



# Chiropractic management of a patient with symptoms of attention-deficit/hyperactivity disorder

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## Abstract

**Objective:** The purpose of this study is to report a case of a child with attention-deficit/hyperactivity disorder (ADHD) who was treated with chiropractic care.

**Clinical Features:** Parents of a 5-year-old boy with diagnosed ADHD brought him for chiropractic care to address his subjective signs (acting out, ability to follow instructions, and poor home and school performance), which also included waking at night due to asthmatic symptoms and low self-esteem. Palpation revealed hypertonicity and trigger points in the paraspinal muscles at the thoracolumbar region with local pain. A preliminary diagnosis included cervical and thoracolumbar facet joint irritation with concurrent muscle hypertonicity.

**Intervention and Outcomes:** Treatment including spinal manipulative therapy, soft tissue therapy, and stretching was provided. Treatment began on a thrice-weekly basis and declined to twice weekly over the course of approximately 12 weeks. After 1 year of treatment, subjective improvements were noted in episodes of acting out, ability to follow instructions, and general home and school performance.

**Conclusions:** The patient improved over 1 year in which he received chiropractic care, including manual treatments such as spinal manipulative therapy and soft tissue therapies. This suggests that there may be a role for doctors of chiropractic in the management of patients with ADHD.

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## Introduction

Attention-deficit/hyperactivity disorder (ADHD) is a well-studied condition and is a common childhood-onset

psychological disorders.<sup>1</sup> The *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*,<sup>2</sup> lists activities such as inattention to homework or chores, inability to follow instructions or remain seated, disorderly behavior, and fidgeting as behaviors consistent with ADHD. Treatment traditionally consists of pharmacological interventions and behavioral treatments.

As in many other areas, though, complementary and alternative (CAM) treatments are becoming more

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commonly investigated as a potential alternate to pharmaceutical intervention or in combination with other biomedical treatments. The CAM treatments for ADHD range from nutritional interventions such as natural supplements, vitamins, and minerals to bio-feedback; to acupuncture<sup>3-5</sup>; and to chiropractic care. The evidence supporting the use of chiropractic care is preliminary but suggests that there may be some positive effects.<sup>6,7</sup> The supportive evidence is in the form of case reports and/or case series,<sup>8</sup> with few clinical trials investigating the efficacy of chiropractic treatments for ADHD.<sup>9</sup> The evidence generally has shown positive trends,<sup>10,11</sup> although the body of evidence remains inadequate. The purpose of this case report is to describe the chiropractic management of a patient with symptoms of ADHD.

## Case report

A 5-year-old boy presented with his parents for evaluation of chiropractic treatment options for ADHD. The patient had been referred to a mental health practitioner by his family physician who diagnosed the patient with ADHD 1 year prior. Following biomedical treatments, the patient's parents were seeking alternatives because they thought that previous treatments had not been completely successful in managing his subjective signs of acting out, ability to follow instructions, and poor home and school performance. They reported that their son had scored high on information processing and concentration testing and that there were no reports of nocturnal enuresis, sleep apnea, or Tourette syndrome. They said that the patient often woke in the night, but that those episodes were generally related to asthmatic symptoms. The parents had noted low self-esteem in their son but that he was a normal, active child as compared with his friends and peers. He slept approximately 11 to 12 hours per night (normal toddler/preschool sleep duration, 11.9 [9.9-13.8] hours per night<sup>11</sup>).

The medical history included a scheduled Cesarean delivery (birth weight, 3685 grams) following an uneventful full-term pregnancy. He reportedly met all physical and vocabulary developmental milestones and had no reported musculoskeletal complaints. Medications included daily fluticasone propionate oral inhaler for his asthmatic symptoms, with albuterol, fluticasone nasal, and montelukast (oral) used intermittently. No medications for ADHD were being used at the time of chiropractic assessment.

On physical examination, the patient had normal posture and no abnormal spinal curvatures. Cervical spine ranges of motion were full and painless. Results of orthopedic testing of the cervical spine were as follows: Kemp test result was positive for pain bilaterally at C2/3/4; compression, Jackson, Maigne, and Houle test results were negative bilaterally. Palpation of the cervical spine revealed joint tenderness and restrictions at C2/3/4 on the right and C2/3 on the left. The paraspinal muscles at the corresponding levels were hypertonic and tender to palpation.

Lumbar spine active ranges of motion were full and painless. Result of orthopedic testing of the lumbar spine was as follows: straight leg raise was 90° bilaterally with no pain reported; Thomas test, Patrick-FABERE test, Gaenslen test, Yeoman test, and sacroiliac compression test results were all negative bilaterally, whereas posterior-anterior pressure at the thoracolumbar junction elicited local pain. Palpation revealed hypertonicity and trigger points in the paraspinal muscles at the thoracolumbar region with local pain.

A preliminary diagnosis included cervical and thoracolumbar facet joint irritation with concurrent muscle hypertonicity. A treatment plan of spinal manipulative therapy, soft tissue therapy, and myofascial release therapy was initiated. The treatment plan included 3 treatments per week for a period of 6 to 8 weeks, with a reevaluation at weeks 4 and 8. Treatment began in mid-June, with 11 treatments provided over the remainder of the summer because of scheduling conflicts. With the beginning of school in September, a more regular schedule was possible. The patient was reevaluated; and treatments were provided 2 to 3 times per week through November, with 4-week reevaluations (total treatments provided, 21). Between December and May (study completion), treatments were provided on an average of twice monthly (total treatments, 13).

Chiropractic treatment included palpation to determine locations of facet joint fixation and trigger and tender points in hypertonic musculature. Chiropractic spinal manipulation (diversified technique) was provided, with the most consistent locations of facet joint irritation being the upper cervical spine, interscapular region, and thoracolumbar region. Paraspinal muscle hypertonicity was common in the upper cervical spine, although rarely in the suboccipital region, and at the thoracolumbar junction. In general, little muscle hypertonicity was noted in the lumbar spine region or the gluteal/pelvic regions. Over the course of 1 year, no adverse effects were reported. No significant illnesses or injuries were reported by the patient's

parents during the duration of the study, nor were there any changes in overall health status. Over the course of a 1-year treatment period, the parents reported that a marked improvement was noted in the patient's ADHD-associated symptoms (acting out, ability to follow instructions, and poor home and school performance).

## Discussion

Attention-deficit/hyperactivity disorder is a common pediatric condition characterized by symptoms including inattentiveness, distractibility, hyperactivity, and impulsivity.<sup>12,13</sup> Treatment options for ADHD are varied and wide-ranging and include pharmacological and CAM treatments.

There are few examples in the peer-reviewed literature of clinical studies attempting to determine the effect of spinal manipulative therapy on the symptomatology of ADHD.<sup>6,10,14</sup> Although the cumulative results from these studies are largely inconclusive, there may be a potential role for chiropractic treatment as an adjunctive treatment of ADHD. Large-scale randomized controlled trials evaluating chiropractic treatments for ADHD are nonexistent, although a small-scale trial of 6- to 12-year-old children diagnosed with ADHD compared the use of spinal manipulative therapy with placebo ultrasonography over a 3-week period.<sup>14</sup> Although the final results of this study were inconclusive, there was a trend toward improvement in the group receiving spinal manipulative therapy. A large-scale randomized controlled trial is currently under way evaluating the effect of chiropractic treatment using Neuro-emotional Technique.<sup>11</sup>

In this report, a positive effect was noted during the course of treatment, with episodes of acting out, concentration, and other associated symptoms improving over the treatment duration. If this change is attributable to the chiropractic treatment, one must ask how this takes place. Bastecki et al<sup>7</sup> have suggested that alterations in the cervical curvature may be responsible for alterations in the functioning of the nervous system, which ultimately resulted in the symptoms of ADHD being expressed in their patient. The Bastecki study, like the current case, is limited by its anecdotal nature, making generalization of the findings impossible.

Other factors are likely involved. The value of physical touch in altering mood and behavior is well documented<sup>15-17</sup>; thus, the hands-on nature of the

treatment may be partially responsible for alterations in behavior. The psychological aspect of the treatment may also have played a role. With the support of the parents and their presence at treatments, the patient may have felt that he had a growing and strengthening support system. His parents were supportive of the treatment and reported improvements throughout the treatment, which may have influenced his behavior and acted as positive feedback.

The stability of the patient's home life is an important factor that must be considered in this case. During the time of the treatment, the patient's father was employed out of town, resulting in long periods of time (weeks to months) where he was not present in the family home. Improvements in the patient's behavior were noted throughout the entire study period but were also noted during the latter portion of the treatment, when treatment frequency had decreased to monitoring levels. This also coincided with the patient's father finding new employment locally, which allowed him to live full-time in the family home and eliminated the need for long periods away from the family. The presence of this complete family support system was likely not an insignificant factor in the patient's improved attitude and behavioral changes, although it cannot be used to fully explain the results of this study because the father's employment situation did not change until near the end of treatment, once improvements in behavior had already been noted.

## Limitations

Case studies are generally of limited research value because of their subjective nature. As such, conclusions made via case studies must be done so carefully and with limits. Although the patient's parents reported that their son was diagnosed with ADHD, it is possible that this was not an accurate diagnosis. There are several measurement scales that have been shown to have excellent reliability and validity with respect to ADHD signs and symptoms. The management of this patient did not include these measurements, so improvement was not measured objectively. The use of one such scale would have provided more objective measurement of the behavioral changes over the course of the study. It has been estimated that, for the natural course of ADHD, one-third of children will outgrow the symptoms.<sup>18</sup> Thus, it is possible that the child improved regardless of the treatment. Because management of ADHD is multifactorial, it is impossible to

suggest cause and effect of any one factor being responsible for patient improvement.

## Conclusion

Over the course of a 1-year treatment period, subjective improvement was noted in the behavioral patterns and ADHD-associated symptoms in a 5-year-old patient who was treated with chiropractic care. This suggests that there may be a role for chiropractors in the treatment of patients with ADHD.

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