CHRONIC NAUSEA AND VOMITING
Lawrence R. Schiller, MD, FACG

Nausea and vomiting are frequent symptoms with a large differential diagnosis. Acute nausea and vomiting usually are due to intercurrent illnesses, such as gastroenteritis. Chronic nausea and vomiting pose a particular problem. When disorders such as gastroesophageal reflux disease, peptic ulcer, and biliary and pancreatic diseases are excluded, it is likely that the patient has a functional disorder.

Functional disorders that may present with nausea and vomiting include gastroparesis, rumination syndrome, cyclical vomiting syndrome and vestibular dysfunction. These syndromes often are confused with one another and differentiation depends more on history than on the results of diagnostic tests.

Gastroparesis
Gastroparesis is an uncommon disorder that is overdiagnosed when typical symptoms prompt a diagnosis without considering a full differential diagnosis. Any patient with symptoms of gastroparesis may have a number of other potential causes, as diverse as gastric outlet obstruction, Addison’s disease, cholelithiasis, chronic pancreatitis, thyroid disease, functional dyspepsia, or any of the other functional conditions that will be discussed today. Each of these conditions must be considered in the differential diagnosis.

Overdiagnosis of gastroparesis is abetted by misuse of gastric emptying scans. These tests identify slow emptying, not gastroparesis per se. Any cause of slow emptying will produce an abnormal result. Moreover, gastric emptying scans are affected by the presence of nausea of any cause; nausea should be suppressed with antemetic drugs before conducting a scan.

Gastric emptying scans always should be done in accordance with the International Standard using a low volume meal and a four-hour imaging interval. Unstandardized meals and shorter imaging periods may produce misleading results and an incorrect diagnosis of gastroparesis.

There are several known causes of gastroparesis – neurological problems, such as diabetic autonomic neuropathy, Parkinson’s disease, or post-vagotomy gastroparesis, vascular disease, and pseudo-obstruction. These cause generally progressive symptoms with fluctuating severity over weeks to months. Gastroparesis also may be idiopathic. In most of those cases symptoms start suddenly as if part of an acute gastroenteritis, but persist. Often they are most severe initially and gradually grow milder with time. Symptoms do not fluctuate cyclically.

Most patients with gastroparesis respond to conventional therapy; tight control of blood sugar (if diabetic), a diet emphasizing nutritious liquids, and adequate doses of metoclopramide and/or erythromycin. Those that do not respond or have side effects pose difficult problems in management. Domperidone, a peripheral dopamine-receptor antagonist (not approved by the FDA for use in the United States) which is less potent than metoclopramide at stimulating gastric emptying, is unlikely to provide more benefit than metoclopramide. Domperidone should be reserved for patients who have responded to metoclopramide, but are intolerant to its central neurological side-effects. Intrapyloric botulinum toxin injection has been used in some centers, but results have been mixed.

Reducing symptoms and maintaining nutrition are the primary goals of therapy for refractory gastroparesis. Placement of a gastrostomy tube to drain the stomach and a jejunostomy tube for enteral feeding is a reasonable choice to achieve these goals and the only conservative option that was possible in the past. It still remains a fallback option, but many motility centers would evaluate the refractory patient for placement of a gastric electrical stimulator as an alternative option.

Gastric electrical stimulation is of benefit in about 60% of diabetics with refractory gastroparesis and in about 40% of patients with refractory idiopathic gastroparesis. Although popularized as a “gastric pacemaker,” it usually does not improve gastric emptying and seems to produce benefit by stimulating the afferent fibers in the vagus nerve; it functions as if it were a “TENS unit” for the stomach. It does not necessarily improve symptoms immediately and it may take months to achieve optimal effects. To qualify for implantation according to the Humanitarian Use Exemption protocol in the United States, patients must have not had gastric surgery and should not have pain requiring high-level narcotics.

Other surgical options, such as gastrojejunostomy, should be avoided except in exceptional circumstances.

Rumination Syndrome
Rumination syndrome was originally described in mentally retarded children but is now recognized in competent adults as well. The key clue to this diagnosis is the effortless regurgitation of food while eating; this contrasts with the delayed emesis typically seen with gastroparesis. Because of this rapid regurgitation of food, digestion does not have time to start and the emesis tastes just like the food did when initially swallowed.
Rumination syndrome is thought to be a behavioral disorder; there is nothing wrong with the stomach. The episodes are not due to activation of the vomiting reflex; instead, abdominal wall contraction and relaxation of the EG junction allows gastric contents to be ejected back into the esophagus and throat effortlessly. Symptoms may be exacerbated by stress.

The diagnosis may be made by gastrointestinal manometry, but history is usually sufficient. Important alternative diagnoses for regurgitation of undigested food are Zenker’s diverticulum and achalasia. These can be excluded by contrast radiography.

Relaxation training and biofeedback along with psychotherapy are the most effective forms of treatment. Antidepressant medications may be helpful in some patients. Antiemetics are not particularly useful.

**Cyclical Vomiting Syndrome**

Cyclical vomiting syndrome is of unknown etiology, but seems to be a central nervous system disorder akin to migraine headache rather than a primary gastrointestinal disease. Episodes are stereotypical and have little or no prodrome. The time course is characteristic. Pain often is quite severe and leads to use of narcotics (which may cause additional problems). Patients sometimes try marijuana to try to alleviate their symptoms, but habitual marijuana use actually may aggravate episodes of vomiting. Diagnosis is based on identification of the symptoms of cyclical vomiting and their characteristic time course; there is no diagnostic test.

Prophylactic therapy parallels migraine prophylaxis: amitriptyline, cyproheptadine, beta-adrenergic antagonists and calcium channel blockers have been tried. Rapid use of sedation (e.g., lorazepam) and antemetics (e.g., ondansetron) can sometimes abort episodes if instituted promptly. If the episode becomes more severe, admission to the hospital and administration of intravenous fluids, sedation and analgesics may be necessary.

**Vestibular Dysfunction**

Isolated nausea, particularly when there is a positional component, can be due to vestibular (inner ear) dysfunction. More than one-third of adults age 40 and older have some evidence of vestibular dysfunction and it can present with symptoms at any age. Subtle vestibular dysfunction may occur in patients with celiac disease or fibromyalgia. Adults with vestibular dysfunction complaining of nausea rather than dizziness or vertigo may have this diagnosis overlooked. In a recent survey of patients seen at a referral center for chronic nausea and vomiting, 64 of 248 patients (25.8%) had some evidence of vestibular dysfunction and two-thirds of those treated with anti-vertiginous medications improved.

Physical findings also may not be sought. Nystagmus is easy to miss and more subtle tests, such as the Fukuda “stepping test,” are not part of the gastroenterologist’s usual repertoire. In this test patients are asked to march in place with eyes shut and ears occluded, disabling three of the four senses used to orient the patient in space—vision, hearing, and proprioception; only the vestibular sense is functional. If there is a difference in the output from the two labyrinths, the brain may interpret this as movement in one direction and take corrective action to offset the perceived movement, thus causing rotation in the opposite direction. Rotation of more than 90° in 60 seconds is considered to be abnormal.

Treatment with transdermal scopolamine patches or oral antihistamines (e.g., meclizine, diphenhydramine) can help nausea due to vestibular dysfunction. Referral to an otorhinolaryngologist skilled in inner ear evaluations may be necessary.

**REFERENCES**

**Gastroparesis**


**Rumination Syndrome**


**Cyclical Vomiting Syndrome**

Vestibular Dysfunction


