

CASE REPORT

Cyclic Vomiting Syndrome in an Adult Patient

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Disclosure: Nothing to report.

Journal of Hospital Medicine 2010;5:251–252. © 2010 Society of Hospital Medicine.**KEYWORDS:** cyclic vomiting syndrome, diagnostic decision-making, gastroenteritis, gastroenterology, symptom management.

We present a 26-year-old white male with a chief complaint of nausea and vomiting. The patient described prodromal nausea followed by intractable vomiting for 2 days. Over the past 2 years he has experienced similar episodes occurring every 3 to 6 months. He has been hospitalized 5 times for this problem with no diagnosis given. There are no obvious precipitants. The symptoms consistently last 2 to 3 days and resolve with supportive care including intravenous fluids and antiemetics. The patient enjoys good health between the periods of sickness. He has never experienced coffee-ground emesis or hematemesis. His past medical history is significant for attention deficit disorder and cholecystectomy. He takes no prescription medications. Social history is remarkable for tobacco abuse, binge drinking on weekends, and daily marijuana use. He is unemployed. His family history is unremarkable.

Physical examination at the time of admission was notable for tachycardia, orthostatic hypotension, and hypoactive bowel sounds. Otherwise physical examination was normal.

Diagnostic testing done on admission was notable for white blood cell count of 25,000, hemoglobin of 17.3, blood urea nitrogen 18, creatinine 1.4, aspartate aminotransferase (AST) 64, and alanine aminotransferase (ALT) 55. Pancreatic enzymes and acute abdominal series were normal.

The patient was admitted to the hospital with the presumptive diagnosis of viral gastroenteritis. Initial therapy included intravenous fluids and promethazine. Throughout hospital day 1, he remained nauseated and had multiple bouts of emesis. Records from the patient's hospitalization 5 months ago were obtained and reviewed. During this previous hospitalization, computed tomography (CT) scans of the abdomen and esophagogastroduodenoscopy (EGD) were performed, both of which were negative. Upon review of this recent workup, the diagnosis of cyclic vomiting syndrome (CVS) was entertained and the patient received a therapeutic trial of subcutaneous sumatriptan. His symptoms abated dramatically. Subsequently, he was able to keep oral liquids down and his orthostatic hypotension resolved. On hospital day 2, his white blood cell count normalized without intervention. Blood, urine, and stool cultures remained negative, and workup for acute intermittent porphyria was negative. Upon discharge from the hospital he was counseled to discontinue all marijuana use and was

scheduled for follow-up in the residents' clinic. He failed to keep this appointment. After being lost to follow-up for 17 months, he presented to the emergency department with nausea and vomiting. As before, his symptoms promptly improved with sumatriptan.

Discussion

CVS, initially described in 1861 as a pediatric illness, is being increasingly recognized in adults.¹ It has been estimated that up to 1.6% of children experience symptoms consistent with this disorder, but the prevalence in adults is unknown.² The essential features of CVS, as noted in our patient, are multiple discrete episodes of nausea and vomiting lasting less than 1 week with absence of nausea and vomiting between episodes. The presentation of adults with CVS often differs from the pediatric form in that adults have longer, less frequent episodes, and the triggers are less evident.³

The etiology and pathogenesis of CVS remain unknown. A variety of physical and psychological stresses, including infection, overexertion, and emotional distress, have been noted to precipitate episodes.⁴ CVS has variably been associated with autonomic, mitochondrial, and endocrine disorders. The most prevalent theory in the literature, however, is that CVS and migraine headaches are different presentations of the same diathesis.⁵ Patients with both are noted to have similar patterns of symptoms and positive family history of migraines. The progression from CVS to migraines is noted frequently in individual patients. As many as 82% of the 214 children in a case series of CVS were noted to have a family history of migraines or to have or subsequently develop migraines.⁶ In addition, electroencephalogram findings and adrenergic autonomic abnormalities are similar in both sets of patients.³ In 1 case series of 17 patients with CVS, patients noted the possible association of episodes with menses (in 57% of women of reproductive age), and the improvement of symptoms with sleep (in 24%), clinical factors common in patients with migraines.³

CVS is one of the functional gastrointestinal disorders for which the diagnosis is clinical, with criteria based upon the consensus of expert opinion in the Rome III Criteria for Functional Gastrointestinal (GI) Disorders.⁷

At least 3 months, with onset at least 6 months previously of:

- Stereotypical episodes of vomiting regarding onset (acute) and duration (less than 1 week);
- 3 or more discrete episodes in the prior year; and
- Absence of nausea and vomiting between episodes.

Supportive criteria: History of migraine headaches or family history of migraine headaches.⁷

Making the diagnosis of CVS requires the exclusion of other disorders associated with recurrent vomiting. Examples include gastric outlet or small bowel obstruction, gastroparesis, vestibular neuritis, elevated intracranial pressure, inborn errors of metabolism, dysautonomia, porphyria, and alterations in the hypothalamic pituitary adrenal axis. The other functional nausea and vomiting disorders described in Rome III, specifically chronic idiopathic nausea and functional vomiting, also need to be considered.⁷ Many drugs can cause nausea and vomiting, and chronic marijuana use has been associated with cyclical hyperemesis.⁸ Our patient meets the diagnostic criteria for CVS, but his frequent marijuana use would preclude a diagnosis of functional vomiting, which by definition requires an absence of chronic cannabinoid use.

Determining which tests and procedures should be performed in the initial evaluation is based on clinical judgment, but commonly includes complete metabolic profile, urinalysis, upper GI series, EGD, neurological imaging, acute abdominal series, and CT of the abdomen and pelvis. In addition, pertinent metabolic screening including serum lactate, cortisol, pyruvate, ammonia, creatinine phosphokinase, carnitine, urinary organic acids, and porphobilinogen may be considered.⁵

Evidence-based treatment of CVS is limited by the lack of controlled trials. Acutely, patients often require hospitalization and symptom management with aggressive hydration, antiemetics, and sometimes even sedative agents. Empiric abortive treatment with antimigraine medications (sumatriptan, prochlorperazine, tricyclic antidepressants, and ketorolac) has been effective in case reports.^{9–11} Patients in whom a history of chronic cannabinoid use is elicited should be counseled that cessation may lead to an improvement in symptoms.

Just as with migraines, patients who experience frequent episodes of cyclic vomiting can benefit from prophylactic medications. Tricyclic antidepressants (TCAs) have been reported to be effective as prophylactic agents in children with CVS.¹² An open-label treatment group of 17 adult patients with CVS noted that 17% of patients had a complete remission with TCA therapy and almost 60% had a partial response.³ More recently, a retrospective case series of patients who had failed TCAs as maintenance therapy reported that 15 out of the 20 patients studied had improvement in the frequency of their vomiting episodes with the newer antiepileptic drugs zonisamide and levetiracetam.

However, moderate or severe side effects were reported in 45%.¹³

Conclusions

In summary, although CVS is still an uncommon diagnosis, it is being made more frequently in adults. Although recognition is increasing, there remains a significant delay between onset of symptoms and diagnosis in adults.⁴ CVS is a diagnosis of exclusion and should be considered when initial evaluation for recurrent nausea and vomiting are unrevealing. A wide range of medications show benefit for both abortive and prophylactic therapy. Increasing awareness of this disorder can lead to a reduction in invasive and costly diagnostic workups.

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