

## CaseStudy

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# Resolution of Cyclic Vomiting Syndrome Following Chiropractic Care

### Introduction

Cyclic vomiting syndrome (CVS) is characterized by recurrent, discrete episodes of nausea and vomiting separated by intervals of normal health.<sup>1</sup> An underlying cause is often not apparent. Onset is most common during preschool or early school years though CVS may begin at any age, from infancy onward.<sup>1</sup>

There is notable overlap between CVS and abdominal migraine in the literature.<sup>2-6</sup> It has been suggested that CVS is not only related to migraine<sup>2</sup> but may actually be a juvenile form of migraine.<sup>3</sup> Though there are other differentials to consider, abdominal migraine is the most common diagnosis in those with cyclic vomiting.<sup>4</sup>

This case study will explain the treatment approach and outcome for a seven-month-old infant with suspected CVS.

### History

A seven-month-old female was presented for chiropractic evaluation by her mother, who reported the infant had three episodes of violent retching and vomiting during the past month; each episode would last about an hour. The infant had also been more irritable during the past month and the mother reported that she had been refusing all solid foods since the first episode of retching and vomiting. Therefore, the infant was being exclusively breastfed at the time of the initial visit, leading to recent weight loss which was concerning the mother. There was no history of injury or recent illness — the mother denied the occurrence of fever, diarrhea or the presence of any other signs of infection. A recent medical examination had revealed no abnormalities, however, a consult with a neurologist had been recommended. The mother believed that their pediatrician wanted to rule out the possibility of seizures. No consult had been scheduled at the time of the initial visit as the mother wanted the infant to be evaluated by a chiropractor first.

The pregnancy was uneventful with the mother in good health prior to conception. No birth complications were reported; the infant was full-term and delivered vaginally.

The infant had been exclusively breastfed for the first 5 months and tolerated solids well when they were first introduced. The mother had no concerns regarding the infant's sleep habits, though she reported that the infant had been very fussy since birth and this had increased during the past month.

A review of family history revealed no significant findings.

### Examination

A complete physical examination was performed. The physical exam revealed that the seven-month-old weighed 15 pounds and was 26½ inches long. The infant appeared thin. Charting her height and weight using data from the National Center for Health Statistics (2001), it was determined that she was in the 50th percentile for height but only the 15th percentile for weight. She was very irritable throughout the exam and visibly uncomfortable when lying supine.

The head and neck exam revealed hypertonicity of the suboccipital musculature, this finding was increased on the right. Heart and lung sounds were unremarkable. An abdominal examination revealed no abnormalities. The abdomen was soft and free of any palpable masses. Neurological tests, including a cranial nerve exam, were essentially negative. Reflexes were appropriate for her age, gross motor movements and developmental milestones were also age-appropriate.

A chiropractic evaluation was performed. Bilateral mastoid fossa temperatures were taken using an infrared temporal artery thermometer. The right was 0.2 degrees Fahrenheit lower than the left. We were unable to assess supine leg length due to a lack of cooperation. It was noted again that the infant could not comfortably lay supine with her head midline. She consistently turned her head to the right to find a position of comfort. Both active and passive cervical flexion were markedly decreased and appeared to be painful. Intersegmental motion palpation revealed decreased occipital glide on the right, decreased right lateral flexion of the occiput relative to C1, and decreased left rotation of the occiput relative to C1.

### Intervention and Outcome

The infant was adjusted using Diversified technique modified for her age and size. Contact was taken at the posterior superior aspect of the right mastoid with the lateral aspect of the doctor's right index finger. The doctor's left thenar pad was placed just anterior to the infant's left ear, over the zygoma, while the left atlas transverse was stabilized by the

doctor's left index finger. The infant's head was laterally bent toward the side of contact and rotated approximately 45 degrees away from the side of contact. A low-amplitude, high-velocity thrust was applied with an S-I, R-L, P-A line of correction.

Immediately after the adjustment, it was noted that the infant was able to lay supine comfortably with her head midline. The mother also commented that the infant was noticeably calmer.

The infant was evaluated again one month later. At the second visit, the mother reported that the infant's irritability had resolved immediately after the adjustment and she had returned to eating solid foods shortly after. The mother reported no reoccurrence of the episodes of retching or vomiting since the last visit and the infant was gaining weight.

Chiropractic assessment revealed no significant findings on the second visit. The infant was able to lay supine comfortably, without any postural distortions. Cervical flexion was within normal limits and caused no apparent discomfort to the infant. Suboccipital musculature was relaxed and there was no notable intersegmental motion restriction.

The infant was released from care. The mother planned to return to her local chiropractor for wellness care.

### Discussion

Though the relationship between migraine and CVS is still unclear, research suggests that the two are related. There are many similarities between them including severity of symptoms, timeline, and triggers.<sup>2,3,5</sup> Many children with CVS either have a family history of migraine or develop migraines as they grow older and it has been suggested that there is a spectrum of disease: CVS — abdominal migraine — migraine.<sup>3</sup>

Due to the similarities between CVS and migraine, recommended medical management of CVS includes antimigraine medication<sup>6-8</sup> along with lifestyle changes.<sup>7</sup> Chiropractic care has also been shown to be effective in managing migraine with improvement in migraine frequency, duration, disability and medication use.<sup>9</sup>

An increasing number of researchers believe that headache pain, including migraine, may be related to structures in the neck.<sup>10</sup> In the late nineties, researchers identified direct anatomical connections between the bony structures of the upper cervical spine, specifically occiput, C1, C2 and the dura mater.<sup>11,12</sup> These discoveries have helped advance our understanding of the mechanisms resulting in migraine headaches as well as explain why upper cervical adjustments have been found to benefit patients suffering migraines. It has been postulated that specific chiropractic adjustments to the cranio-cervical structures alleviate the sequelae of muscle spasm, nerve irritation, myodural traction and ultimately, the dural inflammation<sup>10</sup> that causes migraine pain.

Due to the similarities between CVS and migraine it is reasonable to suspect that the same neuromusculoskeletal mechanism behind migraine may also be present in CVS. Subluxation of the upper cervical spine contributing to myodural traction and dural inflammation may be the cause of CVS in some patients.

### Conclusion

Considering the anatomical relationship between the upper cervical spine and the dura, as well as, the link between myodural traction and migraine disorders, it seems reasonable that the occiput adjustment had a direct impact on relieving dural irritation ultimately leading to the resolution of the patient's symptoms.

Future research should look into the connection between upper cervical subluxation and the CVS — abdominal migraine — migraine spectrum.

### References

1. Fleisher, DR. The cyclic vomiting syndrome described. *J Pediatr Gastroenterol Nutr* 21:S1-S5, 1995
2. Symon DN, Russell G. The relationship between cyclic vomiting syndrome and abdominal migraine. *J Pediatr Gastroenterol Nutr* 21: S42-43, 1995
3. Symon DN. Is cyclical vomiting an abdominal form of migraine in children? *Dig Dis Sci* 44:S23-25, 1999
4. Pfau BT, Li BU, Murray RD, Heitlinger LA, McClung HJ, Hayes JR. Differentiating cyclic from chronic vomiting patterns in children: Quantitative criteria and diagnostic implications. *Pediatrics* 97(3): 364-386, 1996
5. Li BU, Balint JP. Cyclic vomiting syndrome: evolution in our understanding of a brain-gut disorder. *Adv Pediatr* 47:117-160, 2000
6. Li BU, Misiewicz L. Cyclic vomiting syndrome: a brain-gut disorder. *Gastroenterol Clin North Am* 32(3):997-1019, 2003
7. Li BU, et al. North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition Consensus Statement on the Diagnosis and Management of Cyclic Vomiting Syndrome. *J Pediatr Gastroenterol Nutr* 47(3):379-393, 2008
8. Anderson JM, Sugerman KS, Lockhart JR, Weinberg WA. Effective prophylactic therapy for cyclic vomiting syndrome in children using amitriptyline or cyproheptadine. *Pediatrics* 100(6):977-981, 1997
9. Tuchin PJ, Pollard H, Bonello R. A randomized controlled trial of chiropractic spinal manipulative therapy for migraine. *J Manipulative Physiol Ther* 23(2):91-95, 2000
10. Brzozowska WT, Smith CY, Tondera HB. Myodural Cephalgia. Is it time to re-classify headaches? The migraine myth. *eJ Acad Chiropr Orthoped Sep*;5(3):1-5, 2008 <http://www.dorthoacademy.com/pdfs/Journals/journals%202008/08Septvol5iss3.pdf>. Retrieved 14 October 2009
11. Hack, G.D., Koritzer, R.T., Robinson, W.L., Hallgren, R.C., Greenman, P.E.: Anatomic relation between the rectus capitis posterior minor muscle and the dura mater. *Spine* 20, 23:2484-6, 1995
12. Mitchell BS, et al. Attachments of the ligamentum nuchae to cervical posterior dura and the lateral part of the occipital bone. *J Manipulative Physiol Ther* 21:145, 1998

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