

A 7-year-old girl is brought to the physician due to a 3-day history of recurrent, prolonged episodes of nausea and severe vomiting. The vomiting is non-bloody and non-bilious, starts early in the morning, and recurs up to 10 times a day. The child has no fever, headache, abdominal pain, diarrhea, chest pain, or respiratory distress. She has had similar episodes of vomiting and nausea in the past 4 months; these occur at the beginning of the month, last several days, and then resolve spontaneously. Her mother says that the prior episodes were "just like this," but the girl is "totally fine" in between and has a normal appetite. The patient's tests for electrolytes, liver function, and pancreatic enzymes were all normal. Upper gastrointestinal contrast study, abdominal CT scan, and endoscopy were also normal. She has no known medical problems and takes no medications. The mother has a history of migraines but there is no history of gastrointestinal, psychiatric, or other illnesses in the family. The girl's weight and height are average for her age. On examination, the child is afebrile and appears mildly dehydrated. The abdomen is soft and nontender to palpation. What is the most likely cause of the patient's symptoms?

- ☐ A. Bulimia nervosa
- ☐ B. Cyclical vomiting syndrome
- ☐ C. Gastroesophageal reflux disease
- ☐ D. Intestinal malrotation
- ☐ E. Mesenteric adenitis
- ☐ F. Munchausen syndrome by proxy
- ☐ G. Viral gastroenteritis

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- ☐ A. Bulimia nervosa [1%]
- ☒ B. Cyclical vomiting syndrome [84%]
- ☐ C. Gastroesophageal reflux disease [1%]
- ☐ D. Intestinal malrotation [0%]
- ☐ E. Mesenteric adenitis [0%]
- ☐ F. Munchausen syndrome by proxy [13%]
- ☐ G. Viral gastroenteritis [1%]

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Explanation:

User Id: [redacted]

#### Diagnostic criteria of cyclic vomiting syndrome

- ≥3 episodes in a 6-month period
- Easily recognizable to family (stereotypical)
- Lasts 1–10 days
- Vomiting ≥4 times/hr at peak
- No symptoms in between vomiting episodes
- No underlying condition can be identified



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User Id: [REDACTED]

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This child has a **recurrent, predictable pattern** of acute and frequent vomiting that resolves spontaneously with no symptoms in between episodes. This patient's growth, eating patterns, and diagnostic tests are also normal. In the context of a family history of migraines, these findings suggest **cyclic vomiting syndrome (CVS)**.

The incidence of CVS is highest in children whose parents have a history of **migraine headaches**. The etiology of CVS is unclear, but it is thought to be linked to abdominal migraine, which generally presents with abdominal pain as the primary symptom. Some children progress from CVS to abdominal migraines and migraine headaches.

Complications that may arise from recurrent vomiting include anemia and dehydration. Treatment consists of hydration, **antiemetics** (eg, ondansetron), and reassurance of the parents. Children with a family history of migraines are likely to benefit from anti-migraine therapy such as sumatriptan. Approximately 2/3 children with CVS have gradual resolution of their symptoms in 5–10 years.

**(Choice A)** Bulimia nervosa is common in adolescent women and is characterized by self-induced vomiting (purging) to compensate for recurrent binge eating. This diagnosis is unlikely in a school-aged girl with no history of caloric restriction or binge eating.

**(Choice C)** Gastroesophageal reflux disease presents with regurgitation after feeding and failure to thrive. It does not present with acute onset of severe vomiting.

**(Choice D)** Intestinal malrotation can present with recurrent vomiting that is generally bilious. Malrotation can lead to volvulus, which causes severe bilious emesis and hypovolemic shock. Upper gastrointestinal series is the gold standard test for malrotation, and it was normal in this child.



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**(Choice C)** Gastroesophageal reflux disease presents with regurgitation after feeding and failure to thrive. It does not present with acute onset of severe vomiting.

**(Choice D)** Intestinal malrotation can present with recurrent vomiting that is generally bilious. Malrotation can lead to volvulus, which causes severe bilious emesis and hypovolemic shock. Upper gastrointestinal series is the gold standard test for malrotation, and it was normal in this child.

**(Choice E)** Mesenteric adenitis presents with abdominal pain (often right-lower quadrant), abdominal guarding, and tenderness. It can be mistaken for appendicitis and is identifiable on abdominal CT scan. It does not cause recurrent episodic vomiting.

**(Choice F)** Munchausen syndrome by proxy (ie, factitious disorder by proxy) is a form of child abuse. A caregiver may induce an unusual or prolonged illness in a child or provide a false report of symptoms that differs from what is observed or does not make sense. However, factitious disorder is unlikely as this patient has a clear pattern of illness and family history of migraines.

**(Choice G)** In the absence of other symptoms such as abdominal pain, diarrhea, or fever, the history of recurrent self-limiting episodes of vomiting and nausea makes the diagnosis of viral gastroenteritis unlikely.

#### Educational objective:

In children, recurrent self-limiting episodes of vomiting and nausea without an apparent cause suggest the diagnosis of cyclical vomiting. A family history of migraine is often present. Therapy with anti-emetics and anti-migraine agents is beneficial.

#### References:

1. [The management of cyclic vomiting syndrome: a systematic review](#)
2. [North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition consensus statement on the diagnosis and management of cyclic vomiting syndrome](#)
3. [Outcome for children with cyclical vomiting syndrome](#)



Media Exhibit

emitting syndrome

