



Medical evaluation for patients with symptomatic esophageal disease



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ARTICLE INFO

Article history:

Received 27 February 2015

Accepted 14 March 2015

Keywords:

Heartburn
Dysphagia
Odynophagia
Globus
Hiccups

ABSTRACT

We describe the evaluation and initial management of key symptoms prevalent in esophageal disease. Heartburn and regurgitation are 2 symptoms of gastroesophageal reflux disease (GERD), the most common outpatient gastrointestinal tract disease. The initial diagnostic and therapeutic step in management of these hallmark GERD symptoms is an empirical trial of acid suppression therapy, as a response to this is sufficient to diagnose GERD. Patients with symptoms refractory to empirical therapy and those who endorse accompanying alarm symptoms such as dysphagia, melena, anemia, or weight loss need an upper endoscopy to rule out more serious etiologies such as esophageal or gastric carcinoma. Dysphagia can be categorized as oropharyngeal or esophageal in nature, based on patient localization of symptoms. Oropharyngeal dysphagia can be caused by dental, neuromuscular, and structural etiologies. Although it is important to clarify whether esophageal dysphagia is solid or mixed and intermittent or progressive, more cases warrant further investigation with upper endoscopy, especially if alarm symptoms are present. Odynophagia, the etiology of which can be elicited by a thorough clinical history, can be caused by caustic ingestion, pill esophagitis, and infectious esophagitis. Although verifying the etiology of globus and hiccups can be challenging, diagnostic tools such as nasal endoscopy, upper endoscopy, and computerized tomography scans of the thorax can rule out the most serious causes. If initial medical therapy of symptomatic esophageal disease fails, a multidisciplinary team of dietitians, surgeons, and gastroenterologists can guide further evaluation and treatment.

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1. Introduction

Symptomatic esophageal disease ranks among the most common causes for medical care in general medicine and gastroenterology practices. For example, 40% of adults in the United States report symptoms of reflux disease, such as heartburn and regurgitation [1]. Although mild gastroesophageal reflux disease (GERD) symptoms rarely signify severe underlying disease, chronic symptoms require evaluation. Dysphagia, which affects 15% of persons aged 65 years or older [2], and odynophagia are other symptoms that suggest an esophageal etiology and warrant investigation. Less specific symptoms of esophageal origin include globus sensation, hiccups, chest pain, and extraesophageal symptoms ranging from wheezing to sore throat.

Diagnosing esophageal disease presents various challenges. One challenge in the evaluation of esophageal disease is that the degree of esophageal injury frequently does not correlate with the patient's impression of symptom severity [3]. Elderly patients with GERD tend to report decreased symptom severity even though

reflux-induced damage is increased [4]. Another challenge is that esophageal symptoms can have nonesophageal etiologies such as pulmonary disease. In this review, we describe the evaluation and initial management of various symptoms prevalent in esophageal disease.

2. Heartburn and regurgitation

GERD is the most common gastrointestinal tract disease recorded at outpatient visits, as up to 20% of Americans experience symptoms on a weekly or on a more frequent basis [5]. GERD encompasses a constellation of symptoms. Heartburn, described as a burning sensation rising up from the stomach or lower chest, and regurgitation, the return of acidic fluid into the mouth, are 2 of the most common symptoms reported in GERD (Table 1). Heartburn and regurgitation are often accompanied by a host of extraesophageal symptoms, including wheezing, chronic cough, laryngitis, sore throat, chest pain, and halitosis. Although establishing a definitive relationship between these extraesophageal signs and GERD is challenging because reflux disease is one of their many etiologies, the likelihood of causation by GERD increases significantly when they are accompanied by esophageal symptoms [3].

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Table 1
Typical and atypical GERD symptoms

Typical	Atypical
Heartburn and regurgitation	Wheezing Chronic cough
Common triggers include; sugars, chocolates, fatty foods, citrus products, tomato products, caffeine, alcohol	Laryngitis Sore throat
Frequently experienced after eating, especially if patients lie down	Dysphagia
Symptoms respond to empirical trial of acid suppression therapy	Chest pain

The pathophysiology of these symptoms is rooted in prolonged exposure to gastric acid, which can be caused by impaired esophageal motility, decreased lower esophageal sphincter tone and pressure, and lack of saliva. Specific physiological risk factors include hiatal hernia, increased hiatal canal compliance, gastric hypersecretion, delayed gastric emptying, and overeating [6].

Clinically, heartburn and regurgitation are most frequently experienced within an hour of eating, especially following the largest meal of the day. Lifestyle factors such as diet and activity can be associated with symptoms. Sugars, chocolates, and fatty foods as well as caffeine beverages and alcohol can trigger these symptoms by lowering lower esophageal sphincter pressure. Other trigger foods include citrus and tomato-based products, which can irritate inflamed esophageal mucosa due to their high acidity and osmolarity [7]. These symptoms are amplified if patients lie down shortly after a meal. Activities that increase intra-abdominal pressure, including straining, bending over, lifting heavy objects, and wearing tight-fitting clothing, may also worsen GERD symptoms [8].

In patients with classic GERD history and symptoms, the initial diagnostic and therapeutic step is an empirical trial of acid suppression therapy. A symptomatic response to 2 weeks of a standard dose or double dose of a proton pump inhibitor (PPI) is sufficiently sensitive and specific to diagnose GERD. A study that compared a 2-week course of high-dose omeprazole with 24-hour pH monitoring found that the omeprazole test was more sensitive than pH monitoring (83% vs 80%, $P < 0.03$) in diagnosing GERD [9]. Another study showed that in patients with reflux esophagitis, symptomatic response to omeprazole 40 mg daily for 14 days had the exactly same sensitivity and specificity ($P = 0.04$) compared to 24-hour pH monitoring in diagnosing GERD [10]. When heartburn and regurgitation occur together, physicians can diagnose GERD with greater than 90% accuracy [11]. As a full range of tests in all patients with potential GERD symptoms would be costly and ineffective, no further diagnostic steps are needed for confirmation of GERD after response to therapy [12].

If heartburn and regurgitation do not respond to empirical therapy, the next steps may include esophagogastroduodenoscopy (EGD), assessment for complications of GERD, and broadening of the differential diagnoses. An upper endoscopy is not recommended as the initial diagnostic tool given the imperfect correlation between GERD symptoms and endoscopic features of the disease [13]. Overall, 50%–70% of patients with GERD do not show signs of esophagitis on EGD [14] and nearly 40% of patients with upper endoscopy findings secondary to reflux disease are asymptomatic [5]. However, current American Gastroenterological Association guidelines recommend further investigation with EGD in patients whose symptoms are not improved with 4–8 weeks of twice-daily PPI therapy [15]. Similarly, patients with GERD who experience the alarm symptoms of dysphagia, melena, iron-deficiency anemia, or weight loss need upper endoscopy owing to its high yield of actionable findings such as esophageal or gastric

cancer or bleeding lesions. In a study analyzing 30,000 patients with dysphagia who underwent EGD, more than 50% had a key clinical finding, most commonly esophageal stricture [16]. Other complications to consider in patients with refractory GERD include reflux esophagitis leading to ulcers at the gastroesophageal junction, Barrett's esophagus, and esophageal adenocarcinoma.

Clinicians should also consider alternative gastrointestinal tract diseases in patients with GERD-like symptoms that are refractory to initial treatment or accompanied by symptoms not typically associated with reflux disease. In patients with hypertension, hyperlipidemia, and other coronary artery diseases risk factors who present with GERD-like symptoms and chest pain, coronary artery diseases must be ruled out first. Symptoms alone are unreliable in differentiating cardiac and gastrointestinal tract etiologies [12]. Additionally, if patients with heartburn and regurgitation also endorse dysphagia or odynophagia, pill esophagitis, infectious esophagitis, and esophageal motility disorders should be considered in the appropriate clinical context.

In patients with atypical symptoms, various tests can help distinguish GERD from other diagnoses. Ambulatory pH monitoring can confirm the reflux of acidic gastric contents and is the optimal way to correlate reflux time with symptomatic episodes. This test can help distinguish acid reflux from nonacid reflux. Barium radiography is an excellent tool to evaluate persistent dysphagia and is the most sensitive test to detect strictures. However, this test should not be used in initial diagnosis of GERD, as the reflux of barium is positive only in 25%–75% of patients with GERD and falsely positive in nearly 20% of control patients [17]. Similarly, although esophageal manometry can be used to evaluate muscle pressure in the lower esophagus and help diagnose motility disorders, it is very limited in diagnosing GERD [8].

There is no clear consensus regarding testing for and treating *Helicobacter pylori* infection in patients with GERD because of the controversial role of *H. pylori* in reflux disease. Although *H. pylori* colonization can affect both the antrum and fundus, leading to gastric atrophy, decreased acid production, and a higher pH state, it can also affect only the antrum and cause increased acid production and a lower pH state [18]. Therefore, whereas some studies show that concurrent *H. pylori* infection might alleviate GERD symptoms by decreasing gastric acid production due to gastric atrophy and producing ammonia that buffers gastric contents refluxing into the esophagus [19], others have demonstrated that *H. pylori* eradication improves the endoscopic appearance of reflux esophagitis in patients with duodenal ulcers [20].

Finally, initial medical management of heartburn and regurgitation is an essential step in alleviating these symptoms. Lifestyle modifications, such as avoidance of trigger foods, smoking and alcohol cessation, and weight reduction, can help, but they have not been rigorously evaluated. A meta-analysis that screened more than 2000 studies showed that there was no published evidence supporting the efficacy of tobacco cessation, alcohol cessation, and dietary modification in alleviating GERD; only weight loss and head of bed elevation were associated with improved esophageal pH and symptomatology [21]. Acid suppression, however, is the mainstay of GERD therapy. Although antacids are inexpensive and have a rapid onset, they have a brief duration of action and are not sufficiently potent to prevent recurrent heartburn. Histamine₂-receptor antagonists (H₂-blockers) are considered first-line therapy for uncomplicated GERD with mild symptoms, as they achieve adequate symptom relief in 60% of patients with mild-moderate reflux disease and heal esophagitis on endoscopy in 48% of patients [12]. However, PPIs are the optimal treatment of moderate-severe GERD, as the likelihood of healing of esophagitis correlates directly with potency of a medication's suppression of gastric acid production [22]. In this meta-analysis of 136 trials involving nearly 36,000 patients, Khan et al showed that the rate

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