

# Gastroesophageal reflux disease

Gastroesophageal reflux disease (GERD) is a disease in which acid from the stomach flows back (refluxes) into the esophagus, causing irritation and sometimes damage to the lining of the esophagus. The reflux of stomach acid can adversely affect the vocal cords or even be inhaled into the lungs (called aspiration).

## CAUSES

The exact cause of reflux is complex and not completely understood. Many factors are probably involved.

When we eat, food is carried from the mouth to the stomach through the esophagus, a tube-like structure that is approximately 10 inches long and 1 inch wide in adults. The esophagus is made of tissue and muscle layers that expand and contract to propel food to the stomach through a series of wave-like movements called peristalsis.

At the lower end of the esophagus, where it joins the stomach, there is a circular ring of muscle that relaxes and opens when food reaches that point. This ring of muscle is called the lower esophageal sphincter (LES), which allows food to enter the stomach and then closes to prevent the back-up of food and acid into the esophagus. Reflux can occur if the LES is weak or stays relaxed too long.

## Reflux

Some degree of reflux is normal in everyone. Episodes of normal reflux typically occur after meals, are brief and without symptoms, and rarely occur during sleep. Acid reflux becomes GERD when a person has frequent symptoms or the esophagus becomes damaged. The amount of reflux required to cause injury varies.

## SYMPTOMS

People who experience heartburn at least two to three times a week may have GERD. The most common symptom of GERD, heartburn, is estimated to affect 10 million adults in the United States on a daily basis. Heartburn is experienced as a burning sensation in the center of the chest, which sometimes spreads to the throat; there also may be an acid taste in the throat. Less common symptoms include:

- Stomach pain (pain in the upper abdomen)
- Non-burning chest pain
- Difficulty swallowing (called dysphagia), or food getting stuck
- Painful swallowing (called odynophagia)
- Persistent laryngitis/hoarseness
- Persistent sore throat

- Chronic cough, new onset asthma, or asthma only at night
- Regurgitation of foods/fluids; taste of acid in the throat
- Sense of a lump in the throat
- Worsening dental disease
- Recurrent pneumonia
- Chronic sinusitis
- Waking up with a choking sensation

The following signs and symptoms may indicate a more serious problem, and should be reported to a healthcare provider immediately:

- Food getting stuck in the esophagus
- Unexplained weight loss
- Chest pain
- Choking
- Bleeding (vomiting blood or dark-colored stools)

## **DIAGNOSIS**

GERD is usually diagnosed based upon symptoms and the response to treatment. Specific testing is required when the diagnosis is unclear or if there are more serious signs or symptoms as described above.

It is important to rule out potentially life threatening diseases that can cause signs and symptoms similar to those of GERD. This is particularly true with chest pain, since chest pain can also be a symptom of heart disease . When the symptoms are not life threatening, but cannot clearly be ascribed to GERD, one or more of the following tests may be recommended.

### **Endoscopy**

An upper endoscopy is commonly used to evaluate the esophagus. A small, flexible tube is passed into the esophagus, stomach, and small intestine. The tube has a light source and a camera that displays magnified images. Damage to the lining of these structures can be evaluated and specimens of tissue (biopsies) can be taken to determine the extent of tissue damage.

### **24-hour esophageal pH study**

A 24-hour esophageal pH study is the most sensitive test for the diagnosis of GERD, although it is usually reserved for patients whose diagnosis is unclear after endoscopy or a trial of treatment. It is also useful for patients who continue to have symptoms despite treatment.

### **Esophageal manometry**

Esophageal manometry involves swallowing a tube that measures the muscle contractions of the esophagus to determine if the lower esophageal sphincter is functioning properly. This test is usually reserved for patients in whom the diagnosis is unclear after other testing or in whom surgery is being considered.

## **COMPLICATIONS**

The vast majority of patients with GERD will not develop serious complications, particularly when reflux is adequately treated. However, a number of serious complications can arise in patients with severe GERD.

### **Ulcers**

Ulcers can form in the esophagus as a result of burning from stomach acid. In some cases, bleeding occurs. Patients may not be aware of bleeding, but it may be detected in a stool sample with a test called hemoccult. This test is performed by putting a small amount of stool on a chemically coated card.

### **Stricture**

Damage from acid can cause the esophagus to scar and narrow, causing a blockage (stricture) that can cause food or pills to get stuck in the esophagus. The narrowing is caused by scar tissue that develops as a result of ulcers that repeatedly damage and then heal in the esophagus.

### **Lung and throat problems**

Some patients reflux acid into the throat, causing inflammation of the vocal cords, a sore throat, or a hoarse voice. The acid can be inhaled into the lungs and cause a type of pneumonia (aspiration pneumonia) or asthma symptoms. Chronic acid reflux into the lungs may eventually cause permanent lung damage, called pulmonary fibrosis or bronchiectasis.

### **Barrett's esophagus**

Barrett's esophagus occurs when the normal cells that line the lower esophagus (squamous cells) are replaced by a different cell type (intestinal cells). This process usually results from repeated damage to the esophageal lining, and the most common cause is longstanding GERD. As a result, patients with Barrett's esophagus are advised to have a periodic endoscopy to monitor for early warning signs of cancer.

### **Esophageal cancer**

There are two main types of esophageal cancer: **adenocarcinoma** and **squamous cell carcinoma**. A major risk factor for adenocarcinoma is Barrett's esophagus. Squamous cell carcinoma does not appear to be related to GERD.

## TREATMENT

GERD is treated according to its severity.

### Mild symptoms

Initial treatments for mild reflux include dietary changes and using non-prescription medications, including antacids or acid blocking medicines (such as famotidine , cimetidine , nizatidine and ranitidine ). Additional changes to the diet or lifestyle may also be helpful.

- **Weight loss**
- **Raise the head of the bed six to eight inches**
- **Avoid reflux inducing foods** (such as caffeine, chocolate, alcohol, peppermint, and fatty foods )
- **Quit smoking**
- **Avoid large and late meals**
- **Avoid tight fitting clothing**
- **Chew gum or use oral lozenges**

Although these suggestions have been recommended for many years, their effectiveness has not been extensively evaluated in well-designed clinical trials. Thus, these recommendations may be helpful in some, but not all people with mild symptoms of reflux.

### Moderate to severe symptoms

Patients with moderate to severe symptoms, complications of GERD, or mild symptoms that have not responded to the lifestyle modifications described above usually require treatment with prescription medications. Most patients are treated with medications that decrease stomach acid production.

Acid reducing medications can broadly be further divided into two groups:

- H2 antagonists include famotidine , cimetidine , ranitidine , and nizatidine , which and are sufficient to control symptoms in many people.

- Proton pump inhibitors include omeprazole , esomeprazole , lansoprazole , pantoprazole , and rabeprazole , which are stronger and more effective than the H2 antagonists. Most clinicians recommend a stopping treatment for a trial period once symptoms are under control, although many patients continue taking these medications for years.

Both the H2 antagonists and the proton pump inhibitors are safe, although they may be expensive, especially if taken for a long period of time.

## **Surgical treatment**

Prior to the development of the potent acid-reducing medications described above, surgery was used for severe cases of GERD that did not resolve with medical treatment. Because of the effectiveness of medical therapy, the role of surgery has become more complex. In general, anti-reflux surgery involves repairing the hiatal hernia and strengthening the lower esophageal sphincter.

Patients in whom surgery is being considered typically require esophageal manometry and endoscopy to confirm the diagnosis and decide which surgical treatment will be most effective. Although the outcome of surgery is usually good, complications can occur. Examples include persistent difficulty swallowing (occurring in about 5 percent of patients), a sense of bloating and gas (known as "gas-bloat syndrome"), breakdown of the repair (1 to 2 percent of patients per year), and uncommonly, or diarrhea due to inadvertent injury to the nerves leading to the stomach and intestines