



# GERD and Coughing

## What PIDD Patients Need to Know

By Dharshini Mahadevan, MPH

While the cause of GERD is not known, the symptoms and what they trigger in PIDD patients can often be controlled with lifestyle and dietary changes.

For many with primary immune deficiency disease (PIDD), a chronic cough is nothing new. According to Annette Zampelli, MSN, CRNP, a medical science liaison for CSL Behring, as well as a former clinician in the Pediatric, Allergy and Immunology Department at Penn State Children's Hospital, a potential culprit of their cough—gastroesophageal reflux disease (GERD)—is often overlooked. “A lot of people think they're just having sinus drainage,” said Zampelli, who also suffers from GERD, as well as common variable immune deficiency (CVID). “Or, they may blame coughing on asthma.”

Because Zampelli deals with GERD herself, she can often immediately recognize it in others. She recalls one incident during which she realized an individual was refluxing within minutes of meeting her. “A lot of people have chronic hoarseness and intermittent

coughing because GERD can cause a laryngeal spasm," explains Zampelli. "It also causes inflammation of the vocal cords, which causes them to spasm and leads to irritation to the surrounding tissues."

To determine whether GERD is a factor in one's cough, Zampelli recommends that patients pay attention to whether they wake up with morning hoarseness, if they seem to cough more after they lie down or if certain foods make their symptoms worse. In addition, Zampelli suggests that patients track symptoms by using "a food diary to see if there's any correlation with certain things. If they see there's a pattern, it's something they should look at with their doctor."

### **What Is GERD?**

Commonly referred to as acid reflux, GERD occurs when stomach contents regularly return up into the esophagus. This recurrence takes place where the stomach and esophagus meet, at the lower esophageal sphincter (LES). After one swallows, the LES muscle relaxes to allow food to pass through the esophagus into the stomach. It then contracts to prevent food and acid from coming up to the esophagus. However, when the LES is weakened, it results in backward flow of stomach acids into the esophagus, leading to stricture and scarring of the esophagus.

### **What Causes GERD?**

While the exact cause of GERD remains unknown, many believe hiatal hernias are a main cause. Hiatal hernias occur when a part of the stomach slips through the diaphragm into the chest cavity. The role of the diaphragm is to separate the stomach from the chest and assist the LES in keeping things in the stomach. But, when a hiatal hernia occurs, the diaphragm can no longer help the LES, often resulting in backward flow of stomach contents. Other causes of GERD include obesity and pregnancy—which have been known to cause hiatal hernias—as well as unhealthy diet and lifestyle. For instance, smoking and certain foods may weaken the LES.

For PIDD patients, the LES can weaken from coughing due to sinopulmonary problems. And, depending on the individual, GERD can be caused by a varying amount of reflux. Esophageal damage is more common when the reflux is very acidic and occurs frequently, and when there is slow clearing of acid by the esophagus.

### **What Are the Symptoms of GERD?**

The most common symptoms associated with GERD are frequent heartburn (two to three times per week) and acid

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regurgitation. Some people have GERD without heartburn but may experience chest pain, difficulty swallowing or hoarseness first thing in the morning. In more severe cases, GERD may result in vomiting and bleeding. Other symptoms include chronic cough, new-onset asthma, acidic taste in the throat, odynophagia (painful swallow), persistent sore throat, feeling of a lump in the throat and upper abdominal pain.



### **GERD and Asthma**

GERD is a possible trigger for asthma, and GERD symptoms tend to be more common in patients with asthma versus those in control populations. Respiratory symptoms are increased in patients with GERD, and an estimated 75 percent of patients with asthma suffer from GERD. The association between GERD and asthma seems to strengthen with severity of either condition. Patients with severe asthma who do not respond to treatment may have worsening GERD. Reciprocally, patients who have severe GERD and who do not respond to treatment may have worsening ➤

asthma. Common factors that link GERD to asthma are a non-allergic component, nocturnal cough and exacerbation of asthma after heartburn or regurgitation.

GERD can affect asthma when acid from the stomach is refluxed and aspirated into the lungs and airway. When this occurs, breathing becomes more difficult and results in coughing, and if the airway is narrowed, shortness of breath may result.

Asthma may also be triggered by patients with GERD who do not display symptoms. In these cases, esophageal pH monitoring or an empiric three-month trial of vigorous acid suppression is often recommended.<sup>1</sup>

Some potential factors that may cause GERD in asthma patients include autonomic dysregulation, increased pressure gradient between the thorax and abdominal cavity and

asthma medications. Some medications such as theophylline (also known as dimethylxanthine and used to treat asthma or COPD), beta-agonists and corticosteroids may worsen GERD.

There has been discussion that dysregulation and dysfunction of the innervating nerves of the esophagus may cause burning in the sternal area, as well as relaxation of the LES. In addition, dysregulation and dysfunction of the nerves that innervate the airways may directly or indirectly trigger symptoms of asthma, such as cough and chest tightness.<sup>2</sup> This suggests that the nervous system may act as a link between GERD and asthma.

### GERD and Pulmonary Function

The association between GERD and pulmonary disease may be due to microaspiration of gastric contents and vagal

## Suggested Foods for Patients Suffering from GERD

Food group	Foods usually well tolerated	Foods that may cause distress
Milk products	Fat-free or low-fat milk; low-fat buttermilk; fat-free or low-fat yogurt	Whole milk; chocolate-flavored milk products
Breads and grains	Plain bread; whole grain flour; waffles; muffins with low-fat ingredients; bagels	Breads/grains/cereals with high fat ingredients (i.e., croissants, donuts, granola)
Fruits	Fresh, frozen or canned fruits that have no citrus; non-citrus juices	Citrus juices, such as pineapple, grapefruit, orange, lemon, tangerine
Vegetables	Fresh, frozen or canned vegetables without added fat	Creamy vegetables; fried vegetables; tomatoes and tomato pastes and sauces; any tomato products
Soups	Fat-free broths; soups with lean meat; vegetable soup	Tomato-based soup; creamy, high-fat soup with high-fat meat
Dessert	Low-fat desserts; low-fat ice cream; low-fat custards and puddings; Jell-O™	High-fat desserts such as cookies, pastries, cakes and pies; chocolate-flavored desserts
Sweets	Honey; jelly; syrups; hard candy	Chocolate, cream-stuffed candies or chocolates
Meat, poultry, meat substitutes and other proteins	Chicken without skin; lean meat; fish; lean pork; shrimp; lobster; crab; tofu; low-fat lunch meat; low-fat hot dogs; eggs	Fried chicken, meat, fish and eggs; high-fat lunch meat; high-fat sausage
Condiments, etc.	Garlic; non-caffeinated tea; salt; herbs and spices as tolerated	Peppermint; coffee; caffeinated tea; liquor and wine; mint-flavored candy and gum; carbonated beverages; jalapeno peppers; chili sauce or chili pepper
Other starches	Baked potato; mashed potatoes; sweet potatoes; fat-free refried beans; pasta with low-fat cream sauce; rice	French fries; refried beans; potato chips; pasta with high-fat cream sauce; pasta with tomato sauce

nerve-induced bronchospasm from gastric acid irritation of the esophagus. Therefore, certain pulmonary diseases associated with GERD may include pulmonary fibrosis, pneumonia, chronic bronchitis and, as mentioned above, asthma.<sup>3</sup> This connection suggests that GERD may be a risk factor for exacerbation of COPD (chronic obstructive pulmonary disease). According to a study by Rascon-Aguilar et al., patients who have COPD and reflux symptoms at least once a week have a higher likelihood of increased COPD exacerbations versus COPD patients who present with no symptoms or have GERD less than once a week.<sup>3</sup>

Patients who experience acid reflux into the throat over and over again may develop inflammation of the vocal cords, a hoarse voice or a sore throat. If acid gets inhaled into the lungs, this may result in aspiration pneumonia. In more severe cases, when reflux is chronic, pulmonary fibrosis may even occur.

### Long-Term Complications of GERD

In fact, the majority of patients with GERD do not develop serious complications, especially if treated appropriately. However, certain complications may develop in those with more serious GERD. In addition to the above mentioned pulmonary diseases, other potential complications include the following:

- *Barrett's esophagus*: This complication occurs when there is repeated damage to the esophageal lining, resulting in the replacement of squamous cells (which normally line the esophagus) with intestinal cells. These intestinal cells pose a small risk of becoming cancer cells, causing esophageal cancer. Therefore, in the small population of GERD patients who do develop Barrett's esophagus, periodic endoscopies are recommended.
- *Ulcers*: Formation of esophageal ulcers may occur due to burning from stomach acid, and may even cause bleeding.
- *Esophageal stricture*: Scarring and narrowing of the esophagus can occur from acid damage. Narrowing is caused by the development of scar tissue formed as a result of ulcers. This narrowing may create a blockage, which can cause food to get stuck in the esophagus.

### Treatment of GERD

Certain lifestyle and dietary changes may assist in the treatment of GERD. However, in more severe cases, these modifications alone will not treat GERD. Patients should consult with a physician regarding medication options appropriate for them.

Lifestyle changes that can aid in the management of GERD include:

- Eat smaller meals; avoid large portions.
- Wear loose-fitting clothes and belts.
- Maintain a healthy weight to help decrease intra-abdominal pressure caused by extra weight.
- Quit smoking.
- Avoid bedtime snacks and late-night eating; eat three to four hours before lying down.
- Elevate the head of your bed by six inches to decrease the chance of regurgitation of stomach contents back up into the esophagus.
- Consider over-the-counter antacids for immediate relief of symptoms.
- Avoid alcohol, and limit caffeine intake.

Patients should understand that they do not need to completely eliminate food they truly enjoy. They should pay attention to which specific foods exacerbate symptoms, and then decrease intake of those foods. Nutritional management of most conditions, including GERD, varies from person to person. Therefore, each patient will need to find out what helps in alleviating his or her individual symptoms. The goal is to minimize reflux of gastric contents and to identify foods that irritate the esophagus. ■

### References

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