Gastroesophageal Reflux Disease

Purpose: To provide an overview of gastroesophageal reflux disease. The pathophysiology, signs/symptoms, and treatments will be discussed. The role of the nurse in the care of the patient with gastroesophageal reflux disease will be addressed.

Objectives:

- List three common causes of gastroesophageal reflux disease (GERD)
- Discuss two pathophysiological changes that occur in GERD
- List three complications of GERD
- Discuss the different modes of diagnostic testing used in the evaluation of GERD
- Compare and contrast the role of lifestyle changes, medications and surgical treatments in the management of GERD

Case

John is a 58 year-old male with a five year history of intermittent heart burn. Initially it only occurred after overeating, but over the last five years the symptoms have occurred almost nightly. He rarely has symptoms during the day unless he eats out at lunch and consumes alcohol. He also reports waking up in the morning with a sore throat.

He reports occasionally waking up in the middle of the night with burning in the center of his chest. The first time this happened he went to the emergency room and was subsequently admitted for chest pain and had a complete cardiac work-up that turned out to be negative.
Upon further questioning of his lifestyle, John reports that he rarely exercises and eats poorly. He reports eating a diet high ground beef and steak. He also reports eating out with business clients often at Italian restaurants. He eats fast food about three to four times a week. He has put on twenty pounds over the last few years. He is a social smoker and has 8-10 alcoholic drinks a week, typically in one to two sessions.

Physical exam reveals a man in no acute distress that looks his stated age. His vital signs are within normal limits. The physical exam is unremarkable except for mild erythema noted in the posterior pharynx. He also is noted to have abdominal obesity with a waist-to-hip ratio of 1.05.

Introduction

Gastroesophageal reflux disease (GERD) is one of the most common reasons for outpatient visits with primary care physicians. In the United States, about 7-10 percent of the population has daily heartburn and 20% complain of weekly heartburn. In addition, 20-40% of people who have reflux do not even know that they have it. Many suffer from heartburn and treat it without going to their health care provider. Therefore, the condition is likely underreported.

Demographic information sheds some light on the incidence of GERD. While it can affect people from any age group, it is more common after the age of 40. There is no difference in prevalence between men and women, but, men are afflicted with esophagitis and Barrett’s esophagus much more commonly than women. White men are at greatest risk of Barrett’s esophagus.
GERD is present when symptoms or damage to the mucosa result from stomach contents refluxing into the esophagus. A minimum of 2 episodes per week must be present for the definition to remain

Pathophysiology

The pathophysiology of gastroesophageal reflux disease is secondary to physiological and anatomical malfunctions. The lower esophageal sphincter must be physiologically and anatomically normal to prevent gastric contents from being refluxed into the esophagus. Frequent relaxation of the lower esophageal sphincter (LES) increases the risk of GERD. In addition, low pressure in the LES is another common cause of GERD. Certain factors decrease the pressure of the LES including: coffee, alcohol, some medications (nitrates, beta-blockers and calcium channel blockers), and some hormones (progesterone).

A hiatal hernia changes the normal anatomy and contributes to reflux. A hiatal hernia does not allow the diaphragmatic cura to act as an extrinsic sphincter in the prevention of reflux of stomach contents.

The degree of the acidity in the stomach contributes to the degree of GERD. When the pH is less than 4.0 there is a higher incidence of esophageal damage.

When stomach contents remain stagnant there is a greater risk of foods being refluxed back into the esophagus. Therefore, impaired gastric motility is an important – although not common - contributing factor to GERD.

The esophagus needs to be able to clear acid to prevent GERD. When there is abnormal esophageal peristalsis or salivary bicarbonate the acid stomach contents may do more damage to the esophagus
Hormones – particularly estrogen - also have some role in the pathophysiology of the disease. Pregnant women, those on birth control pills and those on estrogen therapy post-menopausal have lower esophageal sphincter pressure\textsuperscript{3}.

**Complications**

Gastroesophageal reflux disease is associated with many other conditions; some benign, some serious. Some of these complications are also signs and symptoms of GERD. Chronic cough can occur from GERD. Laryngitis is another manifestation of GERD. Some patients with GERD will report a sore throat that is worse in the morning.

Esophagitis results from stomach contents – acid and pepsin – damaging the cells of the esophageal mucosa. This condition leads to erosions and ulcers – often just above the gastroesophageal junction. About 50% of those with GERD develop esophagitis\textsuperscript{1}.

Esophagitis is best diagnosed with endoscopy and can be graded between grades I to grade IV. Grade I is simply erythema. Grade II is characterized by linear non-confluent erosions while grade III is made up of circular confluent erosions. Grade four is the most severe with Barrett esophagus or stricture. Barrett esophagus affects 8-15 percent of patients with GERD.

Esophageal stricture can also occur as a result of GERD. Stricture is a persistent narrowing of the esophagus due to inflammation from gastric contents.

Gastroesophageal reflux disease exacerbates asthma. Those individuals who have poorly controlled asthma tend to have poorly controlled GERD. Children
who have their GERD controlled have fewer asthma flares when compared to those who do not have their GERD controlled\(^4\). In addition, children who suffer more frequent bouts of croup may also have GERD\(^5\). Controlling GERD has the potential to reduce the risk of many respiratory problems.

GERD also affects those with chronic obstructive pulmonary disease. A study looked to compare if those with GERD had a higher incidence of chronic obstructive pulmonary disease. Over a five year period it was shown that those with chronic obstructive pulmonary disease had a higher rate of GERD. The opposite does not hold true. Those with GERD are not at higher risk of chronic obstructive pulmonary disease than those without GERD\(^6\).

Refluxed gastric contents can damage the upper gastrointestinal tract. GERD can affect the teeth as refluxed material can be associated dental erosions.

Impaired sleep quality is a common problem associated with gastroesophageal reflux disease\(^7\). GERD is often made worse when a patient lies down, and nighttime is a period of the day when a person lays down for an extended period of time. Those with nighttime GERD often have poor sleep quality and daytime sleepiness. Individuals with nighttime heartburn have a lower quality of life than those with daytime heartburn\(^8\).

Not only can this affect quality of life, but it can force GERD patients to take sleeping medications to improve sleep. Sleeping medications are associated with multiple negative side effects, especially in the elderly, and are not the most effective treatment for patients with nighttime GERD and sleep disturbances. Treatment of the GERD will result in improvements in sleep disturbance.
Cancer is a serious complication of long-standing GERD. Columnar metaplasia replaces the normal squamous epithelium in a condition called Barrett’s esophagus. Barrett’s esophagus is associated with a 30- to 50-fold increased risk of suffering from esophageal adenocarcinoma with a 0.5% risk per year. It is important to catch this early because it is highly lethal with a 5-year survival rate of approximately 10 percent\(^9\).

The overall prevalence of adenocarcinoma is low with only 7000 cases each year, but the prevalence is increasing over the last few years\(^2\)\(^9\).

Genetics may be linked to GERD and esophageal cancer. Individuals with GERD and a specific mutation of the epidermal growth factor gene are at increased risk for cancer. A recent study found that this mutation was associated with an almost two times greater risk of esophageal cancer. Those with more severe GERD were at higher risk when the genetic mutation was present. Individuals with GERD for greater than 15 years or symptoms more than once a week were at greatest risk\(^10\).

**Differential Diagnosis**

Other conditions must be ruled out when considering a diagnosis of gastroesophageal reflux disease. Heartburn may be caused by infectious esophagitis, pill induced esophagitis or achalasia. Achalasia presents with a progressive and gradual dysphagia. It is often associated with regurgitation and can occur with both solid foods and liquids. The patient may also complain of substernal discomfort or fullness after a meal.
Infectious esophagitis is more common in patients who are immunosuppressed. It presents with painful and difficult swallowing and often chest pain. Endoscopy with biopsy is necessary for diagnosis. Pill induced esophagitis is damage to the esophagus by a medication - typically because of direct, prolonged contact with the pill.

Coronary heart disease can present with chest pain that can be misinterpreted as GERD. Some patients present to the emergency room with chest pain and after a negative cardiovascular work up, often including cardiac catheterization, they are treated for GERD and symptoms abate.

Multiple gastrointestinal etiologies are possible causes of symptoms confused with GERD. Gallbladder disease/cholelithiasis is often asymptomatic but can present with abdominal pain which is typically localized to the upper right quadrant. Gastritis – while often presenting without symptoms - can present with epigastric pain, nausea, vomiting and anorexia. Peptic ulcer disease usually presents with epigastric pain with a relationship to meals. The pain is typically dull, gnawing and/or aching.

Gastric or esophageal cancer should be considered when symptoms of GERD are present. Gastric cancer is most commonly gastric adenocarcinoma or lymphoma and both have similar presentation. Heart burn with weight loss, anorexia, early satiety, anemia and blood in the stool is a common presentation. Esophageal cancer presents with weight loss and progressive solid food dysphagia.
Signs and Symptoms

Gastroesophageal reflux disease is characterized by a burning feeling in the lower chest, along with a sour or bitter taste in the throat and mouth. It usually occurs after eating a big meal or while lying down. It lasts for a few minutes to a few hours. When stomach contents - which contain acid - touch the lining of the esophagus a burning sensation occurs. Sometimes the fluid is regurgitated all the way back into the mouth leading to a sour taste in the mouth. Occasional heartburn does not mean one has GERD, but heartburn that occurs more than twice a week is considered GERD, and it can eventually lead to more serious health problems.

Symptoms can be broken down into typical and atypical. The most typical symptoms are heartburn and regurgitation. The symptoms get worse when lying down or bending forward. Symptoms are most common after eating a large, fatty meal. The severity of symptoms does not correlate to the severity of disease found on endoscopy. The patient will often report that antacids relief the symptoms. By the time a patient presents to the physician’s office the patient is often only getting partial relief from over the counter medications.

Alarm signs and symptoms are suggestive of complicated disease. When present they typically require more aggressive work-up such as an endoscopy. Those with alarm symptoms more commonly are afflicted with esophagitis and peptic stricture. Alarm signs and symptoms include: odynophagia, dysphagia, weight loss, anemia and bleeding. Other signs or symptoms suggestive of more
severe underlying disease include: black or bloody stools, choking, chronic cough, early satiety, hematemesis and hoarseness.

Difficulty swallowing, also known as dysphagia, is another symptom in GERD; it typically indicates more severe disease and is an indication for endoscopy. Odynophagia is pain on swallowing and it often suggests severe erosion or infectious esophagitis.

Not all patients afflicted with typical symptoms have GERD. When using typical symptoms as a criterion for diagnosis, only 70% have GERD.

Many patients, who have GERD, have atypical symptoms. Respiratory symptoms are common and include: coughing and wheezing. These symptoms typically result from gastric contents being aspirated into the lungs. Asthma can be made worse by co-morbid GERD.

Hoarseness is another common manifestation of GERD. It is most common in the morning and results from gastric irritation of the vocal cords.

Chest pain has a wide range of diagnosis attached to it, but after more serious conditions have been ruled out, GERD should be considered. Reflux is one of the more common causes of chest pain.

Dyspepsia is a term commonly used but is different than GERD. Dyspepsia is recurrent epigastric discomfort/ pain or postprandial fullness thought to be originating from the gastroduodenal region. While GERD is more commonly associated with heartburn and regurgitation, dyspepsia may represent GERD.
The physical exam typically does not reveal any finding consistent with GERD. Individuals with a high body mass index – particularly if they carry a lot of abdominal obesity – are at risk for GERD.

**Diagnosis**

The diagnosis is often based on patient history and clinical exam. There is uncertainty about the ideal criteria for the diagnosis of GERD. Often times, based on the presumptive diagnosis, empiric treatment is implemented and the diagnosis is confirmed if there is a positive response to treatment.

For those patients who have a typical history of GERD and the course is deemed uncomplicated, empiric therapy is an appropriate course of action\(^{11}\). Response to therapy typically indicates that GERD is present, but if symptoms are not relieved, GERD may still be present.

Some patients are candidates for diagnostic testing. Diagnostic testing helps confirm the diagnosis, avoid a misdiagnosis and catches complications. Laboratory evaluation is typically not performed on those with typical GERD. For those with any alarm signs or symptoms an evaluation of anemia is a reasonable test.

Endoscopy is a helpful diagnostic test as it can evaluate for causes and complications of heartburn. The endoscopy is the only way to allow the esophagus to be seen directly. It is recommended if there is concern of complicated disease or risk factors for Barrett’s esophagus\(^{11}\). It does not help if the symptoms are cardiac related; expect the exam will be negative making a
cause outside the gastrointestinal tract the more likely cause. A normal endoscopy does not rule out GERD.

Biopsy during endoscopy can help diagnose Barrett’s endoepithelium, eosinophilic esophagitis, dysplasia or Helicobacter pylori infection. Endoscopy is able to rule out other diseases such as peptic ulcer.

Another test that may be employed is the barium esophagogram. It is indicated in patients with dysphagia. This test will identify a stricture and diagnose a hiatal hernia.

Esophageal manometry evaluates the function of the LES and looks at how effective peristalsis is in the esophagus. It is used to place the probe for 24-hour pH monitoring. This is an important test in someone who is considering anti-reflux surgery. Those who do not have adequate peristalsis should not undergo surgery or consider a modification of the surgery (less tight procedure).

Ambulatory pH monitoring is done over a 24 hour period and is very sensitive and specific for the diagnosis of GERD. As opposed to endoscopy, ambulatory pH monitoring determines if there is acid in the esophagus. They can be used for multiple indications such as when the diagnosis is not clear. It is the best way to determine the amount of reflux. It can also be done when there are atypical symptoms or if the diagnosis does not respond to adequate therapy. It should also be used to make sure that it is the correct diagnosis when considering anti-reflux surgery.

Another test that is sometimes done to evaluate gastric emptying is the radionuclide measurement of gastric emptying. It is not typically the problem in
GERD, but can significantly contribute to the disease in those with poorly controlled diabetes or a connective tissue disorder. Gastroparesis is characterized by postprandial bloating and abdominal fullness.

**Treatment**

The goals of treatment are to control symptoms and prevent complications. There are multiple approaches to the treatment of gastroesophageal reflux disease. Lifestyle approaches are a starting pointing and a good strategy to implement in all patients with GERD (see table 1).

**Table 1: Lifestyle changes that can help prevent or treat GERD**

- Weight loss – if overweight
- Do not overeat
- Do not eat within 3 hours of bedtime and or do not lay down three hours after eating
- Raise the head of the bed on 6 inch blocks
- Limit intake of high fat foods and other foods such as: citrus fruit, chocolate, peppermint, tomatoes based food, coffee, drinks with caffeine, fatty and fried foods, garlic, onions, mint flavorings, spicy foods, tomato-based foods, like spaghetti sauce, chili, and pizza
- Stop smoking
- Do not drink alcohol
- Eat small meals
- Wear loose-fitting clothes
Often, lifestyle choices are not enough to cure the disease and other interventions are necessary. The next step in treatment involves medications. Decreasing the acidity of gastric contents reduces symptoms, as it allows esophagitis to heal.

Patients often self-treat symptoms with antacids or other over the counter medications before going to the doctor. Antacids can be used on an as needed basis or can be used after meals or right before bed. Antacids are effective when symptoms are mild and less effective in more severe disease. One major advantage of antacids is that their onset of action is rapid. One major drawback is that their duration of action is short. Recent years have seen the addition of multiple other over-the-counter medications including multiple histamine H2 receptor antagonists and most recently omeprazole (Prilosec).

First line treatment for GERD is antacids, which are bought over the counter and common brands include: Alka-Seltzer, Maalox, Mylanta, Pepto-Bismol and Rolaids. Antacids neutralize the acid in the stomach and provide fast, short-term relief. The main side effects of antacids are diarrhea or constipation. Magnesium based antacids – such as Maalox and Mylanta - cause diarrhea while calcium-containing antacids – such as Rolaids and Tums - lead to constipation.

After antacids the next step in treatment involves the use of histamine H2 receptor antagonists (H2RAs). These medications are most effective for mild-moderate disease. They decrease the amount of acid in the stomach after a meal. They can also be used for grade I and II esophagitis. Tachyphylaxis – decreased effectiveness of the medication as it is used overtime- has been noted
with H2RAs and is therefore not as effective for long-term treatment of the disease. While there are some differences between H2RAs, all H2RAs have generally similar efficacy. These medications are also effective when taken prior to an activity that may induce reflux\textsuperscript{11}. The main advantage of H2RAs over antacids is that their length of action is much longer.

Proton pump-inhibitors (PPI) are the most effective medication used for the treatment of GERD in regard to controlling symptoms and healing esophagitis. As mentioned before they are now over the counter PPIs available for the “short-term treatment of heart burn”.

PPIs are typically dosed once a day in the morning about 30 minutes before breakfast. Some physicians prescribe the medication at night (before the dinner) to gain better control of nighttime acid production.

PPIs are much more effective at healing esophagitis than H2RAs. In one study, PPIs healed 83% of esophagitis; H2RAs healed 52% of esophagitis and placebo healed 8% of esophagitis\textsuperscript{12}. There is no proven difference between PPIs in their efficacy to heal esophagitis. There is some benefit to increasing the dose of PPIs to heal esophagitis, but the effect is minimal. One patient would benefit from doubling the standard dose of PPI if 25 patients were treated. The data is not there for doubling the dose of PPIs for refractory heartburn symptoms, even though this is commonly practiced\textsuperscript{1}.

PPIs are relatively safe medications and are often used for long-term use. These medications block hydrogen ion secretion in the parietal cell. Like all medicines, PPIs are not without risk. Common side effects include: diarrhea,
constipation, abdominal pain and headache. In addition long-term PPIs may result in hypergastrinemia, hypochlorhydria and malabsorption. Some evidence suggests that long-term use of PPIs increases the risk of vitamin B-12 deficiency, but there is limited evidence to support this claim\textsuperscript{11}. Some evidence also suggests that long-term PPIs may inhibit calcium absorption increasing the risk of osteoporosis and osteopenia.

Prokinetic agents can be used in those with gastric/esophageal motility problems. Specifically this means that there is poor esophageal clearance, delayed gastric emptying, and LES incompetence. When used, they are used along with acid suppression. Long-term use of many prokinetic agents such as metoclopramide and bethanechol may have consequences. Common side effects include extrapyramidal side effects, drowsiness and irritability.

**Maintenance treatment**

Some patients can be controlled on a short course medication and lifestyle modifications, but others need long-term pharmacological treatment. Many patients report a return of symptoms when the medication is discontinued. After treatment of GERD, only about 20\% of patients have symptoms controlled with antacids and lifestyle changes\textsuperscript{13}. Many patients need long-term treatment with some form of acid suppression. Acid suppression will reduce the incidence of peptic esophageal strictures\textsuperscript{11}.

Some patients respond better to long-term treatment than other patients. Those who are *H. pylori* -negative and have a serum pepsinogen I/II ratio >6.0 (which is a marker of atrophic gastritis) respond better to long-term PPI therapy\textsuperscript{14}. 
Surgery

The most common procedure for gastroesophageal reflux disease is the Nissen fundoplication. The use of surgery is more effective in treating esophagitis than reflux symptoms\(^1\). It is critical to document the proper diagnosis before surgery and therefore those who are considering surgery often have extensive testing. Typically patients have endoscopy; ambulatory pH testing and some have manometry prior to surgery.

Indications for the procedure are variable\(^1\)\(^2\)\(^3\). Individuals whose symptoms are not controlled with PPIs are candidates for the surgery. Those who have Barrett’s esophagus should be considered for surgery. Individuals who do not want long-term medication treatment or would not comply with treatment may be considered for surgery. Those with atypical manifestations can be considered for surgery including respiratory symptoms, hoarseness, sore throat or dental erosions. Those at risk for osteoporosis should also be considered for surgery as long-term treatment with PPIs is associated with an increased risk of hip fracture in people over 50. PPIs also increase the risk of gastrointestinal problems with and increased risk of gastroenteritis and Clostridium difficile colitis.

The best outcomes for surgery are noted in patients who are young (less than 50) and have typical symptoms that respond to medical therapy\(^{11}\).

The procedure is usually done laparoscopically under general endotracheal anesthesia. The fundus of the stomach is swathed around the esophagus and a new valve is made at the gastroesophageal junction. The procedure does well to control esophagitis with rates of esophagitis after 7 years of therapy being similar
between PPIs and surgical intervention\(^1\)\(^{15}\). Even though surgery is not completely effective for treating symptoms, control of symptoms is better with surgery than long-term PPIs\(^{15}\). Ninety-two percent of patients achieve resolution of symptoms after surgery\(^{16}\).

The procedure is not without risk though. Some patients develop severe dysphagia after surgery\(^{17}\). Some patients need a revision after the surgery. Others are plagued by increased diarrhea, abdominal pain, constipation, bloating, inability to belch or increased flatulence. Some need to continue medical therapy after surgery. Interestingly, the prevalence of Barrett esophagus or adenocarcinoma was not different between those who underwent surgery when compared to medical treatment\(^1\).

Other treatments

Some patients have their symptoms controlled through endoscopic therapies, but studies are not overwhelmingly positive. Only two treatments are FDA approved: radiofrequency ablation and endoscopic plication. Radiofrequency application – although infrequently used - to the LES area is meant to increase the reflux barrier of the LES. This technique has demonstrated some mild benefit.

Endoscopic plication – the most popular endoscopic procedure - was shown to be more effective than those who underwent a sham procedure. An endoscope is used in the full-thickness plication and sutures are placed in the junction between the stomach and esophagus to improve symptoms. Those who received the active treatment in the study were more likely to have less acid in
the esophagus, but more likely to have complications such as pain or subsequent hospitalization\textsuperscript{18}.

These therapies can be considered in those whose symptoms cannot be controlled with lifestyle changes and medication; unable to tolerate medication; or do not want or could not tolerate surgical intervention\textsuperscript{11}. Insurance companies may not pay for these procedures and providers should check with the insurance company before the procedure to assure payment.

Table 2: Medications in the treatment of GERD

<table>
<thead>
<tr>
<th>Antacids</th>
<th>H2RAs</th>
<th>PPIs</th>
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<tbody>
<tr>
<td>Calcium Carbonate (Tums)</td>
<td>Cimetidine (Tagamet)</td>
<td>Omeprazole (Prilosec)</td>
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<tr>
<td>Magnesium (Mylanta)</td>
<td>Ranitidine (Zantac)</td>
<td>Lansoprazole (Prevacid)</td>
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<tr>
<td>Pepto-Bismol</td>
<td>Famotidine (Pepcid)</td>
<td>Rabeprazole (Aciphex)</td>
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<tr>
<td>Alka-Seltzer</td>
<td>Nizatidine (Axi d)</td>
<td>Esomeprazole (Nexium)</td>
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Atypical GERD

When heartburn and regurgitation are not present the diagnosis is much more challenging. Typical symptoms of reflux are absent in 57% to 94% of patients with ear, nose, and throat symptoms (laryngitis); 40% to 60% of asthmatics; and 43% to 75% of those afflicted with chronic cough\textsuperscript{19}.

GERD is considered after other causes of the presenting symptoms are ruled out. Diagnostic testing is not as helpful in those with atypical symptoms as 24-hour pH monitoring and upper endoscopy are less sensitive\textsuperscript{19}. As with typical
symptoms if any alarm symptoms are present it is important to dive into a more aggressive work-up.

The treatment of atypical symptoms of GERD is similar to the management of typical GERD. Twice a day dosing of PPIs for 3-4 months is recommended\textsuperscript{19}. If symptoms improve it is not only a cure but also demonstrates that GERD is the cause of the symptoms. Some practitioners use PPIs as a diagnostic test to identify GERD that presents with non-cardiac chest pain. Interestingly, laryngeal symptoms are least responsive to this treatment, possibly because GERD is over diagnosed as a cause of laryngeal signs and symptoms. Those with asthmatic signs and symptoms do benefit from PPI therapy as evidence by improved quality of life, improved pulmonary function and decreased use of albuterol\textsuperscript{19}. Like asthma, chronic cough responds well to acid reduction therapy.

**Refractory disease**

Those who do not respond to 2 months of treatment with maximum dose PPIs are classified as having refractory GERD. This affects approximately 25\% of patients with reflux\textsuperscript{20}. The validity of the diagnosis should be considered and diagnostic testing should ensue if it has not already. The use of an upper endoscopy will help rule out other diagnoses such as peptic ulcer disease and cancer. It can also evaluate for esophagitis, pill induced injury, eosinophilic esophagitis or autoimmune disease of the esophagus. The use of 24 or 48 hours acid probe test can be helpful to confirm acid is in the esophagus. Other testing to consider includes esophageal manometry and gastric function tests.
diagnoses to consider include: achalasia, gastroparesis, nocturnal gastric acid breakthrough, nonacid GERD or functional heartburn\textsuperscript{20}.

**Prognosis**

Some patients are able to use medications for a short period of time, go off of them, and be cured. Many do not. Those who have recurrent symptoms after cessation of medical therapy are candidates for long term therapy. More research is needed to fully understand how to treat the disease appropriately. A method to predict who is at risk for serious complications needs to be developed to determine who are candidates for aggressive therapy.

**GERD and Aging**

The incidence of GERD increases with age but often presents with less severe clinical manifestations\textsuperscript{21}. Older adults often have less visceral perception contributing to less severe clinical signs and symptoms. The onset of GERD in the older adult should prompt the clinician to more strongly consider endoscopy as there is a higher probability of bleeding, ulcers or malignancy. The risk of more severe esophagitis is much more common in the older adult\textsuperscript{21}.

While older adults likely have similar pathophysiological mechanisms to disease there are some caveats in the older adult. There is a decrease in salivary secretions which typically help neutralize acids in the stomach. Some older adults have swallowing difficulties which may be caused by esophageal motility impairment. Esophageal immobility can contribute to GERD.

Treatment is no different in the older adult when compared to the younger adult. Extra attention should be paid to other medications taken by the older
adult including over the counter medications. Non-steroidal anti-inflammatory medications and aspirin increase the risk of dyspepsia. Individuals who need to take routine NSAIDs should consider the use of prophylactic PPI therapy\(^{21}\).

Traditional H2RA therapy does not adequately prevent NSAID induced ulcers.

The bacterium *Helicobacter pylori* is linked to ulcers and gastric cancer. It is also linked to dyspepsia. The benefit of treating the infection with antimicrobial therapy in its resolution of dyspeptic symptoms is controversial. Older adults are more commonly affected with *H. pylori* than younger adults and may benefit more from treatment than younger adults.

**Conclusion**

GERD is a serious disease that can lead to poor quality of life and in some instances predispose to cancer and death. Heartburn and regurgitation are the most common symptoms associated with the disease, but the clinician should be aware of more atypical presentations of GERD such as chronic cough and poor sleep quality.

GERD is often diagnosed on clinical grounds but some patients are candidates for diagnostic testing. This includes high risk patients as well as those in whom a diagnosis is unclear.

Treatment of GERD always includes lifestyle modification. It often needs to include medications such as antacids, histamine receptor blockers or proton pump inhibitors. For patients who are resistant to lifestyle and medical therapy, surgical options are available.
Case Conclusion

John was empirically started on the proton pump inhibitor lansoprazole at 30 mg once a day for 8 eight weeks. He was also instructed on lifestyle changes to reduce the incidence of GERD. He was encouraged to start exercising and lose weight. He was given a list of foods that he should not eat. In addition, he was told to stop eating within three hours of bed.

John received extensive dietary counseling. He should reduce the amount of fat in his diet. Substituting vegetarian meals or chicken, turkey or fish for beef and steak may be helpful. Selecting lean beef and steak may also assist in reducing his symptoms. He should limit his consumption of fast food or eat healthy low-fat choices while at the restaurant such as salads. When eating out, it may be helpful to avoid foods with a tomato base or rich high fat meals which are common at Italian restaurants. He should cease smoking and limit his alcohol consumption.

Because of his age, and his physician worry about the possibility of Barrett’s esophagus, he was referred to a gastroenterologist for an upper endoscopy to rule out any esophageal pathology.
References


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