

Gastroesophageal Acid Reflux: How to Effectively Recognize and Treat This Wide Spread Disease

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Introduction

Gastroesophageal acid reflux disease (GERD) is a large problem in western countries, with a prevalence anywhere from 10 to 20%¹. The disorder is currently defined as a condition that produces troublesome symptoms and/or complications due to reflux of stomach contents². People who have the disease experience symptoms including throat pain, globus sensation, hoarseness, and excessive throat clearing³. As a result, acid reflux significantly decreases the quality of life, and symptomatic gastroesophageal acid reflux is actually the strongest known risk factor for adenocarcinoma⁴. Due to the high prevalence of this disease, primary care physicians are likely the first clinicians to whom patients will report symptoms.

Learning Goals: Upon completion of this activity, participants should be able to:

- 1) Recognize possible risk factors and symptoms for gastroesophageal acid reflux disease
- 2) Suggest possible lifestyle modifications and advise patients in achieving such changes
- 3) Suggest a relevant pharmacological approach if necessary

Case Presentation

A 42 year old man visits his primary care physician. He complains of heartburn that frequently occurs in the middle of the night. His discomfort often causes him to awaken in the night, resulting in a restless night sleep. He has been out of work for 7 months after being fired for poor production levels. He has been working odd jobs in order to support his wife and two children. He is not currently taking any prescription medications but does take a daily

multivitamin and is on a preventative aspirin regimen. He is not overweight and does not smoke. When asked about his drinking habits, he admits that he has recently mildly increased his alcohol consumption.

Symptoms and Risk Factors

The defining symptoms of GERD are heartburn and regurgitation. In most patients, these symptoms are caused by the reflux of acidic gastric content. However, in some patients non-acid reflux may need to be considered⁵. Occasional GERD symptoms are often experienced by the general population, but range in frequency and severity.

In population-based studies, most patients consider symptoms to be bothersome when they occur in mild forms 2 or more days a week or more severely at least once a week⁵. Patient self-evaluations can be useful to the physician in assessing symptom severity. Such questionnaires include the Reflux Disease Questionnaire, the Gastrointestinal Symptom Rating Scale, and the Quality of Life in Reflux and Dyspepsia questionnaire⁵. Patients who reported a history of GERD-like symptoms usually had an abnormal 24 hour esophageal pH monitoring using a pH sensor and probe placed in the esophagus⁶. However, 51% of patients with severe symptoms did not have true pathological GERD⁶.

Approximately 25% of patients report having heartburn during sleep which caused sleep disruption. Such disruption can cause daytime tiredness which negatively affects functioning and productivity⁵. Dysphagia is also reported in 37% of patients⁵.

In some patients respiratory problems, such as reflux cough, laryngitis, and asthma, have been reported; however, GERD is more likely to aggravate these problems rather than to be the solitary cause⁵. Dental erosion may also be more pronounced in patients presenting with GERD⁵. However some symptoms including persistent vomiting, evidence of gastrointestinal tract blood

loss, abdominal mass or involuntary weight loss, and dysphagia which persist after treatment are atypical symptoms which warrant further examination for malignancy⁵.

Risk factors for GERD include the use of NSAIDs or aspirin, obesity, stressful psychosocial factors including job strain, and increased alcohol consumption⁷⁻¹⁰.

Quiz

1) Which of the following symptoms warrants further investigation for malignancy?

- a. Persistent vomiting
- b. Reflux cough
- c. Heartburn

Answer: a

Case Diagnosis

Based on all the symptoms and risk factors, this patient is diagnosed with GERD. He displays the classic symptom of heartburn, has the night time discomfort that is often characteristic of GERD, and has some of the risk factors associated with GERD: increased alcohol consumption and an aspirin regimen. The first step in treatment is lifestyle modification.

Life Style Modifications

When dealing with the control of GERD, lifestyle modifications are commonly implemented either as the first treatment option or in conjunction with pharmacological treatments. The effects of diet, obesity, physical activity, tobacco smoking, and head of bed elevation on GERD prevalence and its symptoms are discussed below.

Certain eating habits and the consumption of specific foods cause, or aggravate the symptoms of GERD¹¹. A high caloric diet comprised of high amounts of cholesterol, saturated fatty acids, and calories from fat increases esophageal acid exposure and the chance of reflux events¹¹. Alcohol has been suggested as an independent risk factor for GERD because its consumption causes esophageal motility abnormalities such as lower esophageal sphincter (LES) hypertension and non-peristaltic contractions¹². Long term alcohol renunciation has been shown

to improve the abnormalities; however, these improvements are not accompanied by one in esophageal pH, and alcohol consumption has been shown to be connected to a decrease in the perception of intra-esophageal reflux events¹¹⁻¹². Coffee has not been shown to increase the number of reflux events, though coffee does increase esophageal acid sensitivity, thus worsening the symptoms of an event¹¹. Double blind placebo studies have found no correlation between ingesting spearmint and a change in symptoms, LES pressure, or reflux episodes¹². Therefore, a diet that is low in cholesterol, saturated fatty acids, and calories from fat, along with alcoholic abstinence is recommended for the control of GERD related symptoms¹¹.

The connection between obesity and the symptoms and prevalence of GERD has long been noted, and recent research attributes this relationship to an increase in patients' gastroesophageal gradient, intra-abdominal pressure, and output of bile and pancreatic enzymes¹². An increase in BMI is also positively correlated with an increase in the rate of reflux related hospitalizations, and for every BMI increase of 5 the risk for GERD goes up by 1.2%¹¹⁻¹².

Exercise, once thought to be one of the best lifestyle modifications to implement for the treatment of GERD, has proved to be ineffective at certain levels of exertion¹¹. Current research shows that strenuous or vigorous exercise is positively correlated with GERD¹¹. Specifically, running and resistance training in combination with high carbohydrate sport drinks provoke the greatest risk for onset¹¹. Studies have connected the number of moderate exercise sessions that equaled or exceeded thirty minutes in length with a decreased risk of GERD¹¹. Interestingly, a monozygous co-twin study shows that physical activity in a work environment increases the risk of GERD, while physical activity in a leisure environment decreases the risk of GERD¹¹. A healthy lifestyle consisting of moderate exercise sessions while avoiding high carbohydrate sport

drinks is recommended for both keeping BMI in a healthy range and controlling GERD related symptoms.

The relation between tobacco smoking and GERD is sizable and multifaceted¹¹. Through a monozygous co-twin study, tobacco smoking has been connected to an increased risk for the appearance of frequent GERD symptoms by increasing intra-abdominal pressure, reducing LES pressure, and decreasing bicarbonate secretion in saliva, thereby reducing saliva's pH neutralizing effect¹¹. Although tobacco smoking increases the number of reflux episodes, studies have shown no increase in esophageal acid exposure time¹². Although smoking does not increase acid exposure time, quitting is highly recommended to control the variety of symptoms that are linked to GERD¹².

The acidic contents of the stomach have a greater chance of refluxing into the esophagus from a position that is parallel to the floor than one at an angle; therefore, head of bed (HOB) elevation is commonly recommended¹². A study that monitored esophageal pH in sitting, lying, and elevated HOB showed that patients with a 28 cm block raising the head of their beds experienced significantly fewer reflux episodes and GERD symptoms¹².

When confronted with GERD, lifestyle modifications should be the first course of action. Although the goal of lifestyle modifications are to contain, not cure, GERD, the specific implementation of mild exercise, a diet rich in fiber and poor in fat, quitting smoking, and elevating the head of the bed is advised to prevent or reduce GERD symptoms¹¹.

Quiz

- 2) Correctly match the type of exercise to an increase/decrease in GERD symptoms
- a. Resistance training, decrease; thirty minute moderate sessions, increase
 - b. Running, increase; resistance training, decrease
 - c. Resistance training, increase; thirty minute moderate sessions, decrease

Answer: c

- 3) How does tobacco smoking increase the risk for GERD?
- By increasing intra-abdominal pressure, reducing LES pressure, and decreasing bicarbonate secretion
 - By damaging the stomach's proton pumps
 - By increasing saliva secretion and esophageal peristalsis

Answer: a

Case Treatment: Life Style Changes

Because the patient's symptoms present themselves when he is sleeping, it is likely that lying flat causes the contents of his stomach to reflux into his esophagus. Alcohol consumption leads to esophageal motility abnormalities, and long term consumption abstinence has shown to re-regulate esophageal motility. For these reasons, elevating the head of his bed and abstaining from alcohol consumption would be recommended as life style modifications. Also, an aspirin regimen has been known to be a risk factor for GERD, so because he is using aspirin only for preventative reasons and it is currently hurting him more than helping, he is removed from that regimen to further alleviate his condition. At follow-up after one month of lifestyle modification, the patient still complains of symptoms.

Pharmacological Treatment

If a lifestyle adjustment is not enough to alleviate the patient's symptoms, then a pharmacological approach is appropriate. The pharmacological approach to treatment of GERD strives to not only relieve the symptoms of the disease, but also to heal damage to the esophagus, and to ensure that complications do not develop¹³. According to the American College of Gastroenterology, gastric acid suppression is the most important type of medical therapy available for GERD¹³ because it is gastric acid in the stomach causing the problems associated with GERD¹³⁻¹⁴. The two types of acid suppressors available are H₂ receptor antagonists (H₂ blockers) and Proton pump inhibitors (PPIs), the selection of which is dependent on the severity of the patient's reflux.

Antacids and H₂ blockers are used most by patients with occasional reflux¹³. Antacids work by neutralizing the acid in the stomach, and as a result, they are recommended as a self-care method for patients with mild GERD¹³. However, in mild to moderate cases of GERD, antacids alone are not effective, and H₂ blockers become the more appropriate method of treatment, with an effectiveness of about 75%¹⁵. The H₂ blockers work by preventing histamine₂ from signaling the parietal cells to secrete acid: the most common ones available are Cimetidine (Tagamet), Famotidine (Pepcid), Nizatidine (Axid), and Ranitidine (Zantac), all of which are available without a prescription¹⁴.

In moderate to severe cases of GERD, proton pump inhibitors become the treatment of choice, as they are the most effective in healing esophagitis and have the most rapid symptomatic relief¹³. The proton pump inhibitors work by blocking the hydrogen/potassium ATPase (gastric proton pumps) in the parietal cells, rendering them incapable of secreting H⁺ ions¹⁵. For moderate cases of GERD, one PPI, Omeprazole (Prilosec), is available over the counter and can be used effectively for 14 days, up to three times a year¹³. If GERD proves to be more severe and the symptoms persist, stronger prescription PPIs have been shown to heal 83% of the erosive esophagitis cases caused by GERD¹³⁻¹⁴. The different forms of prescription PPIs available are Pantoprazole (Protonix), Esomeprazole (Nexium), Lansoprazole (Prevacid), Omeprazole with sodium bicarbonate (Zegerid), and Rabeprazole (Aciphex)¹⁴, all of which have demonstrated no significant difference in effectiveness¹³⁻¹⁴. PPIs are less effective in treating symptoms of GERD other than esophagitis (such as heartburn), but they still remain the most effective medicine based treatment for this as well¹³⁻¹⁴.

Despite their effectiveness, the pharmacological treatments available for GERD only relieve the symptoms and prevent complications; they do not address the underlying causes¹⁵. As a result, most cases of GERD are chronic, with 80% of patients having a relapse in esophagitis 6-

12 months after treatment is discontinued^{13,15}. This means that continuous therapy is often needed, so it is common practice to keep patients on PPI treatment as long as necessary to maintain control over the symptoms of GERD¹³⁻¹⁵.

Patients on PPIs start out with once daily doses, but if this proves ineffective they can be moved to twice daily doses¹³. Increasing the dosage typically increases the relief brought by the medication, but about 25% of GERD patients fail to respond¹³. These patients are said to have PPI refractory GERD, which means that the symptoms, the esophagitis, or both did not disappear with treatment¹³. Most patients who experience PPI failure are suspected as having the non-erosive (does not cause esophagitis) form of GERD, since PPIs are less effective in treating symptoms other than esophagitis¹³. When patients fail to respond to treatment like this, it becomes necessary to refer them to a gastroenterologist¹³⁻¹⁴.

Quiz

- 4) Which of the following is the most effective at treating the esophagitis caused by GERD?
- H₂ blockers
 - Antacids
 - Proton Pump Inhibitors
 - Lifestyle modifications

Answer: c

- 5) Which of the following treatment methods is most appropriate for mild to moderate GERD?
- Lifestyle modifications
 - H₂ blockers
 - Antacids
 - Proton Pump Inhibitors

Answer: b

Case Treatment: Pharmacological Approach

Initially, the patient tries an over the counter H₂ blocker, ranitidine (Zantac), and symptoms are assessed after 2 weeks. Since patient continues to complain of symptoms, over the counter omeprazole (Prilosec) is recommended. After his first two week trial, symptoms have still not improved, so the patient is moved onto a once daily dose of lansoprazole

(Prevacid). Two weeks later this approach proved effective in alleviating the patient's symptoms. The patient is instructed to continue the lifestyle modifications he has made to prevent his symptoms from reoccurring, and a six-month follow up is scheduled to ensure his symptoms do not relapse.

Conclusion

Gastroesophageal reflux disease is a fairly wide spread disorder, and as a result, needs special attention from general practitioners. The general symptoms of GERD are heartburn and regurgitation, causing damage to the esophagus, and often causing sleep disturbances as well. Common risk factors are alcohol consumption, frequent use of aspirin, obesity, smoking, and constant stressful conditions. The first line of defense against GERD is reversing the lifestyle trends that put patients at risk or agitate their current condition. If this is not sufficient, it is necessary to introduce a pharmacological treatment. Many patients' symptoms can be relieved by simple over the counter H₂ blockers or proton pump inhibitors, but in more severe cases, prescription proton pump inhibitors may need to be used and used continually if the condition proves to be chronic. If the patient's symptoms persist, it will be necessary to refer them to a gastroenterologist.

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