

AMERICAN GASTROENTEROLOGICAL ASSOCIATION

American Gastroenterological Association Medical Position Statement: Diagnosis and Treatment of Gastroparesis

This document presents the official recommendations of the American Gastroenterological Association (AGA) on Diagnosis and Treatment of Gastroparesis. It was approved by the Clinical Practice Committee on May 16, 2004, and by the AGA Governing Board on September 23, 2004.

This medical position statement summarizes the concepts presented in the accompanying technical review, the purpose of which was to synthesize the clinical research literature on how to diagnose and manage patients with gastroparesis.

Gastroparesis (delayed gastric emptying) is a common cause of nausea, vomiting, and other upper gut symptoms in patients referred to gastroenterologists. The true prevalence of gastroparesis is unknown. It is estimated to occur in 20–40% of patients with diabetes mellitus, primarily those with long duration of type 1 diabetes mellitus with other complications. Delayed gastric emptying may also be present in 25%–40% of patients with functional dyspepsia, a condition affecting approximately 20% of the US general population.

The etiology of gastroparesis is multifactorial; the main categories are diabetic, idiopathic, and postsurgical. Diabetic gastroparesis is believed to represent a form of neuropathy involving the vagus nerve. Hyperglycemia itself can also cause antral hypomotility, gastric dysrhythmias, and delayed gastric emptying in some patients. Idiopathic gastroparesis is present in many patients with functional dyspepsia and may in some cases occur after a viral infection.

Diagnosis of Gastroparesis

The diagnosis of gastroparesis is based on the presence of appropriate symptoms/signs, delayed gastric emptying, and the absence of an obstructing structural lesion in the stomach or small intestine.

Symptoms of Gastric Dysmotility

Clinical symptoms that suggest gastroparesis include nausea, vomiting, and postprandial abdominal fullness. In contrast, dyspepsia refers to a symptom complex of chronic or recurrent upper abdominal pain or discomfort that may have associated symptoms of early satiety, nausea, and postprandial fullness/bloating. There is overlap of the symptoms of gastroparesis and functional

dyspepsia. Idiopathic gastroparesis may be one of the causes of functional dyspepsia.

The differential diagnosis of nausea and vomiting is extensive and includes a broad range of pathologic and physiologic conditions affecting the gastrointestinal tract, the central nervous system, and endocrine/metabolic functions. Assessment of the patient begins with a careful history aimed at understanding the patient's symptoms. Vomiting needs to be differentiated from regurgitation, rumination, and even bulimia; the duration, frequency, and severity of symptoms together with a description of their characteristics and the nature of any associated symptoms should be delineated. The physical examination should be directed toward any consequences or complications of vomiting and identification of any signs that may point to the cause of the symptoms.

Evaluation for Gastroparesis

Gastric emptying scintigraphy of a radiolabeled solid meal is the best accepted method to test for delayed gastric emptying. Conventionally, the test is performed for 2 hours after ingestion of a radiolabeled meal. Shorter test durations are inaccurate for determining gastroparesis. For the test meal preparation, the radioisotope needs to be cooked into the solid portion of the meal. Performing the test for a longer duration, up to 4 hours, has been proposed to increase the yield in detecting delayed gastric emptying in symptomatic patients.

Breath testing can be used to measure gastric emptying using the nonradioactive isotope ^{13}C to label octanoate, a medium-chain triglyceride, which can be bound into a solid meal. Studies have also reported labeling the proteinaceous algae (*Spirulina*) with ^{13}C . By measuring ^{13}C in breath samples, gastric emptying can be indirectly determined. The octanoate breath test has been used primarily for clinical research and pharmaceutical studies.

Antroduodenal manometry provides information about coordination of gastric and duodenal motor function in fasting and postprandial periods. Decreased antral contractility and origination of organized fasting migrating motor complexes in the small intestine rather than in the stomach are observed in gastroparesis. With accurate stationary recording, a reduced postprandial distal antral motility index is correlated with impaired gastric emptying of solids. A normal study with a normal transit test result strongly suggests that antral motor dysfunction is not the cause of symptoms. Antroduodenal manometry may differentiate between neuropathic or myopathic motility disorders and may help to diagnose unexpected small bowel obstruction or rumination syndrome.

Treatment of Gastroparesis

Primary treatment of gastroparesis includes dietary manipulation and administration of antiemetic and prokinetic agents.

Dietary recommendations include eating frequent smaller-size meals and replacing solid food with liquids, such as soups. Foods should be low in fat and fiber content.

Antiemetic agents are administered for nausea and vomiting. The principal classes of antiemetic drugs are antidopaminergics, antihistamines, anticholinergics, and more recently serotonin receptor antagonists. The antiemetic action of phenothiazine compounds is primarily due to a central antidopaminergic mechanism in the area postrema of the brain. Commonly used agents include prochlorperazine, trimethobenzamide, and promethazine.

Serotonin (5-HT₃) receptor antagonists are helpful in treating or preventing chemotherapy-induced nausea and vomiting. The sites of action of these compounds include the area postrema as well as peripheral afferent nerves. These agents are frequently used for nausea and vomiting due to other etiologies with little published evidence demonstrating their efficacy. These agents are best used on an as-needed basis.

Current prokinetic agents include metoclopramide and erythromycin, which can be administered orally or intravenously. Domperidone, a dopamine (D₂) receptor antagonist, is not approved in the United States but is available in Canada, Mexico, and Europe. Tegaserod, a partial 5-HT₄ receptor agonist, enhances gastric emptying; however, no clinical trials have confirmed its efficacy in reducing symptoms in patients with gastroparesis.

Patients refractory to the initial treatment of gastroparesis can be difficult to manage. Treatment may involve switching prokinetic and antiemetic agents, com-

bining prokinetic agents, injecting botulinum toxin into the pylorus, using gastrostomy/jejunostomy tubes, and implanting a gastric electric stimulator.

A treatment recently reported to be helpful for refractory gastroparesis is endoscopic injection of botulinum toxin into the pyloric sphincter. Botulinum toxin, which reduces the release of acetylcholine from cholinergic nerves, may relax pyloric sphincter resistance, allowing more food to empty from the stomach. In open-label trials, pyloric botulinum toxin has been reported to produce modest temporary symptom improvements in selected patients. To date, no placebo-controlled trials have been reported for this therapy of gastroparesis. Long-term control is not to be expected from this treatment.

Decompressing gastrostomy and feeding jejunostomy tubes are occasionally used when necessary. A jejunostomy tube may provide a route for administering enteral nutrition, hydration, and medications.

Gastric electric stimulation is an emerging therapy for refractory gastroparesis. There are several ways to stimulate the stomach by varying the electrical parameters. With gastric electrical pacing, the goal is to entrain and pace the gastric slow waves at a higher rate than the patient's normal 3-cpm myoelectric frequency. One unblinded study in a small number of subjects has shown this to accelerate gastric emptying and improve dyspeptic symptoms. The second method is to use high-frequency stimulation at 4 times the basal rate (12 cpm). High-frequency gastric electric stimulation has been evaluated in several studies, showing an improvement in symptoms with only a modest change in gastric emptying. Studies to better evaluate the efficacy of gastric electric stimulation are ongoing. As this type of treatment evolves, further delineation of the overall effectiveness, the type of patient who will likely respond, optimal electrode placement, and stimulus parameters should be explored.

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The Medical Position Statements (MPS), developed under the aegis of the American Gastroenterological Association (AGA) and its Clinical Practice Committee (CPC), were approved by the AGA Governing Board. The data used to formulate these recommendations are derived from the data available at the time of their creation and may be supplemented and updated as new information is assimilated. These recommendations are intended for adult patients, with the intent of suggesting preferred approaches to specific medical issues or problems. They are based upon the interpretation and assimilation of scientifically valid research, de-

rived from a comprehensive review of published literature. Ideally, the intent is to provide evidence based upon prospective, randomized, placebo-controlled trials; however, when this is not possible the use of experts' consensus may occur. The recommendations are intended to apply to healthcare providers of all specialties. It is important to stress that these recommendations should not be construed as a standard of care. The AGA stresses that the final decision regarding the care of the patient should be made by the physician with a focus on all aspects of the patient's current medical situation.