

Esophageal Disorders

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ESOPHAGEAL SYMPTOMS

Despite advances in diagnostic tests for gastrointestinal (GI) disorders, a careful clinical history remains central to the evaluation of a patient with upper GI symptoms. Most patients who present with esophageal disorders will have a relatively mild and non-life-threatening illness and in many instances a thoughtfully obtained history will lead to expedient and accurate management. Alternatively, it is also important to identify patients who carry a higher likelihood of serious underlying disease so that they can be investigated and managed expeditiously. As part of the history, physicians should inquire about the patient's dietary habits as well as smoking and alcohol consumption. Some patients may experience symptoms only when they eat excessively, particularly if done so late at night before going to bed. Four major esophageal symptoms, each of which is associated with a functional esophageal disorder, are heartburn, chest pain, dysphagia, and globus.

Heartburn (pyrosis)

This is the most frequently encountered symptom of esophageal origin. Heartburn is characterized by a discomfort or burning sensation behind the sternum that arises from the epigastrium and may radiate toward the neck (1). Heartburn is an intermittent symptom, most commonly experienced within 60 min of eating, during exercise, and while lying recumbent. The discomfort is relieved with drinking water or antacid but can occur frequently and interfere with normal activities. Given the high background prevalence of gastroesophageal reflux disease (GERD), there is a very high predictive value of GERD as the diagnosis when heartburn is the dominant or exclusive symptom. The association is so strong that in such instances, empirical therapy for GERD has become an accepted management strategy (2). However, the term "heartburn" is often misused and/or referred to with other terms such as "indigestion" or "repeating" making it incumbent on the clinician to clarify the intended meaning.

Chest pain

This is a surprisingly common esophageal symptom with characteristics strikingly similar to cardiac pain making this discrimination very difficult in some instances. Given the potential for

morbidity and mortality associated with cardiac pain, it is always appropriate to consider carefully that option before the esophageal option (3). Esophageal pain is usually experienced as a pressure type sensation in the mid chest, radiating to the mid back, arms, or jaws. The precise etiology of esophageal chest pain is unknown but it is clearly overly simplistic to view this as indicative of esophageal spasm or a manifestation of a contractile abnormality. Rarely do such individuals objectively show spasm and no correlation could be established between minor aberrations of esophageal contractility and pain events. More likely, the similarities to cardiac pain stem from the fact that the two organs share a nerve plexus and the nerve endings in the esophageal wall have poor discriminative ability among stimuli (4). Esophageal distention or even chemostimulation (eg, with acid) will often be perceived as chest pain (5,6). In fact, GERD is a more common cause of chest pain than esophageal dysmotility (3).

Dysphagia

This symptom is reported to some degree by more than 30% of individuals with GERD. It can be caused by peptic stricture, a Schatzki ring, peristaltic dysfunction, or simply by the mucosal inflammation associated with esophagitis. Dysphagia also occurs in the absence of any identifiable abnormality in which case it is likely the result of abnormal sensitivity to bolus movement during peristalsis. Esophageal dysphagia is often described as a feeling of food "sticking" on the way down or even lodging in the chest for a prolonged period. Important distinctions are between uniquely solid food dysphagia as opposed to liquid and solid, episodic vs. constant dysphagia, and progressive vs. static dysphagia. If the dysphagia is for liquids as well as solid food, it suggests a motor abnormality of the esophagus such as achalasia (7). Conversely, uniquely solid food dysphagia is suggestive of a structural abnormality such as a stricture, Schatzki ring, or tumor; this should always be investigated. If the dysphagia is only episodic, it suggests only a slight compromise of the esophageal lumen. Afflicted individuals will often report an all-or-none phenomenon; either they perceive no impediment in food transit or they are completely obstructed to the point that even liquids back up. Progressive solid food dysphagia is an ominous finding, especially in association with weight loss, this being the classic

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presentation of esophageal cancer. Of note, a patient's perception of the locus of food hang-up in the esophagus is grossly imprecise. Approximately 30% of distal esophageal obstructions are perceived as cervical dysphagia, often prompting an evaluation for an oropharyngeal swallowing disorder. In such instances, the esophagus can usually be identified as the culprit because of the absence of concomitant symptoms generally associated with oropharyngeal dysphagia such as aspiration, nasopharyngeal regurgitation, cough, drooling, or obvious neuromuscular compromise.

Globus sensation

This symptom, alternatively labeled "globus hystericus," is the perception of a lump or fullness in the throat that is felt irrespective of swallowing (8). In fact, although such patients are frequently referred for an evaluation of dysphagia, globus sensation is often relieved by the act of swallowing. As implied by its other name (globus hystericus), globus sensation often occurs in the setting of anxiety or obsessive-compulsive disorders (9). Clinical experience teaches that it is also attributable to GERD in a substantial fraction of patients, although that experience is widely not reflected in the scientific literature (10).

RECURRENT HEARTBURN

Case history

A 34-year-old woman is referred to a gastroenterologist by her primary care physician (PCP) because of "therapy-resistant" reflux symptoms. She has experienced for about 5 years with daily episodes of heartburn that partially responded to treatment with

a proton pump inhibitor (PPI), prescribed by her PCP. An upper GI endoscopy, carried out 3 years before, had revealed no macroscopic signs of esophagitis and no hiatus hernia.

When the history is taken by the gastroenterologist it becomes clear that the episodes of burning retrosternal pain (Box 1, **Figure 1**) experienced by the patient last from 10 min to some hours, bear no clear temporal relationship to meals, and are not posture dependent. She does not have regurgitation, or other types of chest pain. There is no dysphagia, odynophagia or other alarm features (Box 2). The use of omeprazole 40 mg daily (Box 3) seems to ameliorate the symptoms somewhat, but the result is described as unsatisfactory, even at a 40 mg twice daily dose (Box 4). The patient requests surgical treatment.

The gastroenterologist decides to repeat the upper GI endoscopy (Box 6), after a period of PPI avoidance of 2 weeks. At endoscopy no macroscopic abnormalities are seen (Box 7). No biopsies are taken; 24-h esophageal pH and impedance monitoring is then undertaken (Box 9). This test is carried out after the patient discontinues omeprazole for 7 days. Esophageal acid exposure (Box 10) is found to be in the normal range (time with pH < 4: upright 3.2%, supine 0%, total 2.3%). During the 24-h recording six symptom episodes are indicated by the patient. None of these is temporally associated with the onset of a reflux episode, neither acid, nor nonacid, leading to a symptom association probability (SAP) of 0% (Box 12). Before placement of the pH/impedance catheter a manometric study was carried out, to measure the distance of the lower esophageal sphincter (LES) to the nose (Box 13). During this test, normal esophageal peristalsis and normal LES resting pressure and relaxation were observed (Box 14). A diagnosis of "functional heartburn" is made (Box 16).

Figure 1. Legend

1. It should be noted that heartburn is described quite differently between different cultures and languages. Most descriptions of this symptom include discomfort or burning sensation behind the sternum that may radiate toward the neck. Heartburn is an intermittent symptom, most commonly experienced in the early postprandial periods, during exercise, and while lying recumbent. The discomfort is relieved with drinking water or antacid. The symptom can interfere with normal activities. Epigastric pain or discomfort that does not rise to the retrosternal region should not be called heartburn (1).
2. History and physical examination should look for alarm features suggestive of cancer. This would include evidence of persistent dysphagia, gastrointestinal (GI) bleeding, unintentional weight loss, lymphadenopathy, an epigastric mass, and evidence of anemia.
3. There is no convention for the dosage, duration, or specific drug to be used in a proton pump inhibitor (PPI) trial for heartburn, making it reasonable to treat with a standard once daily dose for 2 weeks (11).
4. If insufficient response is achieved with standard dose PPI, this should be increased to twice daily for at least 2 weeks before considering it a treatment failure.
5. Once a satisfactory response has been achieved, the PPI dosage should be reduced to the lowest amount that is still associated with a satisfactory treatment effect.
6. Biopsies should be obtained at the time of endoscopy if there are any visual abnormalities suggestive of metaplasia or eosinophilic esophagitis or if dysphagia is an additional presenting symptom. If eosinophilic esophagitis is suspected, five mucosal biopsies should be obtained (12,13). Although histological criteria for esophagitis may also be detected (basal cell hyperplasia, rete pegs extending toward surface) these findings lack specificity for gastroesophageal reflux disease (GERD) (14).
7. Relevant abnormalities at upper GI endoscopy that would exclude a diagnosis of functional heartburn are reflux esophagitis and eosinophilic esophagitis.
8. The Los Angeles Classification of esophagitis is based on the occurrence and extent of visible mucosal breaks in the distal esophageal mucosa. Los Angeles A is the mildest with only short breaks (<5 mm) confined to folds of the epithelium, whereas Los Angeles D is the most severe with nearly circumferential breaks (15). Eosinophilic esophagitis is often attributable to allergy to ingested (food) or inhaled allergens and defined by finding ≥ 15 eosinophils per high-power field in esophageal mucosal biopsies (16).
9. pH or impedance-pH monitoring is performed after withholding PPI therapy for 7 days to obtain a meaningful assessment of esophageal acid exposure and to provide the greatest chance of finding a positive association between heartburn episodes and reflux events (17,18).
10. The cutoff for abnormal esophageal acid exposure is typically <5%, although this value varies slightly among centers (19).
11. The Rome III definition of nonerosive reflux disease is either abnormal acid exposure or a positive symptom-reflux association in the absence of macroscopic endoscopic signs of reflux esophagitis (20,21).
12. The symptom association probability (SAP) is a statistical test to determine if the co-occurrence of symptoms and

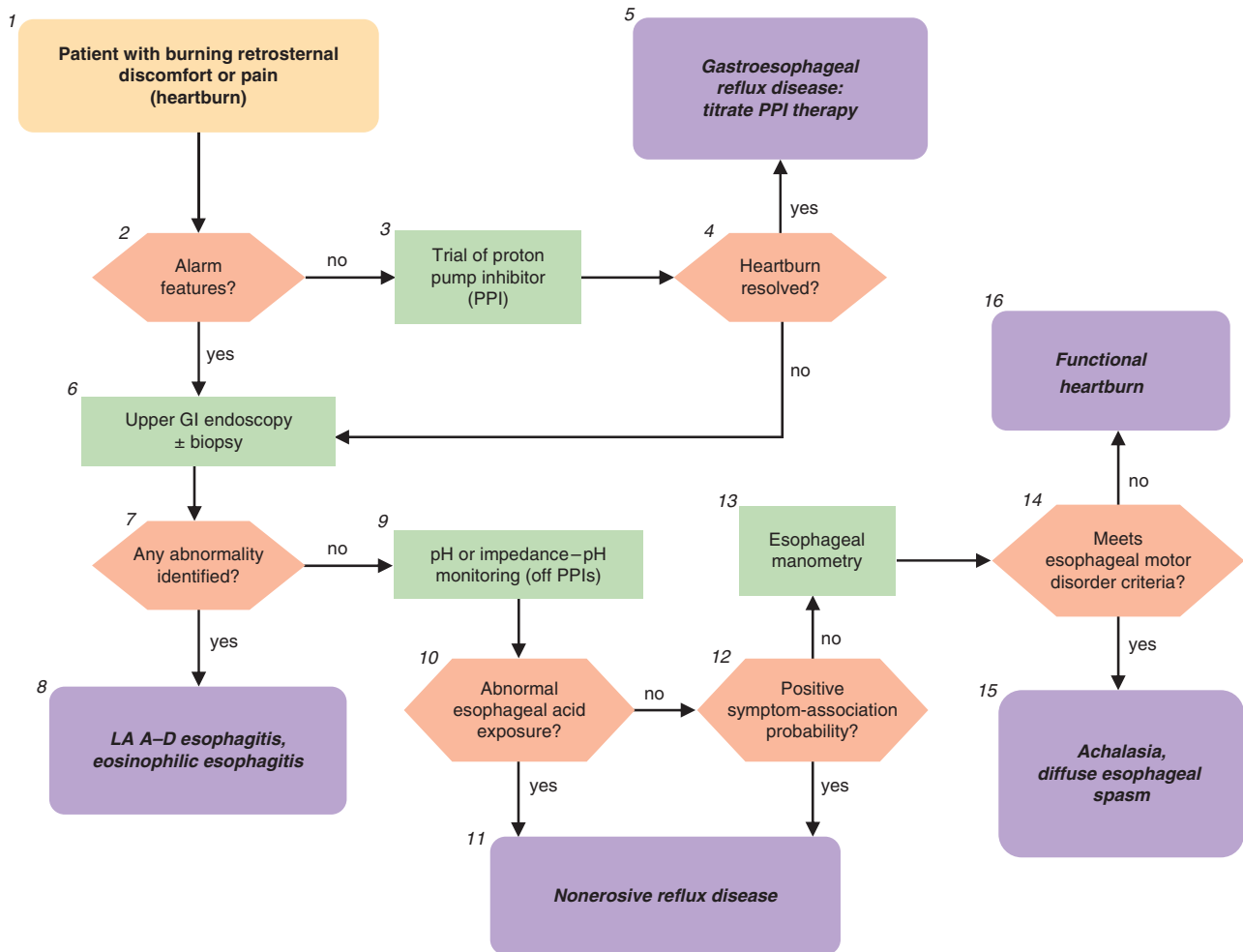


Figure 1. Recurrent heartburn.

reflux events within 2-min periods is happening by chance or because the two are likely related. An SAP >95% equates to a $P < 0.05$ that they are related (22). Although some centers use the symptom index (SI) to gauge symptom–reflux association, the SI is not a validated method and has no statistical basis (23).

13. It would be preferable to obtain a high-resolution manometry (esophageal pressure topography) study if available because of a greater sensitivity in the diagnosis of achalasia (24).
14. For the purposes of establishing a diagnosis of functional heartburn the only two exclusionary diagnoses are achalasia and diffuse esophageal spasm (DES). Other, less severe, peristaltic

abnormalities are still consistent with a diagnosis of functional heartburn.

15. Achalasia is defined by absent peristalsis and impaired deglutitive lower esophageal sphincter (LES) relaxation; DES by $\geq 20\%$ of test swallows showing simultaneous or spastic contractions in the distal esophagus (25).
16. Rome III diagnostic criteria for functional heartburn are: (i) burning retrosternal discomfort or pain, and (ii) absence of evidence that GERD is the cause of the symptom, and (iii) absence of histopathology-based esophageal motility disorders, and (iv) criteria fulfilled for the past 3 months with symptom onset at least 6 months before diagnosis (26).

RECURRENT CHEST PAIN OF SUSPECTED ESOPHAGEAL ORIGIN

Case history

A 72-year-old retired woman consults a gastroenterologist upon referral by her cardiologist. In the past 2 years she has experienced numerous episodes of severe retrosternal pain radiating to the jaw and left arm; at times there is also radiation of the pain to the midline of the back (Box 1, **Figure 2**). Before the onset of the chest pain the patient has rarely had health problems. Her appendix was removed at age 22 years and she underwent hysterectomy at age 52 years because of fibroid tumors. She has no relevant family history of GI disease.

The chest pain occurs at an average rate of two episodes per week, but there are large variations in its rate of occurrence; it is described as a heavy sensation. The onset of the pain is not clearly related to meal intake and there is no dysphagia, either during chest pain episodes, or in between. There is no typical heartburn, regurgitation, or odynophagia. The onset of the pain is not clearly related to exercise or body posture and physical examination of the lungs and chest wall is normal (Box 2). On

three occasions she has been admitted to the coronary care unit of a large general hospital. In all cases no evidence of myocardial ischemia or infarction was found. Chest X-ray had been normal. Coronary angiography had revealed normal coronary arteries, and exercise testing was negative (Boxes 5 and 6). Before referral to the gastroenterologist a therapeutic trial of omeprazole 40 mg twice daily had been given (Box 8). After 6 weeks of this treatment the patient reported that the chest pain had continued to occur (Box 9).

The gastroenterologist performs an upper GI endoscopy (Box 11), during which a normal squamocolumnar junction is seen, positioned 1 cm proximal to the diaphragmatic impression (Box 12). At this stage the gastroenterologist decides to arrange some additional tests. Esophageal manometry (Box 18) followed by 24-h esophageal pH monitoring off a PPI (Box 14) shows normal peristalsis, normal LES function (Box 19), and physiological acid exposure (time with pH < 4 3.2%) (Box 15). During the 24-study no chest pain episode occurred, and therefore a positive SAP could not be established (Box 17). A diagnosis of “functional chest pain of presumed esophageal origin” is made (Box 21).

Figure 2. Legend

1. Esophageal chest pain is typically described as retrosternal with radiation to the midline of the back. It can be a heavy sensation and closely mimic cardiac pain. Radiation to the jaws and to the left arm may also occur.
2. History and physical examination should seek evidence of musculoskeletal, pulmonary, or neurological etiologies of chest pain.
3. If an alternative diagnosis that is typically associated with chest pain is established this would conclude the evaluation for functional esophageal chest pain.
4. It is important to consider the adequately risk of potentially fatal cardiac conditions before pursuing an esophageal evaluation. This need not always mean cardiological referral but if doubt exists, it is best to err on the side of caution.
5. Relevant cardiological evaluation may include exercise stress testing, Holter monitoring and coronary angiography depending on symptom features and risk factors (27).
6. If a cardiological diagnosis that is typically associated with chest pain is established, this would conclude the evaluation for functional esophageal chest pain.
7. Although other cardiological diagnoses could potentially explain chest pain, the two with most immediate consequence are coronary artery disease and pericarditis.
8. For the indication of suspected reflux-related chest pain, a 4-week trial of twice daily proton pump inhibitor (PPI) is indicated (28).
9. If PPI therapy is associated with a satisfactory improvement or resolution of chest pain, this would conclude the evaluation for functional esophageal chest pain.
10. Once a satisfactory response has been achieved, the PPI dosage should be reduced to the least amount that is still associated with a satisfactory treatment effect.
11. Biopsies should be obtained at the time of endoscopy if there are any visual abnormalities suggestive of metaplasia, ulceration, infection, eosinophilic esophagitis, or if dysphagia was an additional presenting symptom.
12. Endoscopic findings diagnostic of a painful esophageal condition would conclude the evaluation for functional esophageal chest pain.
13. The most common cause of esophageal chest pain is gastroesophageal reflux disease (3) but other causes of esophageal ulceration such as caustic, infectious, or pill-induced esophagitis may be encountered. The Los Angeles Classification of esophagitis is based on the occurrence and extent of visible mucosal breaks in the distal esophageal mucosa. Los Angeles A is the mildest with only short breaks (<5 mm) confined to folds of the epithelium whereas Los Angeles D is the most severe with nearly circumferential breaks (15).
14. pH or impedance-pH monitoring is performed after withholding PPI therapy for 7 days to obtain a meaningful assessment of esophageal acid exposure and to provide the greatest chance of finding a positive association between heartburn episodes and reflux events.
15. The cutoff for abnormal esophageal acid exposure is typically <5%, although this value varies slightly among centers (19).
16. Abnormal esophageal acid exposure or a positive symptom association probability is diagnostic of nonerosive reflux disease by Rome III criteria. This would then establish a diagnosis of a reflux chest pain syndrome (and exclude functional chest pain).
17. The symptom association probability (SAP) is a statistical test to determine if the co-occurrence of symptoms and reflux events within 2-min periods is happening by chance or because the two are likely related (22). An SAP > 95% equates to a $P < 0.05$ that they are related. Although some centers use the symptom index (SI) to gauge symptom-reflux association, the SI is not a validated method and has no statistical basis (23).
18. If reflux cannot be identified as the cause of the chest pain, esophageal manometry is indicated. It is preferable to obtain a high-resolution manometry (esophageal pressure topography) study if available because of a greater sensitivity in the diagnosis of achalasia (24).
19. For the purposes of establishing a diagnosis of functional chest pain the only two exclusionary diagnoses are achalasia and DES. According to the Rome III criteria, other, less severe peristaltic abnormalities are still consistent with a diagnosis of functional chest pain.

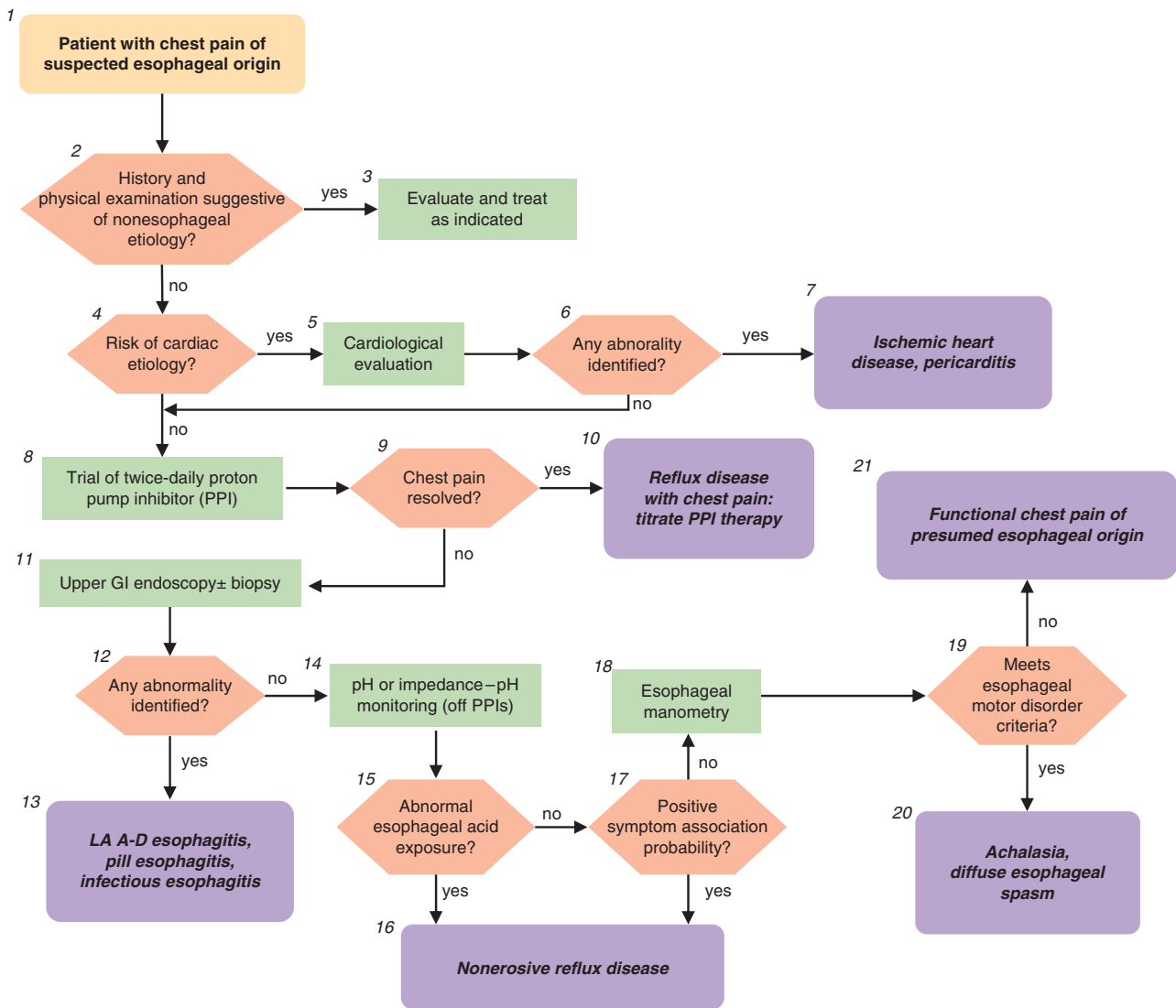


Figure 2. Recurrent chest pain of suspected esophageal origin.

- 20. Achalasia is defined by absent peristalsis and impaired deglutitive lower esophageal sphincter (LES) relaxation; DES by $\geq 20\%$ of test swallows showing simultaneous or spastic contractions in the distal esophagus (25).
- 21. Rome III diagnostic criteria for functional chest pain of presumed esophageal origin are: (i) midline chest pain that is not

of burning quality, and (ii) absence of evidence that GERD is the cause of the symptom, and (iii) absence of histopathology-based esophageal motility disorders, and (iv) criteria fulfilled for the last 3 months with symptom onset at least 6 months before diagnosis (26–29).

DYSPHAGIA

Case history

A 44-year man is referred to a gastroenterologist by his PCP because of dysphagia for solid food and liquids (Box 1, **Figure 3**). The symptoms had begun about a year ago. They were intermittent and mild initially, but for the past few weeks bolus hold-up at the mid-thoracic level is perceived with almost all meals. He has no chest pain or odynophagia. There are no features of oropharyngeal dysphagia, and physical examination for nonesophageal causes of dysphagia is negative (Box 2). His weight has remained constant at 92 kg. The patient experiences heartburn once a week on average. A brief therapeutic trial with an H₂ receptor antagonist, initiated by his PCP, eliminated his heartburn but had not resulted in improvement of the dysphagia. His medical history is otherwise unremarkable, and he does not take any drugs. There is no family history of GI disease.

Upper GI endoscopy is performed (Box 4) and excludes macroscopic esophagitis or any organic lesion causing esophageal

obstruction (Box 5), and microscopic examination of biopsies taken from the distal as well as the proximal esophagus shows that there is no evidence of eosinophilic esophagitis or other histological abnormality (Box 8). A barium swallow with marshmallow bolus challenge (Box 6) reveals no structural lesion and no impairment of transit through the esophagus (Box 7). Because of the presence of the mild reflux symptoms (Box 9), a trial of PPI, omeprazole 40 mg twice daily, is initiated (Box 10). This does not result in improvement of the patient's dysphagia (Box 11).

The gastroenterologist then arranges a manometric study of the esophagus (Box 13). This shows normal esophageal peristalsis, normal LES pressure and normal LES relaxation on swallowing (Box 14). Concomitant impedance monitoring confirms complete bolus transit with nine of ten swallows, findings within the range of normal. The patient again denies any cervical symptoms (Box 16). A diagnosis of "functional dysphagia" is made (Box 20).

Figure 3. Legend

- Dysphagia should be characterized as occurring with only solid food, suggesting a structural abnormality, or both solids and liquids, suggesting a motility abnormality, and whether localized as proximal or distal. The associated symptom of odynophagia is also important as this is highly suggestive of esophageal ulceration.
- History and physical examination should explore for nonesophageal causes of dysphagia: neck masses, goiter, or neurological findings supportive of oropharyngeal dysphagia.
- Detection of a nonesophageal condition associated with dysphagia would conclude the evaluation for functional dysphagia.
- Biopsies should be obtained at the time of endoscopy regardless of visual abnormalities to evaluate for eosinophilic esophagitis; five mucosal biopsies should be obtained (12,13). Although histological criteria for esophagitis may also be detected (basal cell hyperplasia, rete pegs extending toward surface) these findings lack specificity for GERD (14).
- Detection of a structural lesion would conclude the evaluation for functional dysphagia.
- Barium swallow with solid bolus challenge (barium tablet or barium impregnated marshmallow) is useful in detecting obstructive lesions such as a subtle distal esophageal ring. In this application, this exam has superior sensitivity to upper gastrointestinal (GI) endoscopy (30).
- Detection of a structural lesion would conclude the evaluation for functional dysphagia.
- Dysphagia is a common symptom of a multitude of inflammatory and structural esophageal disorders, the detection of which would exclude functional dysphagia (31–33).
- Concomitant symptoms of heartburn or regurgitation suggest that GERD may be the cause of dysphagia.
- When used as a therapeutic trial in dysphagia proton pump inhibitors (PPIs) are usually dosed in a twice daily regimen for at least 2 weeks (34).
- Resolution of dysphagia with PPI therapy would imply that the dysphagia was a manifestation of reflux disease and exclude a diagnosis of functional dysphagia.
- As with all patients, once a satisfactory treatment response has been established, the dose of PPI should then be reduced to the minimal dose still associated with a satisfactory treatment response.
- If no structural abnormality is found, manometry is indicated. It may be preferable to obtain a high-resolution manometry (esophageal pressure topography) study if available because of a greater sensitivity in the diagnosis of achalasia and other motility disorders (35,36). If available, concurrent impedance-based assessment of esophageal transit may provide additional information regarding the completeness of bolus transit in the esophagus.
- The Rome III criteria stipulate that histopathology-based disorders, DES and achalasia, preclude the diagnosis of functional dysphagia. Achalasia is defined by absent peristalsis and impaired deglutitive lower esophageal sphincter (LES) relaxation; DES by $\geq 20\%$ of test swallows showing simultaneous or spastic contractions in the distal esophagus (25).
- We propose that in addition to DES and achalasia, absent or severely disrupted peristalsis should also lead to exclusion of the diagnosis of functional dysphagia.
- High (cervical, oropharyngeal) dysphagia is reported by about 30% of individuals with distal disease. However, once distal disease has been adequately excluded the suggestion of any evidence for cervical dysphagia should prompt evaluation for proximal esophageal dysfunction.
- A videofluoroscopic swallowing study allows for the detailed examination of the swallow mechanism including the opening characteristics of the upper esophageal sphincter, which is often a blind spot at endoscopy or barium swallow examination because of lack of adequate distention (37). Note that if the initial barium study (Box 6) included videofluoroscopy as is performed in some institutions, this step can be omitted.
- The finding of proximal esophageal dysfunction would end the evaluation for functional dysphagia.
- A cricopharyngeal bar is caused by fibrous degeneration at the upper esophageal sphincter with resultant restricted opening and can be accepted as the cause of dysphagia once other pathology is excluded (38). This can also lead to the formation of Zenker's

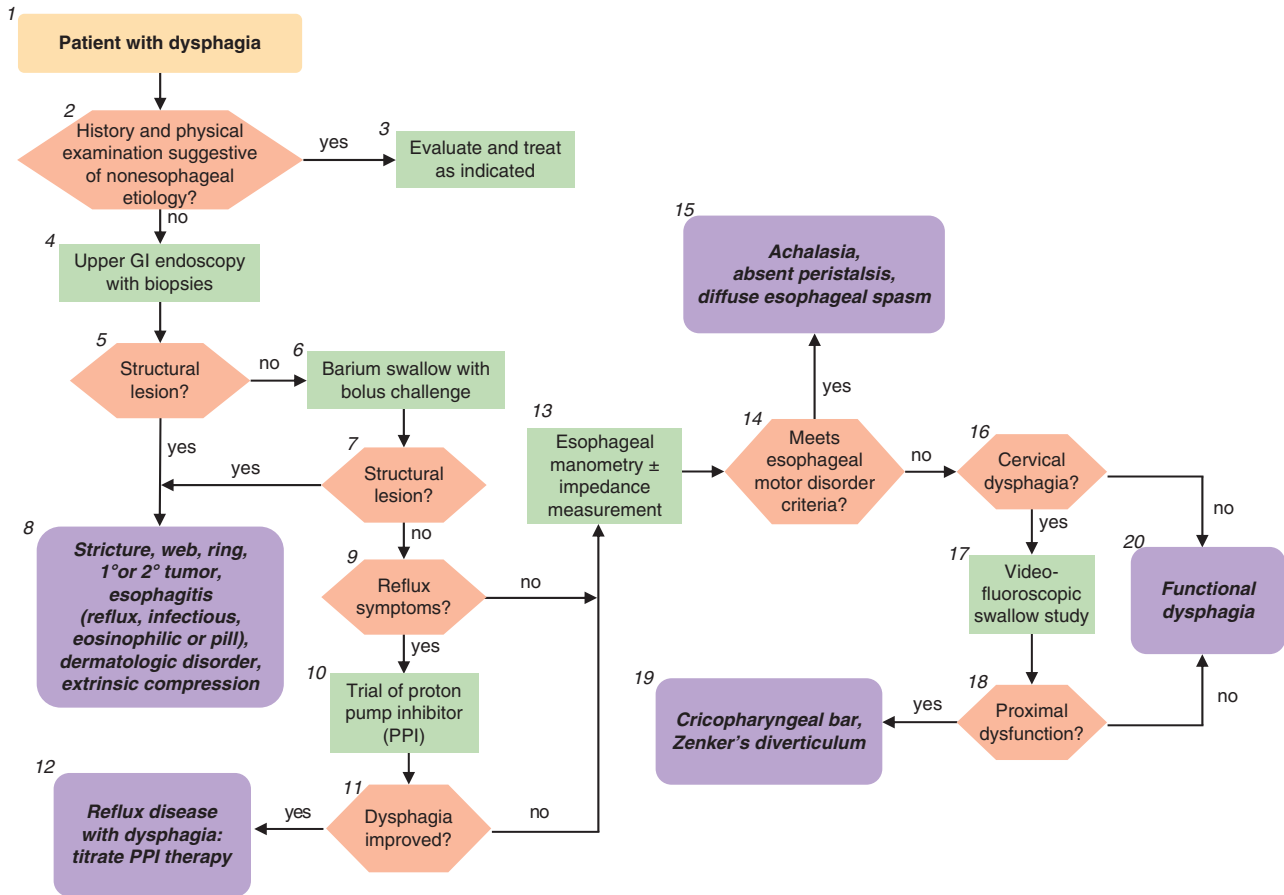


Figure 3. Dysphagia.

diverticulum, the mouth of which is located just proximal to the cricopharynx.

- 20. Rome III diagnostic criteria for functional dysphagia are: (1) sense of solid and/or liquid foods sticking, lodging, or passing abnormally through the esophagus; and (2) absence of

evidence that gastroesophageal reflux is the cause of the symptom; and (3) absence of histopathology-based esophageal motility disorders; and (4) criteria fulfilled for the last 3 months with symptom onset at least 6 months before diagnosis (26).

SENSATION OF A LUMP IN THE THROAT

Case history

A 30-year old woman consults her PCP because of a feeling of a lump in the throat (Box 1, **Figure 4**). She has had this symptom intermittently for about 1 year, but the intensity has increased during the past few weeks. There was no obvious precipitating event. Her swallowing is normal, and not painful. There is no dysphagia (Box 4) or odynophagia, and no hoarseness or other change in her voice (Box 6). Eating improves the symptom. Yet, the patient has the impression that something is stuck in her throat. She rarely experiences heartburn, and has had no weight loss. The patient is otherwise healthy. She is a nonsmoker and takes alcohol in moderation (Box 6). Apart from an oral contraceptive she does not use any drugs.

The PCP examines the patient's neck, throat, and oral cavity, but finds nothing abnormal (Box 2). There are no palpable masses, no enlarged lymph nodes, and the thyroid is not enlarged. The PCP has the impression that the patient is experiencing some anxiety

and explores whether the lump sensation is temporally related to stress, but the patient denies this association. The PCP, convinced that he is dealing with a functional disorder, explains to the patient that nothing is seriously wrong and attempts to reassure her.

However, 2 weeks later the patient consults her PCP again because of a continuing lump sensation. She is then referred to an ear–nose–throat physician because, in reviewing her history, she did have substantial exposure to second-hand smoking and was quite concerned about this (Box 7). The latter does not find any abnormalities at examination, which includes nasolaryngoscopy (Box 8). Because of an association between globus and the endoscopic finding of ectopic gastric mucosa in the proximal esophagus and esophageal cancer, the patient is referred for endoscopy (Box 10). No abnormalities were found (Box 11). Because of the presence of some heartburn, 6-week trial of PPI therapy is initiated (Box 14). This does not lead to improvement of the lump sensation (Box 15). The patient is again reassured of the benign nature of her condition and a diagnosis of “globus” is made (Box 17).

Figure 4. Legend

1. Globus sensation (Greek for “ball”) is the feeling of a lump or “ball” in the throat that is distinct from dysphagia in that it is experienced without swallowing and is even improved by swallowing; it is non-painful.
2. History and physical examination, especially of the neck, throat and oral cavity, may reveal evidence of trauma or an inflammatory or other condition potentially explaining symptoms.
3. Discovery of an alternative diagnosis sufficient to explain the symptom would preclude a diagnosis of globus.
4. Globus sensation can occur in association with dysphagia in which case diagnostic efforts shift to the evaluation of dysphagia.
5. Conditions associated with dysphagia would preclude a diagnosis of functional globus; see algorithm for dysphagia.

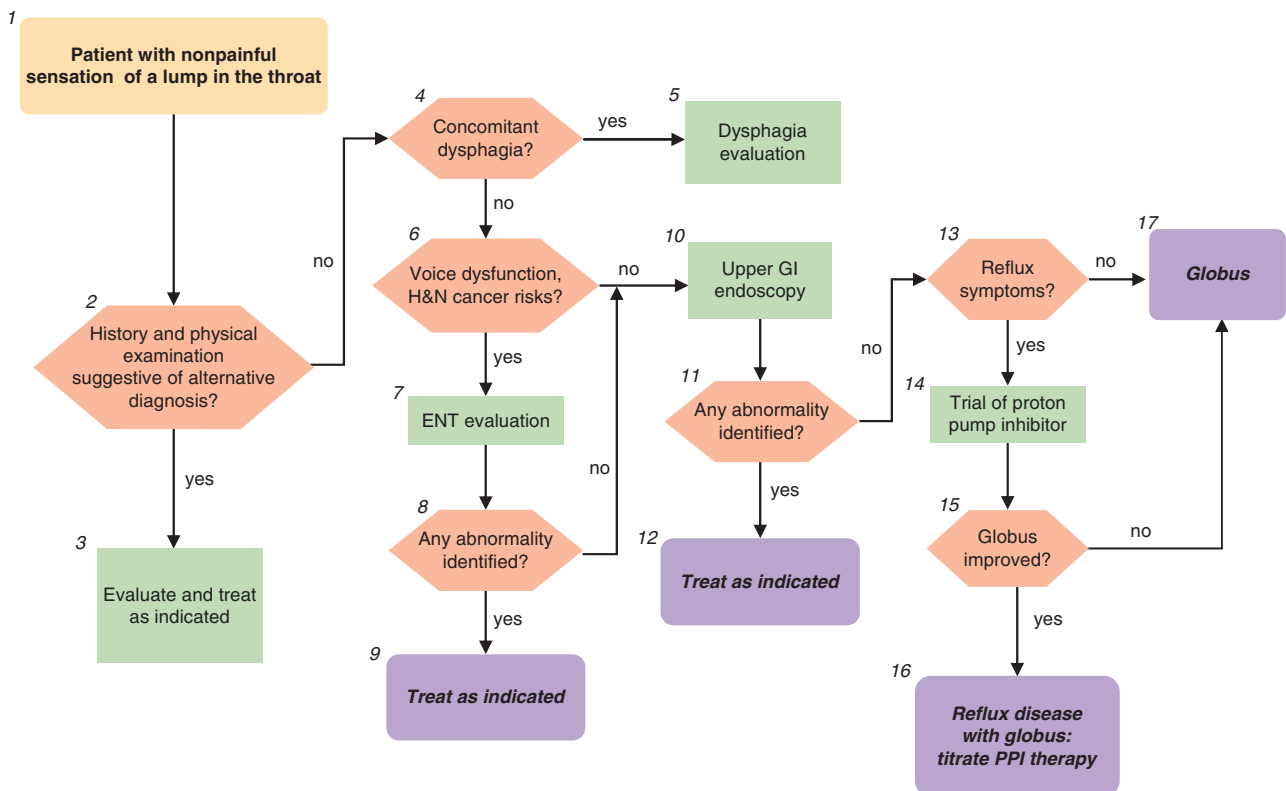


Figure 4. Sensation of a lump in the throat.

6. Globus sensation can occur in association with other symptoms of laryngeal dysfunction such as hoarseness, which should prompt ear–nose–throat (ENT) evaluation. Similarly if a patient is at risk for laryngeal cancer because of smoking he or she should have an ENT evaluation (39).
7. ENT evaluation would likely include nasolaryngoscopy and other imaging as indicated (40,41).
8. Identification of an abnormality on ENT evaluation would preclude a diagnosis of functional globus.
9. Other ENT condition would prompt treatment as indicated.
10. Endoscopy is performed to evaluate for ectopic gastric mucosa in the cervical esophagus or esophageal cancer, which can be associated with globus sensation.
11. An abnormality identified at endoscopy would conclude the evaluation for functional globus. The finding of ectopic gastric mucosa in the proximal esophagus should prompt consideration of ablation therapy.
12. Other conditions should be treated as indicated.
13. Reflux disease can be a cause of globus and most gastroesophageal reflux disease (GERD) patients will not have macroscopic endoscopic findings. Hence patients with symptoms such as heartburn or regurgitation should undergo a therapeutic trial of antireflux therapy.
14. When used as a therapeutic trial in globus proton pump inhibitors (PPIs) are usually given in a twice daily regimen (42).
15. Resolution of globus with PPI therapy would imply that the globus was a manifestation of reflux disease and exclude a diagnosis of functional globus.
16. Once a satisfactory treatment response has been established, the dose of PPI should then be reduced to the minimal dose still associated with a satisfactory treatment response.
17. Rome III diagnostic criteria for globus are: (i) persistent or intermittent, nonpainful sensation of a lump or foreign body in the throat, and (ii) occurrence of the sensation between meals, and (iii) absence of dysphagia or odynophagia, and (iv) absence of evidence that gastroesophageal reflux is the cause of the symptom, and (v) absence of histopathology-based esophageal motility disorders, and (vi) criteria fulfilled for the last 3 months with symptom onset at least 6 months before diagnosis (26).

CONFLICT OF INTEREST

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