

## CLINICAL VIGNETTE

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# Cyclic Vomiting Syndrome

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Evelyn Curls, MD, MBA and Adam Cavallero, MD

### **Introduction**

Cyclic Vomiting Syndrome (CVS) is functional gastrointestinal disorder characterized as intermittent episodes of nausea and vomiting.<sup>1</sup> Interspersed between the recurrent episodes of nausea and vomiting are extended periods of time when patients return to their baseline health. Identified associations include younger age, tobacco use, personal or family history of migraines, and psychiatric comorbidity.<sup>1,2</sup> The prevalence of cyclic vomiting syndrome in the United States is 3%. Age of onset is bimodal with pediatric onset disease at a mean age of onset of symptoms at age 5.3. Patients who experience adult-onset disease have a mean age of onset is 35.<sup>1</sup> There is a slight female predominance of 55% in adult-onset cyclic vomiting syndrome. This paper will focus on adult onset disease, in this form of cyclic vomiting syndrome symptoms are characterized as severe and frequent vomiting up to 8 times per hour at peak, with 6 day mean duration of flares/cycles. Vomiting cycles occur on average 4 times per year with 40-60% of patients experiencing baseline inter-episodic nausea.<sup>2</sup> Presented here is a case of a 24-year-old woman who complained of symptoms recurrent nausea and vomiting.

### **Case Presentation**

The patient is a 24-year-old female with past medical history of endometriosis, migraines, who presented to her Primary Care Physician with recent flare of baseline nausea to intense bouts of vomiting. The patient reports that over the past six days she has sudden increase in nausea and has been vomiting at least 10 times per day. Immediately after eating, her vomitus was described initially as undigested food, with progression to non-bloody bilious emesis over the course of the day. She denied fever, constipation, diarrhea, abdominal pain, melena, or hematochezia. There was no recent travel or contacts who had similar symptoms. She did not have previous episodes of nausea and vomiting for 14 years. At baseline she has near daily mild morning nausea. Vomiting episodes often coincide with migraines and are exacerbated by anxiety. She has been previously evaluated by gastroenterology with negative endoscopy and negative CT Abdomen/Pelvis. She reports increasing frustrated with persistent nausea and vomiting which impact daily activities, including missed work secondary to these episodes. She reports weight loss of up to 5-7 lbs during flares, but regains weight over the weeks to months between episodes. On average she has 4 episodes per year of frequent vomiting, with episodes lasting two to four days. She presented at this visit because of the extended duration of this episode to

six days. She denies alcohol use and notes occasional weekend marijuana use. In the past 14 years she has been treated with ondansetron, metoclopramide, and prochlorperazine, which were ineffective. Physical examination findings were significant only for tachycardia at a heart rate of 100, with otherwise normal exam. Her abdomen was soft, non-distended, non-tender, without organomegaly. Labs at the time of presentation revealed hypokalemia to 3.4. Sodium, LFTs, Creatinine, and BUN were normal.

The patient was diagnosed with cyclic vomiting syndrome and she was given IVF hydration and sumatriptan during the office visit. She was started on amitriptyline 25mg PO QHS X 2 weeks and then advised to increase to 50mg PO QHS for prophylactic treatment and sumatriptan 25mg Q2hr X 2 doses for abortive treatment. She was also advised to avoid marijuana use and was referred to East/West medicine.

At one-month follow-up, she noted a decrease in baseline nausea. She continued to visit East/West medicine and received acupuncture and started adjunct therapy with meditation and yoga classes. She also established care with a psychologist for treatment of anxiety. At 6-month follow-up, she reported only one episode of vomiting, which resolved in one day.

### **Discussion**

Cyclic vomiting syndrome (CVS) is an idiopathic disorder described as recurrent, self-limited episodes of nausea and vomiting separated by symptom free intervals.<sup>3</sup> Although the etiology is unclear, it is thought that CVS is a migraine equivalent caused by autonomic dysfunction.<sup>4</sup> There is a strong association between CVS and migraines, with 43% of patients with CVS having a personal history of migraines and 64% of patients having a family history of migraines.<sup>5</sup> Anxiety and depression are also commonly associated with CVS.<sup>6</sup> Panic attacks have been identified as a possible trigger for the onset of cyclic vomiting episodes. Cyclic vomiting episodes commonly include: nausea, retching, and vomiting up to six to eight times per hour, abdominal pain, occasional diarrhea, fatigue, and hyper-salivation. The episodes occur in four phases 1) The interepisodic well phase, which lasts for weeks-months. 2) The pre-emetic or prodromal phase is characterized by nausea, anorexia, and malaise, and can last minutes to hours. 3) The emetic phase is described as intense and unrelenting nausea with repetitive vomiting, that can last from hours to days. 4)

The recovery phase occurs when vomiting ceases and hunger returns accompanied by the ability to tolerate solids.<sup>7</sup> Laboratory findings can include hyponatremia, ketosis, lactic acidosis, and neutrophilia without band forms.<sup>7</sup> Initial evaluation includes pregnancy test for female patients, complete blood count with differential, lipase, urinalysis, and comprehensive metabolic panel. It is also advised to obtain imaging, specifically abdominal films to rule out abdominal obstruction. Diagnosis of Cyclic vomiting syndrome is based on the Rome III criteria. The following three criteria must be fulfilled for the prior 3 months with symptom onset at least 6 months before diagnosis 1) Stereotypical episodes of vomiting with acute onset and duration less than 1 week. 2) Three or more discrete episodes in the prior year. 3) Absence of nausea and vomiting between episodes.<sup>7</sup> Diagnosis of CVS should exclude other causes of vomiting, GI infections, GI inflammatory conditions, PUD, gastroparesis, cholecystitis, SBO, CNS mass, nephrolithiasis.<sup>7</sup>

After the diagnosis has been made, treatment is focused on symptom management to prevent and abort episodes. Prevention includes both prophylactic medications and lifestyle changes. The first line prophylaxis medication for adult-onset CVS is amitriptyline, titrated from 10mg or 25mg PO QHS to the goal therapeutic dose of 75mg or 100mg.<sup>8</sup> Other tricyclic antidepressants, TCA can be used if patient cannot tolerate amitriptyline. Patients who do not respond to TCAs can be treated with topiramate 100mg PO qday or levetiracetam 1000mg PO qday.<sup>8</sup> Lifestyle modifications include avoidance of common triggers like excessive emotional excitement, fasting, chocolate, cheese, monosodium glutamate and activities that induce motion sickness. Implementation of relaxation routines and involvement of psychology also serve as effective prophylaxis.<sup>7</sup> When lifestyle modifications and prophylactic medications are used in combination, 70% of patients report a decrease in frequency of CVS episodes.<sup>8</sup>

Acute abortive treatment occurs during the prodromal phase. Treatment includes the use of anti-emetics like ondansetron, promethazine, prochlorperazine, or diphenhydramine. Triptans are a mainstay of abortive treatment in the prodromal phase. Benzodiazepines should be used with caution to avoid dependency, but have been shown to be effective in this phase. Dextrose administered either orally or intravenously can truncate episodes.<sup>7</sup>

If these attempts fail, and the patient progresses to the emetic phase, supportive care is rendered. This includes anti-emetics, triptans, as well as the administration of IV fluids and PPIs. IV fluids containing dextrose are more effective in cessation of symptoms, with 50% of patients responding to IV dextrose administration.

In summary, Cyclic Vomiting syndrome is a functional brain-gut disorder that can be debilitating. CVS is clinically defined as Rome III criteria. Multifaceted approach to treatment which includes lifestyle modification to avoid triggers, treatment of comorbid psychiatric disease, cessation of chronic marijuana

use. The majority of patients respond to prophylactic treatment with TCAs. Because CVS is debilitating and can effect quality of life causing absence from work and school, but is responsive to prophylactic treatment it is important to keep this condition in the differential for any patient that presents with unexplained recurrent vomiting and nausea.

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