0008-3194/94/160–162/$2.00/©JCCA 1994

# Chiropractic care of a 13-year-old with headache and neck pain: a case report

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*Headaches are the most frequent cause of visits to primary care practitioners. Standard medical care for headaches is prescription of pain relieving medication. This report describes a 13-year-old female who had suffered from severe headache and neck pain for five days. Following a series of four chiropractic treatments over a 2-week period, her headache and neck pain resolved. A thorough search of the scholarly literature revealed very little regarding chiropractic treatment of headaches or neck pain in children. This patient's response suggests chiropractic care may be effective in this area and invites further investigation.*
(JCCA 1994; 38(3):160–162)

KEY WORDS: chiropractic, child, headache, manipulation.

*Les céphalées constituent la cause la plus fréquente de visites chez un professionnel de la santé de premier contact. Le traitement médical habituel pour les céphalées est la prescription d'analgésiques. Ce rapport décrit le cas d'une jeune fille de 13 ans qui souffrait de céphalées graves et de douleurs au cou depuis cinq jours. À la suite d'une série de quatre traitements chiropratiques sur une période de deux semaines, ses céphalées et douleurs au cou avaient disparus. Une recherche complète de la littérature récente révèle fort peu en ce qui concerne le traitement chiropratique des céphalées ou des douleurs au cou chez les enfants. La réaction de cette patiente démontre que les soins chiropratiques peuvent être efficaces dans ce domaine et qu'ils devraient faire l'objet d'une étude plus approfondie.*
(JCCA 1994; 38(3):160–162)

MOTS CLÉS : chiropratique, enfant, céphalée, manipulation.

## Introduction

Headaches are the most frequent cause of visits to primary care practitioners.[1] According to a Swedish study of 9,000 children, over 70% experience headache by age 15.[2] Headaches were the primary complaint of 6.5% of children visiting chiropractic clinics in Denmark.[3] At a chiropractic college outpatient clinic in Oregon, 7.8% of pediatric patients complained of headache.[4] Standard medical treatment for benign headaches (i.e. those headaches not due to traumatic or organic disease processes) is the prescription of pain relieving medication. Little data have been reported in the scholarly literature examining chiropractic treatment of benign headaches in children. This case report describes a 13-year-old girl suffering from unremitting neck pain and headache of 5 days duration whose pain resolved after receiving chiropractic care. It is hoped that her case will spur future investigation in this area.

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## Case description

A 13-year-old female patient complained of intermittent neck pain and headaches of at least one year's duration. Her headaches, which she described as a throbbing and stabbing pressure, normally occurred once per week and lasted approximately one hour. Her headaches were located in the frontal, temporal and occipital regions bilaterally. No prodromal symptoms occurred prior to the onset of her headaches, nor did she experience visual disturbances prior to or during her headaches. There was no temporal pattern to her headaches. Neck pain, normally intermittent, became constant when a headache occurred.

At the initial visit, she had had a headache for 5 days without remittance. She rated the headache as a 7 and the neck pain between a 4 and 5 on an increasing pain scale of 1–10. The patient had missed one week of school because of the severity of her headache. Acetaminophen (brand name Tylenol), rest and a heating pad to the back of her neck with a cold pack on her forehead all temporarily relieved her discomfort. The patient had been seen by her pediatrician two days prior to the initial visit. The pediatrician had recommended a chiropractic examination.

Past history revealed that during gymnastics, the patient had "sprained" her neck twice several years prior to the initial visit, though the patient felt that this was not related to her current

discomfort. Three years previous to the examination, also during gymnastics, the patient had suffered a stress fracture in a pedicle of L3, for which she had worn a night splint for 9 months.

She had experienced menarche 5 months previous to the initial chiropractic examination. The patient did not feel that there was a monthly cyclical pattern to her headaches. The patient was also under considerable stress. Her parents had divorced during the last year, her father was getting remarried in two weeks, and she was facing an impending move across the country.

Physical examination revealed a very mature, articulate 13-year-old girl. Cervical range of motion was full with the exception of right lateral flexion which was limited to 35 degrees. Cervical spine muscle testing revealed mild weakness in right lateral flexion and right rotation. Postural examination revealed an unusual upper lumbar hypolordosis. Passive spinal motion palpation[5] revealed movement restriction in the T7–8, T3–4, C5–6, C4–5, C2–3 and C1–2 vertebral motion segments. There was bilateral mild-to-moderate hypertonicity in the upper thoracic and cervical paraspinal, suboccipital and suprascapular muscles. Sensory and reflex examinations were normal. Cranial nerve and balance testing were within normal limits, as were blood pressure and fundoscopic examination.

The patient was diagnosed with chronic tension headache secondary to moderate cervical and thoracic segmental dysfunction with attendant mild-to-moderate suboccipital, cervical and thoracic paraspinal and suprascapular myofibrosis. She was treated on the first visit with gentle diversified adjusting to the restricted area described above. The T7–8 restriction was manipulated with an anterior thoracic flexion maneuver.[6] The T3–4 restriction was manipulated with a unilateral pisiform/transverse maneuver.[7] The cervical restrictions were manipulated using a modified rotary break maneuver.[8] The patient was also treated with soft tissue manipulation consisting of effleurage and trigger point therapy to the affected muscles noted above.

The patient was seen five days later at which time she reported that her neck was less painful, but her headache had not changed. She had seen her pediatrician again the day of her first chiropractic treatment who had prescribed Tylenol #3 with codeine and ordered a computerized axial tomographic (CAT) scan of her head and sinuses. She reported that the Tylenol #3 helped her to sleep. Results of the CAT scan were negative.

Examination on this day revealed passive motion restrictions at the C4–5, C2–3 and C1–2 motion segments. Her thoracic spine was normal. In addition, she had mild-to-moderate hypertonicity in her suboccipital and cervical paraspinal muscles. Her suprascapular and thoracic paraspinal muscles were normal. She was again treated with manipulation and massage. The C4–5 restriction was adjusted with a modified rotary break. The C2–3 was adjusted on a drop table with a mid-cervical extension maneuver.[9] The C1–2 restriction was adjusted with a thumb-contact modified rotary break.[10]

The patient returned two days later. She reported that her headache had improved. She no longer felt a throbbing or stabbing pain. The pressure sensation was still present, but less so than before treatment commenced. She did not complain of neck pain. She had stopped taking the Tylenol #3.

Examination on this date revealed a passive motion restriction at the C1–2 motion segment. The remainder of the cervical spine was normal. There was also mild hypertonicity in the suboccipital and suprascapular muscles. The patient was treated with a modified rotary break manipulation and massage to the above areas. She was also counselled about stress reduction (deep breathing exercises, referral to support group for children of divorced parents, etc.) and was given a nutritional supplement containing herbs for tension relief which she was instructed to take every four hours until the next visit.

The patient was seen one week later, two weeks after the initial examination. She stated that her headache had disappeared completely after the last treatment. In addition, she was no longer experiencing any neck pain. She mentioned that she had taken the supplements as instructed. Examination on this day revealed one passive motion restriction at the C1–2 level. Muscular examination was within normal limits. The restriction was adjusted with a thumb-contact modified rotary break.

The patient was contacted by telephone four weeks later for a follow-up, at which time she reported that she had had no return of her headache or neck pain.

## Discussion

In this instance, a regime of four multi-component chiropractic treatments apparently relieved neck pain and headache in a thirteen-year-old child. In her case, medical management with pain relievers was apparently effective in assisting the patient to sleep, but ineffective in eliminating the headache or neck pain.

A thorough search of the scholarly literature through Medline, Chirolars and CLIBCON Index to Chiropractic Literature revealed one study regarding manipulative care of childhood headaches. In his 1971 study of anteflexion headache (i.e. headache precipitated by forward bending of the head and neck), Lewit found favorable therapeutic results with manipulation in 24 of 41 patients.[11] While 28 of 41 patients in the study were under 20 years old, the age breakdown of those who responded to manipulation was not provided. No other published material concerning chiropractic care of headaches or neck pain in children was discovered.

While the majority of chronic recurrent headaches in children represent either muscle contraction (tension) or migraine (vascular) headaches, it is imperative that the examining doctor rule out underlying organic disease. Rare but important causes of pediatric headache include space-occupying intracranial lesions, trauma, hypertension and infection. Detailed history and pertinent physical examination, including fundoscopy, station, gait and neurological evaluation, should be used to rule out pathological etiologies.[12] Cranial imaging with CAT scan or magnetic resonance imaging is considered mandatory in any child with a progressive headache, symptoms of increased intra-

cranial pressure, or abnormal neurologic findings.[13]

Standard medical care for the treatment of benign headaches in children includes administration of pain relieving medications such as Tylenol #3.[14] However, Tylenol #3, which contains the morphine-based product codeine, has several known side effects. The drug many impair mental and physical function and may produce a psychic and physical drug dependence.[15]

Chiropractic management of headaches in children generally involves adjusting, massage and lifestyle advice. The main risk possibly associated with cervical adjusting is cerebral vascular accident (CVA) and the occurrence has been estimated to be 1–3 cases per million cervical adjustments. Of the 126 incidences of CVA reported from 1934–1987, one occurred in a child.[16] Since chiropractic care appears to be a safer alternative to medical management, the implication of this case report is that chiropractic care for pediatric headaches warrants future investigation.

Major weaknesses of this case report are lack of control comparisons and questionable generalizability to the population at large. Coincidence, natural disease progression, and a late effect of the pain relieving medication cannot be excluded as explanations for the observed changes. Further study is also needed to determine if these results are applicable to the wider pediatric population with similar conditions.

Another weakness of this case report is the lack of long-term follow-up. Though the patient was followed four weeks after the cessation of treatment, a longer period of six months to one year would provide more information as to the permanence of the apparent changes.

In this case, the patient was treated in the chiropractic office with several different modalities of care, including manipulation, soft tissue massage, herbal supplementation and stress reduction counselling. In addition, during part of the treatment phase, the patient took Tylenol #3 as prescribed by her pediatrician. For this reason, one must be cautious in drawing conclusions regarding which aspect(s) of this care, if any, were responsible for the patient's recovery.

The mechanism(s) whereby spinal dysfunction may lead to headache are not well understood. One possible explanation is that joint dysfunction in the cervical or upper thoracic spine may lead to hypertonicity in muscles that attach to the head, resulting in head pain either directly or indirectly through nerve entrapment.[17] Alternatively, it has been proposed that joint dysfunction may alter autonomic nerve activity.[18] Such neural facilitation may lead to head pain by altering blood flow to the head or by creating referred pain in the distribution of the trigeminal nerve.

## Conclusion

This case represents an instance wherein chiropractic care was apparently effective in eliminating a child's neck pain and headache when analgesic medications were ineffective. No conclusions can be reached from the outcome of one case report. Future investigation is warranted to determine if chiropractic care does in fact represent an effective treatment approach for the relief of neck pain and headaches in children. If this proves to be the case, comparative trials examining the relative effectiveness and safety of chiropractic care versus pain relievers would be a logical next step.

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**Gál J, Herzog W, Kawchuk G, Conway P, Zhang YT. Biomechanical studies of spinal manipulative therapy: quantifying the movements of vertebral bodies during SMT. JCCA 1994; 38(1):11–24.**

**To the Editor:**

Understanding what occurs biomechanically during spinal manipulation has been made possible in recent years due to the advent of piezoelectric technology (e.g. accelerometers, and force transducers, etc.) and it is gratifying to see the ongoing work by the group at the University of Calgary, in this area.[1,2] However, in their latest study using human cadavers,[3] I noticed that no mention was made of our prior work where pins were placed into the vertebrae of dogs to measure forces, acceleration and displacements during adjustments with an activator adjusting instrument.[4,5] These studies and the exchange which followed[6,7] represent significant pioneering efforts in the maturation process among chiropractic scientists/technique developers in our profession and are therefore worthy of mention.

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**To the Editor in reply:**

Thank you for bringing to our attention the concerns of Dr. AW Fuhr with respect to our recently published manuscript. We would be grateful to you if you would pass on the following information to Dr. Fuhr.

During the two-year period spanning November 1991 to November 1993, a series of biomechanical studies were undertaken at the University of Calgary, with the specific goal of quantifying the relative movements of vertebral bodies during spinal manipulative therapy (SMT). The project was successful in terms of exploring several aspects of the biomechanics of spinal manipulation. As such, we are currently in the process of preparing the relative manuscripts:

1 Absolute and relative movements of vertebral bodies during SMT to T10, T11, and T12 . . . submitted to SPINE.
2 Absolute and relative movements of vertebral bodies which accompany cavitation . . . accepted by JMPT.
3 Comparison of invasive (bone-pin) and non-invasive (surface markers and accelerometers) markers for measuring vertebral

movements during spinal manipulation . . . in preparation.
4 Potential viscoelastic effects during slow and fast manipulative treatments . . . in preparation.
5 Vertebral movements during percussive manipulation . . . in preparation.

During the 1993 ICSM meeting in Montreal, we were approached by the JCCA to write a review about the current state of spinal biomechanics at the University of Calgary. The outcome of that request is the report mentioned by Dr. Fuhr (JCCA 1994; 38(1):11–24.

It was our understanding that this review should take the form of a clinical report, rather than a rigorous scientific report and therefore, we left the more rigorous literature discussions to the more formal scientific manuscripts outlined above.

It is perhaps unfortunate that the manuscript in JCCA has been accepted and published before the scientific manuscripts. However, Dr. Fuhr can be assured that indeed his work has been thoroughly discussed in the relevant scientific manuscripts, particularly 1, 3, and 5. Certainly, his group was the first to utilize accelerometers to measure vertebral displacements.

We sincerely regret that he and his colleagues may have felt that their work has been overlooked. On the contrary, we acknowledge and respect their efforts to understand the biomechanics of spinal manipulation, and trust that they will understand that this apparent oversight was rather a case of unfortunate timing.

Thank you again for bringing this matter to out attention.

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