, and sore throat showed improvement of symptoms over a three month period.

Key Words: *Chiropractic, sinusitis, constipation, subluxation, child, sore throat*

Introduction

Acute rhinosinusitis is defined as “Inflammation of the nose and paranasal sinuses characterized by two or more of the following symptoms: blockage/congestion; discharge (anterior or postnasal drip); facial pain/pressure; reduction or loss of smell, lasting less than 12 weeks.”¹ Sinusitis is a common problem seen in pediatric practices^{1,2} and can be either bacterial or viral in nature.^{2,3} The prevalence of acute sinusitis has been reported by Worrall⁴ to be 15 to 40 episodes per 1000 patients per year and is much more common in children

than adults due to underdeveloped sinuses.³ Chronic rhinosinusitis is described as a disruption of normal sinus fluid production and outflow which can be due to anatomical, physiological, immunological or infectious conditions.⁵

The treatment of sinusitis can be achieved by medical or natural means. Medical treatment of sinusitis usually involves the use of antibiotics “because sinusitis is a condition in which the sinuses may be infected” although side effects include stomach pain, nausea, vomiting and diarrhea.⁶ The use of antibiotics has been found to reduce the duration of symptoms

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and is most beneficial in patients with poor oro-dental conditions or recent previous use of antibiotics.³ The Center for Disease Control and Prevention has reported that 58% of prescribed antibiotics were inappropriate for most episodes of acute respiratory infection whether due to specific or non-specific upper respiratory infections.⁷ Some natural treatments include: vitamin C, bromelain, Quercetin⁵, nasal spray and humidification.⁶

Constipation has been defined as consisting of at least two of six criteria: two or fewer defecations, history of excessive stool retention, one episode of incontinence per week, painful or hard bowel movements, large fecal mass in the rectum and/or large diameter stools in a child at least four years of age which occurs once a week according to the ROME III criteria.⁸ The prevalence of constipation in children has been reported to be 3% of pediatric visits⁸⁻¹¹ and 25% of pediatric gastroenterologist visits.^{8,9,11-13} Numerous risk factors exist that can contribute to constipation in children. These include: congenital causes, metabolic, certain drugs and a low fiber diet.¹⁴

A variety of treatment methods for constipation in children are available. This can include osmotic laxatives such as lactulose and PEG,^{8,13,14} enemas,⁸ behavior modification,^{13,14} and probiotics.^{10,14} The use of the probiotic strain *Bifidobacterium breve* has been found to increase frequency and create more consistency of stool in children after 4 weeks use without any side effects.¹⁰ The use of lactulose or PEG has also been shown to be effective although they can create side effects such as: abdominal pain, nausea, vomiting and atopy.¹⁵

Pharyngitis, or sore throat as it is commonly referred to, has been defined as an infection of the pharynx or tonsils and is a common condition in children as well as adolescents. Clinical presentations can include: fever, red pharynx, enlarged tonsils and swollen lymph nodes.¹⁶ The cause of pharyngitis can be either bacterial or viral in nature. Although viruses cause most acute pharyngitis episodes, Group A *Streptococcus* causes 37% of cases of acute pharyngitis in children older than 5 years.¹⁷ Annual visits to primary care physicians for sore throat has been found to be approximately 7.3 million visits per year¹⁸ with an estimated national cost of \$224 to \$539 million annually.¹⁹

Antibiotics are a common method of treatment for pharyngitis caused by Group A *Streptococcus* bacteria.^{16-18,20-23} Linder et al¹⁸ found that antibiotics were prescribed by physicians to 53% of children with sore throat which was in excess of the expected prevalence for Group A *Streptococcus* bacteria. This excess amount of prescription could be due to complications that occur with a possible *Streptococcus* infection such as Rheumatic fever.^{16,19,22}

The use of broad spectrum antibiotics has proved a concern due to acquired antibiotic resistance.^{22,24} Other forms of treatment for sore throat include steroids,²¹ paracetamol,^{22,25} ketoprofen lysine salt²⁵ and NSAIDs.²² These forms of treatment are more focused on analgesic pain relief from pharyngitis than antibiotics although pain reduction with antibiotics could be attributed to the reduction of bacterial infection and subsequent inflammation.²¹

This paper reports the resolution of sinusitis, constipation and sore throat in a 9 year old female undergoing chiropractic care. One study that substantiates this improvement involved 650 children and has shown chiropractic care to be effective in treating somatic, visceral and immune conditions by addressing and correcting the Pelvic Distortion Subluxation Complex.²⁶

Case Report

History

The patient was a nine year old female who presented with sinusitis, constipation and sore throat. The mother reported the child was sick every two months which is the reason for contacting the chiropractic clinic. The child had been experiencing these symptoms since she was 6 years old. The birthing history revealed duration of 36-40 weeks gestation which was assisted by induced labor. No forceps or vacuum extraction was used. The mother did not use tobacco products, alcohol, or drugs during the pregnancy. At birth the patient was 6 pounds, 13 ounces and met major milestones without complication. The child was not breast fed and Enfamil formula was used since birth with cow's milk and solid foods being introduced at one year of age. The patient received "all required" vaccinations as the mother could not recall each particular one. No adverse reactions to the vaccinations were reported.

No traumas were reported during the pregnancy and the child had not experienced any major falls or hospitalizations since birth. The patient was active and participated in gymnastics one time per week for about three hours. Her diet was reported to be healthy with inclusion of fruits and not many processed foods but a lot of cheese and ice cream. The mother also reported the patient had difficulty going to sleep for about 45-60 minutes due to her symptoms.

Examination

An initial physical was performed at the first visit. Postural evaluation revealed a left lateral head tilt with shoulder level, kyphosis, lordosis, scoliosis and iliac crests all within normal limits. Bilateral scales used to assess weight distribution measured 32 pounds on the left and 34 pounds on the right, showing an imbalance between sides. Range of motion revealed restriction of right rotation in the cervical spine with flexion, extension, left rotation, and right and left lateral flexion all within normal limits. A prone leg length found a short right leg.

Palpation of the cervical spine found right sub-occipital spasm and tenderness. Bilateral anterior cervical lymph node swelling was also present. Motion palpation of the spine revealed bilateral restriction at the occiput, left rotation restriction at T3 and T4, right rotation restriction at C1 and decreased joint play at C2 and L3. In addition, muscle tension at occiput, T3 and T4 with bilateral tenderness at L3 were discovered.

A rolling paraspinal thermal scan showed mild right sided autonomic dysfunction at C3, L2 and L3 with an asymmetrical distribution to the right side. Surface electromyography was

performed and found abnormal muscle tone at C3, C5, C7-T2 and T4. Upon completion of the history and physical examination the patient was diagnosed with cervical and thoracic subluxation.

Intervention

A report of findings was presented to the parents of the child and a treatment plan of 2 visits per week for 3 weeks was recommended. In total, the patient was seen 12 times over a 3 month period for evaluation and adjustment of subluxations as indicated. At the initial visit L3 had right rotation restriction and was adjusted, utilizing Diversified technique modified for pediatrics,²⁷ in the prone position with a posterior to anterior and right to left line of drive with a spinous process contact. C1 was found to be restricted in right rotation and was adjusted supine with lateral right transverse process contact and lateral to medial line of drive. T4 was found to be restricted in left rotation and was adjusted in the prone position with a posterior to anterior and left to right line of drive with a spinous process contact.

At the next visit the chiropractic technique was changed to utilize the Activator instrument²⁸ when adjusting the atlas because the patient did not like manual cervical adjustments. Diversified adjustments were still utilized in the thoracic and lumbar regions as indicated. Applied kinesiology²⁹ was also utilized on two visits throughout the treatment. The procedure involved application of light pressure to the temples, using increased but light pressure with inspiration.

Similar treatments were performed throughout the course of chiropractic care. The type of adjustment performed depended on motion palpation findings specific and tailored to each visit.

Outcome

The patient returned to the office 4 days following the first adjustment. On this visit the patient had a fever of 101.2 degrees Fahrenheit and was adjusted according to subluxations present at that visit. By the third visit the child no longer had a fever but still had difficulty falling asleep. Bowels were reported to be moving better by the fourth visit and the child reported sleeping through the night. On the fifth visit the patient's sinuses were improved and she was having bowel movements daily. In addition, the mother stated her daughter usually got sick on vacation but reported that she did well on a recent trip. The treatment plan was reduced to one visit per week for two weeks at the sixth visit.

A re-assessment was performed on the 10th visit approximately two months into care. Posture was improved with all aspects now within normal limits. Bilateral scale measurements were found to be 33 pounds on the left and 34.5 pounds on the right. Right rotation restriction was still present in the cervical region with all other ranges of motion within normal limits. Left sub-occipital spasm was palpated with mild bilateral tenderness at the occiput. The anterior lymph nodes were no longer swollen.

Evaluation also revealed muscle tension from T6-T8 with subluxations found at T6, T9 and occiput. The patient reported feeling better overall and had discontinued use of antibiotics for over a month. Her mother also reported the child's bowels were moving better, sleep was improved and a recent bout of congestion did not turn into an infection as it had in the past. In addition, the child had not reported a sore throat since the initial physical. The thermal scan found severe autonomic dysfunction on the left side of C1 and L2 with moderate dysfunction on the right from T2-T5 and T8. Surface electromyography also revealed the same areas of abnormal muscle tone.

Chiropractic Technique

Multiple chiropractic techniques were used on this patient. A modified version of Diversified for pediatrics was used for a majority of the segments adjusted. This technique utilizes a sustained contact correction of 10-15 seconds before a high velocity, low amplitude thrust is applied.²⁷ The direction of the impulse is applied to reverse three-dimensional vectors of dysfunction created by subluxation. Activator technique was also used but only at the C1 area due to patient preference. This technique utilizes isolation moves and challenges in order to determine areas of subluxation. The Activator instrument delivers a consistent amount of force depending on the model used and response is determined by resonant frequency of the spine.²⁸

In this particular patient the instrument was used in place of manual adjusting with the same line of drive in order to correct an atlas subluxation. Applied Kinesiology was also utilized in two instances at the temporal region. This technique was created by Dr. George Goodheart and was founded on the principle of the neurolymphatic reflex.²⁹ Manual muscle testing is used in order to determine areas of dysfunction whether they are somatic, mental or visceral in nature.

The area of subluxation was determined in this case by motion palpation. According to Davies²⁷ "kinesiopathology may be represented by frank joint fixation, relative hypomobility, relative hypermobility, or aberrant motion within the normal physiological range, otherwise known as dyskinesia." Thermography was utilized in order to determine autonomic dysfunction. Paraspinal thermography has been considered to be an insight into functioning of the sympathetic nervous system.³⁰ Analysis of thermal scans are concerned with symmetry and pattern. Symmetry refers to the difference in temperature between the left side and the right side at like points along the spine.³¹ Pattern analysis is used to determine the body's adaptability to changing environments, both internal and external.³²

Surface electromyography or sEMG is also an important tool in determining the presence of vertebral subluxation. Altered muscle function or myopathology is recognized as part of the vertebral subluxation complex model presented by Kent.³³ Surface EMG provides objective, quantitative data concerning the changes in paraspinal muscle function that accompany vertebral subluxation.³⁴ A pilot study of clinical application of sEMG has shown that sEMG readings have a gradual or significant decline in activity following chiropractic

adjustments.³⁵ It is important to note that the segments adjusted in this study were not correlated with areas of abnormal muscle function measured on sEMG. Therefore, thermography and sEMG can be seen as reliable tools in the assessment of nervous system dysfunction in patients with vertebral subluxations.

Discussion

As stated in the introduction, the treatment of sinusitis, constipation and sore throat can be accomplished by medical or alternative means. This section will discuss the evidence of improvement in these conditions through chiropractic care by removal of vertebral subluxation.

A case study of an 8 year old female with otitis media, headaches and sinus pressure presented to a chiropractic clinic after 3 years of symptoms. The patient had received several rounds of antibiotics, sinus surgery and bilateral tympanectomy and was recommended to continue antibiotics with another tympanectomy by her pediatrician. No positive results were obtained and the problems persisted. Upon chiropractic examination the patient was found to have cervical kyphosis, muscle spasms, cervicgia, cervical subluxation and thoracic subluxation. After one month of care the patient reported an absence of symptoms.³⁶

A case report by Heagy and Canty presented an 11 year old female with chronic sinusitis as well as loss of smell. Her previous treatment consisted of prescription medications which gave temporary relief but no change in her sense of smell. Subluxations found at C2 and the sacrum were adjusted using specific chiropractic adjustments. The patient's sense of smell returned for 6 hours after the first adjustment and 12 hours after the second adjustment. After completing a routine follow up with her medical doctor the patient's sinuses were noted to be significantly improved and her improvement in olfaction continued until it was fully restored after 3 months of care.³⁷

Foweiler and Lynch have studied the effect of nasal specific technique as a treatment method for chronic sinusitis and sinus headaches. This technique utilizes a sterile and lubricated finger cot into the nasal chamber. This cot is attached to a detached cuff of a sphygmomanometer and is then inflated by squeezing the bulb of the folded cuff. The bulb is then released and the procedure is repeated several more times. This study included a case report of a 41 year old female with chronic pain and pressure over her sinuses. The nasal specific procedure, chiropractic manipulation, trigger point therapy and light force cranial manipulation were utilized 15 times over 2 months. The patient's headaches and sinus pressure were resolved following 2 months of treatment.³⁸

A case series reviewed three case reports of constipation in infants. The presenting complaints included: painful bowel movements, severe straining, hard feces and rectal bleeding. Each patient was adjusted using Full Spine and Activator protocol. Their length of chiropractic care ranged from 3 weeks to 2 months. The treatment plans also varied depending on the patient's response to care. All patients reviewed in this case series improved and reported normal, consistent bowel movements with chiropractic care.¹²

A case study by Horkey has also shown resolution of constipation following chiropractic care. The patient involved was a 6 year old female with a history of constipation and neck pain. A physical exam was performed and revealed reduced range of motion in the cervical region with motion palpation restriction at C2, T11 and sacrum. The patient was diagnosed with cervical-thoracic-sacral subluxation complex. She was evaluated and adjusted using a high-velocity, low-amplitude thrust for subluxation 1 time per week if necessary. After 13 visits it was reported that the neck pain and constipation had resolved.⁹

Davis and Alcantara provide a case study of a 7 year old male with chronic constipation. The history of the patient's complaint determined that the child had suffered from constipation since the age of 3. Previous methods of treatment included enemas, laxatives and surgery which did not resolve the issue. The patient also had previous traumas as an infant and two episodes of torticollis. Upon physical examination hypertonic musculature was found in the cervical, thoracic and lumbar regions. Range of motion was decreased in all directions in the cervical spine. Chiropractic adjustments were performed utilizing gonstead technique at C1, T2 and L5 with similar adjustments at subsequent visits. The patient had increased bowel movements without the use of laxatives after a total of 10 visits.¹¹

Previous case studies and case series have shown chiropractic care to be effective for improvement of symptoms due to constipation and sinusitis with a lack of research of cases with pharyngitis. The largest study performed involved 650 children and discussed the correlation between the vertebral subluxation complex with somatic, visceral and immune complaints.²⁶ However, an article by Daly et al states that generalizable studies have greater clinical indications than case studies and therefore have greater strength in regards to conclusions made from the findings.³⁹

Chiropractic mechanism

The goal of the chiropractic adjustment is the reduction and correction of vertebral subluxation. The vertebral subluxation complex is used in order to describe different manifestations of dysfunction in the body.³³ The original five component model of VSC includes: spinal kinesio pathology, neuropathology, myopathology, histopathology and biochemical changes.³³ This model was later expanded by Lantz into a nine component model which includes: kinesiology, neurology, myology, connective tissue physiology, angiology, inflammatory response, anatomy, physiology and biochemistry.³³

A chiropractic adjustment has a direct influence on the nervous system via the somatosympathetic reflex hypothesis. This states that "proper sympathetic nervous system function is dependent on continuous, accurate sensory input to the central nervous system. When some type of musculoskeletal dysfunction occurs, the sensory input to the central nervous system is altered."⁴⁰ An example of musculoskeletal dysfunction could be spinal fixation. When the sympathetic nervous system is altered organ and tissue responses are reduced.³³

This can lead to increased sympathetic tone which can cause decreased peristalsis and vasoconstriction in the gastrointestinal tract.¹² Cervical adjustments have been found to increase the overall ratio of parasympathetic to sympathetic activity.⁴¹ The parasympathetic input to the GI tract arises from the brain stem by means of the vagus nerve which is found adjacent to the transverse process of atlas.¹² This could provide a mechanism by which an adjustment would have an effect on the parasympathetic activity of the GI tract.¹² In addition, a study by Bahtia and Tandon has postulated that stress can alter gastrointestinal function via the autonomic nervous system due to down regulation of gluco-corticoids.⁴²

The literature has shown that chiropractic care also has effects on the immune system.^{26,40,43,45,46} Autonomic innervation of the thymus, spleen, lymphoid tissue and bone marrow has been proven through anatomical evidence.⁴⁰ A study by Teodorczyk-InJeyan et al⁴³ has shown that the immunoregulatory cytokine interleukin-2, which is crucial in the creation of an immune response,⁴⁴ was increased in subjects who received spinal manipulative treatment when compared to a sham adjustment group. The neurodystopic model of subluxation advocates that “neural dysfunction is stressful to body tissues” which “can modulate specific and nonspecific immune responses and may alter the trophic function of the involved nerves.”³³ According to Cohn “the nervous system senses damage, infectious agents and foreign bodies with the help of chemical releasing immune cells to carry out specific procedures.”⁴⁵ This would lead to a conclusion that nervous system interference due to vertebral subluxation could alter this ability and subsequently affect immune response.

Conclusion

This case report has discussed the chiropractic care of a child who presented with sinusitis, constipation and sore throat. Symptoms were improved following a total of 12 chiropractic visits and were correlated with reduction of vertebral subluxation. This case provides further evidence that chiropractic care is effective in treating non-musculoskeletal related conditions although more research is needed to further substantiate these findings.

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