

# CASE STUDY

## Chiropractic Care of a Pediatric Patient with Asthma, Allergies, Chronic Colds & Vertebral Subluxation

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### Abstract

**Objective:** To provide supporting evidence on the effectiveness of chiropractic care in relieving asthma and allergies and overall improvement in a pediatric patient's immune system and health.

**Clinical Features:** A 7-year-old male was presented by his parents for chiropractic evaluation and possible care. The patient suffered from chronic colds, allergies, and asthma since the age of 5 months. At the time of initial evaluation, the patient was on a 1x/day dose of prescription Alavert for allergies and Albuterol for asthma. The patient's illness caused him to miss approximately 1-2 days a month of school due to colds and symptoms of asthma. His parents also indicated that his health problems resulted in monthly visits to his medical doctor.

**Interventions and Outcomes:** The patient was cared for using specific, low-force adjustments with the Activator Instrument to address areas of vertebral subluxation in the cervical, thoracic, and lumbosacral spine. Within two weeks of initiating chiropractic care, the patient was able to discontinue his allergy and asthma medications (as decided upon by his parents) and the use of his nebulizer. In the first 5 months after beginning chiropractic care, he has had only wellness checkups at the medical doctor. In the past school year, the patient has not missed any days of school due to illness.

**Conclusion:** This case report provides supporting evidence that chiropractic care can help balance immune system functioning and relieve asthma symptoms as well as colds and allergies. It is recommended that further research be done on this subject to support the findings of this case study.

**Key Words:** *Chiropractic, spinal manipulative therapy, adjustment, subluxation, asthma, allergies, immune system*

### Introduction

Chiropractic has demonstrated much success in the care of patients with musculoskeletal conditions such as neck pain and low back pain<sup>1</sup>. Continuing surveillance studies supports this phenomenon with only a small percentage of patients reporting improvement in non-musculoskeletal conditions<sup>2</sup> in the adult population.

In an effort to identify patient and practice characteristics that might contribute to people's seeking chiropractic care for nonmusculoskeletal complaints, Hawk and colleagues<sup>3</sup> estimated that nonmusculoskeletal complaints accounted for approximately 10.3% of the chief complaints in their patient population.

Furthermore, according to Hawk and colleagues<sup>3</sup>, the following characteristics allow for patients to more likely present with non-musculoskeletal chief complaints: being less than 14 years of age; being female; presenting in a small town/rural location; reporting more than 1 complaint,

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especially nonmusculoskeletal complaints; having received medical care for the chief complaint; and having first received chiropractic care before 1960.

The chiropractic care of the child is simply not a scaled-down version from that of an adult. The most obvious reason for this is predicated upon the unique biomechanical features of the pediatric spine such as growth, malleability, and overall immature neuromusculoskeletal system<sup>4</sup>. In addition, the types of patient complaints associated with the care of the child are mainly non-musculoskeletal in nature<sup>5-6</sup>. To further contribute to evidence-based practice, we present the successful chiropractic care of a pediatric patient with asthma, allergies and chronic "colds."

## Case Report

### *Clinical Features*

The patient was a 7-yr-old male presented by his parents for chiropractic consultation and possible care to one of the co-authors (LVR). According to the boy's parents, the patient suffered from chronic colds, allergies, and asthma since the age of 5 months. At the time of presentation, the patient was medicated on a once-a-day dose of prescription Alavert for allergies and Albuterol for asthma on an "as needed" basis." The patient received 6 Albuterol physician-treatments in the past year prior to initiating chiropractic care. Additionally, Claritin was prescribed for his allergy complaints, then changed to Singulair and finally Alavert. His mother reported that the patient's suffering from the flu or flu-like symptoms was associated with asthmatic attacks. He would then require nebulizer treatments for these asthmatic episodes. Steroid injections were also used "regularly", as reported by his mother, for his asthma.

The patient, while in his first year of school (kindergarten), missed 1-2 school days per month due to "colds", asthma and "being sick", according to his mother. The patient required at least once-monthly medical visits due to his various illnesses prior to beginning chiropractic care.

Other past notable history examination findings include the patient experiencing several episodes of tonsillitis and bronchitis in his life. The most recent episode of bronchitis was in the year preceding his initial chiropractic visit. His allergies were primarily in response to molds and mildew allergens.

### *Pre-natal History*

The pre-natal history revealed that the patient's mother had gained 70 lbs during her pregnancy. This was mostly "water-weight" according to the patient's mother and stated that she had a lot of swelling during her pregnancy. Three ultrasound imaging studies were performed during her pregnancy, the last of which was to confirm the size of the baby, as the mother was measuring larger than what was originally calculated. The delivery was induced by Cervadil four days past the calculated delivery date. An epidural was given as well as Pitocin, due to a failure to progress during labor.

The first stage of labor lasted 17 hours, at which time a

Cesarean-section was performed with local anesthesia. The patient was born weighing 9 lbs, 2 oz and 23½ inches long at birth. According to the patient's mother, her son's vaccination history followed the standard medical schedule and at the time of his initial chiropractic visit, the patient was current on receiving all his scheduled vaccinations. The patient was breastfed for the first 3-4 weeks after birth and his developmental history revealed that he did not crawl but eventually walked at 10 months of age. At the age of two years, he had surgery for a "trigger finger" of the right third digit.

### *Chiropractic Examination*

The chiropractic examination revealed the following. Postural evaluation revealed a left head tilt and low left acromioclavicular joint as compared to the right. Active thoracolumbar range of motion (ROM) on right lateral bending and right rotation were restricted when compared to the contralateral sides. On active ROM of the cervical spine, the patient was restricted on left rotation when compared to right rotation. All other directions of ROM were symmetric.

Neurological testing involving dermatome, myotome and deep tendon reflexes were unremarkable for both the upper and lower extremities. Static palpation of the patient's spine and paraspinal soft tissue elements revealed paraspinal muscular changes. Notably increased muscle tone and tenderness were observed on the right side of C<sub>1</sub> vertebral body (VB), the left side of T<sub>6</sub> and T<sub>8</sub> VBs, to the right side of the L<sub>5</sub> VB, and in the area overlying the left sacroiliac joint. Craniosacral examination<sup>7</sup> revealed restricted cranial bone motion at the sphenoid bilaterally, and at the right parietal bone. The craniosacral protocol briefly involved visualization and palpation of the cranium as well as the application of light palpation to determine misaligned cranial bones.

On visual examination/observation, facial symmetry or any abnormalities in alignment such as one eye relatively more elevated or smaller than the other, one ear relatively more elevated than the other or had greater flaring of the nostrils were noted. The center of the forehead (glabella) was visualized for alignment or lack thereof with respect to the patient's nose and with the center of the chin.

On the cranium itself, ridges were palpable indicating for possible overlap. Measurements from the external occipital protuberance (EOP) to the glabella were measured bilaterally. A difference of ¼ inch or more indicates an overlap of the cranial bones at the coronal suture on the side with a longer EOP-glabella measurement. Palpation for the cranial pulse/rhythm was made. Additionally, palpation was made to determine restrictions of the individual cranial bones beginning with the frontal bones, then the parietal bones, the sphenoid, ethmoid, temporal, and occipital bones, and temporomandibular joint. If any restrictions in motion or misalignment was palpated during this digital palpation examination, a light/gentle sustained pressure was applied to correct the misalignment. For cranial adjustments to correct coronal suture misalignment, a light sustained pressure was applied to correct the overlap misalignment. We stress that this type of adjustment is unlike that of the generic high velocity, low amplitude (HVLA) type thrusts.

Static and motion palpation of the patient's spine revealed restricted intersegmental motion and vertebral subluxation complex at the C<sub>1</sub> VB (ASR subluxation or [-θX;-X]), at the T<sub>6</sub> VB and T<sub>8</sub> VB as PR subluxation or [-Z; +θY], at the L<sub>5</sub> VB as PL subluxation or [-Z; -θY], and the left ilium as PI subluxation or [-θX].

### *Intervention and Outcomes*

An initial treatment frequency of three times a week for 4 weeks was scheduled. Chiropractic adjustments were applied to the segments mentioned above on the initial visit, as well as to other subluxated vertebrae on successive visits, utilizing the Activator Technique<sup>8</sup>.

The most frequently adjusted segments during the course of the patient's care were subluxations at the C<sub>1</sub>, T<sub>6</sub>, and L<sub>5</sub> VBs. The patient's response to care was positive.

Within two weeks of first receiving chiropractic care, the patient's mother indicated that the patient no longer dependent on his prescription medication for allergies, and they (the parents) had independently discontinued providing their son with the medication. The patient's mother reported that his asthmatic episodes were "lessening" with respect to frequency and intensity of the asthmatic attacks. Furthermore, the patient no longer required his nebulizer treatments since beginning chiropractic care.

Due to the patient's positive response in the first 2 weeks of chiropractic care, his treatment frequency was abated to treatments every 4 days. Following another 6 patient visits, the patient's treatment frequency was again abated due to continuing response to chiropractic care and improvement in symptoms.

Approximately 2 months into care, the patient developed a sinus infection, but did not accompany an asthmatic episode, which was expected to occur as in the past prior to chiropractic care. The patient's mother indicated that this sinus infection resolved much faster and was "easier" on her son than previous similar infections. Shortly thereafter, based on his mother's assessment, all the patient's initial complaints were addressed successfully.

As a result of the patient's overwhelmingly positive response to chiropractic care, the patient's mother requested continued "wellness visits." The patient was placed on treatment frequency of care at once every 3-4 weeks. In the 5 months after his initial visit, the patient had medical visits designated as "wellness checkups" (i.e., medical visits not due to illness) only.

We emphasize that these medical visits were not to address any physical complaints or illness on the part of the patient. A follow up 16 months since initiating chiropractic care revealed the patient continued to attend chiropractic care at the designated treatment frequency of once every 3-4 weeks at the continued request of his mother. During this period of time, the patient experienced only 1-2 minor "colds" or sinus infections and required the use of his nebulizer on only two occasions. The patient nor his mother did not report any adverse reactions to the chiropractic care provided.

### **Discussion**

The combined asthma and allergic morbidity represent the sixth leading cause of chronic illness and disability in the United States and the leading cause of chronic illness and disability among children<sup>9</sup>. Despite the serious implications of the epidemiology of these diseases, its impact on children does not adequately reflect the physical and emotional toil the disease has on the affected individual, their families, and to society as a whole. Nor does it reflect the enormity of the negative impact of these diseases on the economies of countries, continents and the entire planet<sup>9</sup>. Our discussion in this case report will impact of these diseases in more detail as well as focus on the clinical aspects of care and the implications on the chiropractic care of children.

### *Epidemiology of Asthma*

The United States National Health and Nutrition Survey revealed trends in the cumulative prevalence of asthma for children (0-17 years of age) in the United States. A significant increase in prevalence has been observed from 4.8% in NHANES 1 (1971-1974) to 7.6% in NHANES 2 (1976-1980)<sup>10</sup>.

In 2002, 30.8 million people (111 people per 1,000) had been diagnosed with asthma during their lifetime. Among adults, 106 per 1,000 had a lifetime asthma diagnosis which translates to approximately 21.9 million people. When compared to children 0-17 years, this figure was much larger with 122 per 1000 children and translating to 8.9 million children<sup>11</sup> overall. For allergies, the statistics are not much different. According to data obtained from the National Health Interview 2006<sup>12</sup>, the number of children in the United States with reported hay fever in the past 12 months number some 6.8 million.

What are the economic effects of this disease? In the U.S., health care spending for asthma medication alone has been approximated to \$1 billion per year. Furthermore, it has been estimated that the total cost of asthma in the U.S. in 1985 was almost \$4.5 billion and \$6.2 billion when extrapolated to 1990. Approximately \$2.4 billion accounts for direct costs and \$2 billion for indirect costs. Inpatient hospitalization accounted for the greatest portion of direct costs<sup>13</sup>. In other industrialized countries, the economic cost of asthma is also burdensome. In New South Wales, \$209 million was spent on asthma based on 1989 figures. Of this amount, \$142 million was for direct health care costs, \$19 million to direct non-health care costs and \$48 million for indirect costs<sup>14</sup>.

In a study to compare generic health-related quality of life (HRQOL) across ten chronic disease clusters and 33 disease categories/severities from the perspectives of patients and parents, Varni et.al.<sup>15</sup> found that patients with asthma self-reported significantly lower overall HRQOL, physical health, psychosocial health, emotional functioning, and school. Parents of patients with asthma reported their children as having lower overall HRQOL, physical health, psychosocial health, emotional functioning, and school functions.

### *Implications to Chiropractic Care*

The extent of documentation in the scientific literature on the

complementary and alternative medicine (CAM) use of children with asthma supports the findings that indeed, CAM therapies for children with chronic conditions remain popular and extensive. A Pubmed search using the subject heading "alternative medicine AND asthma" revealed 1,396 entries. It is beyond the scope of this manuscript to review the available literature but sufficient for our purpose, we recommend to the reader the most recent review on this subject by Mark<sup>16</sup>. CAM therapies such as nutritional and dietary supplements, herbal medications, traditional Chinese medicine (including acupuncture), homeopathy, mind-body techniques, and manual therapies are reviewed by the author. Although it is our opinion that his interpretation of the available literature is somewhat biased, this review nonetheless reflects the extensive literature-base on the topic. Mark's bias is reflected in his comments on the effectiveness of chiropractic in asthmatic patients and may reflect his views overall on the CAM therapies reviewed. In citing the conclusions of the Cochrane review of manual therapies for asthma<sup>17</sup>, Mark chose to comment that "... there is insufficient evidence to support the use of manual therapies in the treatment of asthma." To the contrary and arguably, Hondras et.al.<sup>17</sup> concluded that, "Currently, there is insufficient evidence to support or refute the use of manual therapy for patients with asthma."

#### *Review of the Chiropractic Literature*

More instructive for the purpose of this manuscript was a selective review of the literature on the chiropractic care of patients with asthma. We performed a search on the chiropractic care of asthmatic patients using Pubmed (1966-2008) and MANTIS (1965-2008). Pubmed was searched using the subject headings "asthma AND chiropractic" and specified to the English language. The search revealed 36 papers. MANTIS was similarly searched in ALL for "asthma" specified to the Chiropractic Discipline, the English language, in Refereed Journals and of High Clinical Relevancy. The search revealed 56 papers.

The abstracts were of these articles were then examined by applying the following eligibility criteria: (1) the study was a primary investigation/report (i.e., case reports, case series, case control, randomized, controlled trials, and survey or surveillance studies); (2) part or all of the study population was 18 years or younger and; (3) the manuscript involved the chiropractic care of a patient with asthma as the primary or comorbid complaint. Due to the lack of literature involving patients less than 18 years of age, we expanded the search to include all age groups.

A similar search was performed with the care of patients with allergy. Pubmed was searched using the subject "allergy AND chiropractic" and MANTIS was searched using "allergy." Many articles are published in the peer-reviewed literature<sup>2,18-34</sup> as well as in conference proceedings and non-peer-reviewed literature<sup>35-42</sup> on the chiropractic care of patients with asthma. The same may not be said for the chiropractic care of patients with allergy<sup>2,43-46</sup>.

Three clinical trials involving the care of patients with asthma<sup>47</sup> have been published in the scientific literature. The first of these involved the trial by Nielsen et. al.<sup>48</sup>. This group examined the effects of chiropractic care on 31 adults with

chronic to moderate asthma in a randomized, controlled, 4-week, crossover trial. The subjects received treatment at two times per week with active or sham treatments followed by a 2-week washout period. The primary outcome measures were: forced expiratory volume in the first second (FEV1), forced vital capacity (FVC), daily use of inhaled bronchodilators, patient-rated asthma severity and non-specific bronchial reactivity (n-BR).

According to Nielsen et.al.<sup>48</sup>, "No clinically important or statistically significant differences were found between the active and sham chiropractic interventions on any of the main or secondary outcome measures." The objective lung function did not change during the study, but over the course of the study, non-specific bronchial hyperreactivity (n-BR) improved by 36% and patient-rated asthma severity decreased by 34% compared with the baseline values. The second clinical trial was performed by Balon et. al.<sup>49</sup>. The investigators examined 91 children with medically controlled chronic asthma in a randomized, controlled, blinded trial. The subjects received an average of 20 active or sham treatments over a 16-week period. The investigators found no changes in lung function, small increases in peak expiratory flow rate, substantial improvement in symptoms and quality-of-life scores, and a reduction in  $\beta$ -agonist use. According to Balon et. al.<sup>49</sup>, no clinically or statistically significant differences between active and control groups and essentially, both groups responded similarly. In the third study, a prospective, randomized, pilot trial with a 1-year follow-up was performed by Bronfort et. al.<sup>50</sup>. The study allocated 24 children to an active care group and 12 to a sham group and provided each with 20 treatments over a period of more than 3 months by one chiropractor. The children rated their quality of life substantially higher and their asthma severity substantially lower. These improvements were maintained at the 1-year follow-up assessment. There were no important changes in lung function or hyper-responsiveness at any time. Based on their findings, Bronfort et.al.<sup>50</sup> concluded that the results were unlikely as a result of the spinal manipulative therapy (SMT) alone but other aspects of the clinical encounter that should not be dismissed readily.

A fourth clinical trial examining asthma and chiropractic has been presented at various conferences by Hayek et.al.<sup>38-41</sup>. In addition to established outcome measures, this group examined the effects of chiropractic care on the endocrine and immune system in patients with asthma. The subjects were randomly allocated into 4 groups: a chiropractic group at treatment centers scheduled 3 times per week, a group with no treatment presenting to treatment centers, a group with no treatment and at home, and a control group of non-asthmatic patients with no treatment at home. The study period spanned a period of 14-weeks consisting of a 2-week pretreatment, 6-week treatment, and 6-week post-treatment protocol with numerous quality of life measures and biochemical outcomes without lung function measures. Based on the results obtained from 110 subjects, clinically important changes in quality of life measures and endocrine measures were observed in the treatment group. Salivary IgA and cortisol levels increased in the treated group but not in the controls.

Given that three clinical trials have already been performed to study the efficacy of chiropractic in asthmatic patients, the question that must be addressed involve the unique

contribution/purpose of this case report. The trial by Nielsen et.al.<sup>48</sup> and Bronfort et.al.<sup>50</sup> involved spinal manipulative therapy (SMT) utilizing drop mechanisms to perform the active and sham treatment. The Balon et. al. trial involved care using HVLA-type thrusts. Hayek et.al.<sup>38-41</sup> utilized techniques including HVLA spinal adjustments such as Diversified Technique in addition to passive wedging (as in the Sacro-Occipital Technique) and Activator Methods. On the issue of technique alone, this case report contributes to the scientific literature on the use of Activator Methods in combination with cranial technique with successful results. The specifics on the type of care employed is of paramount importance to determine the optimum care approach and for reproducibility in subsequent clinical trials. Studies have since been published to demonstrate that manual SMT versus Activator Methods have different effects<sup>51-52</sup>.

In the Balon et.al. trial<sup>50</sup>, the sham treatment consisted of procedures of questionable inertness. The patients in the sham group received non-specific side-posture maneuvers (bilaterally), thrusts to the thoracic spine with contact over the scapulas and while tractioning the legs of the supine patient position, a clinician performed a thrust maneuver to the EOP. First, we are not aware of any study that the sham treatment employed by Balon et.al.<sup>50</sup> does not have an effect on asthmatic patients. In our opinion and those of others (particularly practitioners of none-force techniques), one can argue that the sham treatment in the Balon et.al.<sup>50</sup> study did have an effect. Balon and colleagues<sup>50</sup> further describe in their protocol of performing soft-tissue massage on the sham group prior to the sham SMT treatment. Studies by Field and colleagues<sup>53,54</sup> have demonstrated that massage is effective in alleviating the symptoms of asthma. To this day, Balon and colleagues<sup>50</sup> have never addressed these limitations and continue to propagate the falls conclusions of their study<sup>47</sup>.

On the issue of sham treatment, the use of the Activator Technique provides for an acceptable sham treatment by setting the Activator instrument to the zero setting. However, according to Hawk et.al.<sup>55</sup>, given our current lack of knowledge about the active agent in manual chiropractic procedures, placebo-controlled trials may be unfeasible and certainly difficult.

Despite its lack of generalizability, case reports still provide an important contribution to evidence-based practice. Descriptive surveys and case reports are part of the Levels of Evidence hierarchy for evidence-based medicine<sup>56</sup>. Case reports/series describe the clinical encounter, the starting point for all clinical research. Case reports describe the clinical encounter from examination/evaluation, the formulation of a diagnosis and prognosis, the interventions and outcomes of care. Case reports/series assist to address educational, administrative as well as overall effectiveness and safety concerns<sup>57</sup>. Case reports stimulate further research and "help develop practice guidelines and critical pathways"<sup>57</sup>. They illustrate "how clinicians integrate the best available research evidence, clinical experience, and patient choice"<sup>57</sup>.

## Conclusion

This case report provides contributing data on the safety and effectiveness of chiropractic care in patients with asthma and

allergies. We encourage further research on the chiropractic care of children with asthma and allergies.

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