

Esophageal pH Monitoring (Esophageal pH Test)

What is esophageal pH monitoring?

Esophageal pH monitoring is a procedure for measuring the reflux (regurgitation or backwash) of acid from the stomach into the esophagus.

When is esophageal pH monitoring used?

Esophageal pH monitoring is used to diagnose gastro-esophageal reflux (GERD, the regurgitation of acidic, partially digested food contents from the stomach into the esophagus) and to determine the effectiveness of medications that are given to prevent acid reflux.

How is esophageal pH monitoring performed?

Esophageal pH monitoring is performed by passing a thin plastic catheter a sixteenth of an inch in diameter through one nostril, down the back of the throat, and into the esophagus as the patient swallows. The tip of the catheter contains a sensor that senses acid. The sensor is positioned in the esophagus so that it is just above the lower esophageal sphincter, a specialized area of esophageal muscle that lies at the junction of the esophagus and stomach and prevents acid from refluxing back up into the esophagus. In this position the sensor records each reflux of acid. The catheter protruding from the nose is connected to a recorder that registers each reflux of acid. The patient is sent home with the catheter and recorder in place and returns the next day to have them removed. During the 24 hours that the catheter is in place, the patient goes about his or her usual activities, for example, eating, sleeping, and working. Meals, periods of sleep, and symptoms are recorded by the patient in a diary and/or by pushing buttons on the recorder. After the catheter is removed, the recorder is attached to a computer so that the data it has gathered can be downloaded into the computer where it is analyzed and put into graphic form.

How is esophageal pH monitoring used?

Everyone has some acid reflux, but the amount of reflux is small and rarely causes inflammation of the esophagus (esophagitis). As the amount of acid reflux increases above the normal range, so does the probability of developing esophagitis and its symptoms. In patients with symptoms that suggest acid reflux, a diagnosis of reflux can be made by demonstrating an acid pH in the esophagus for a greater than normal amount of time. (A common alternative method to diagnose reflux is to treat patients with medications that reduce reflux. If the patient's symptoms stop, then they are likely to be due to acid reflux.) Another way of diagnosing acid reflux as the cause of symptoms is to demonstrate that episodes of acid reflux recorded by esophageal pH monitoring occur at exactly the same time as symptoms.

Esophageal pH monitoring also can be used to determine why treatment for reflux is not working. For example, a patient treated for acid reflux may continue to have symptoms. If so, then the question must be asked as to why the symptoms are continuing. Is it because the medication is not adequate or is it because the symptoms are not due to reflux and, therefore, are not responding to treatment for reflux? If the pH monitoring study performed while the patient takes his or her medication for reflux shows abnormal amounts of reflux, then treatment is inadequate and needs to be changed. If the amount of acid reflux is within the normal range, then it is likely that the symptoms are not being

caused by acid reflux, and other potential problems need to be considered as the cause of the symptoms.

What are the limitations of esophageal pH monitoring?

The demonstration of abnormal amounts of acid reflux does not mean that symptoms are being caused by the reflux. Only treatment with medications that treat reflux coupled with a marked reduction of symptoms can be used to substantiate reflux as the cause of the symptoms. Nevertheless, it is important to remember that treatment is associated with a placebo response. For instance, 10-20% of patients without acid reflux report an improvement in symptoms with anti-reflux medications. Therefore, even a good response to treatment does not definitely prove that reflux is the cause of symptoms.

Some of the strongest evidence that a symptom is being caused by acid reflux is provided by demonstrating that the symptom coincides with an episode of acid reflux. If there are very frequent episodes of reflux, however, it may not be possible to separate a true association between a symptom and reflux from a chance association due to the great frequency of episodes of reflux. Conversely, if a symptom occurs infrequently, for example, once every few days, it is unlikely that the symptom will occur during a routine 24 hour monitoring session, and therefore, a correlation will not be possible. (One attempt to get around the latter problem is to extend the monitoring to several days, though this is not done commonly.)

Are there other ways in which pH monitoring can be used?

If the pH sensor is left in the stomach instead of the esophagus, it is possible to determine the effectiveness of medications that shut off the production of acid in the stomach. This information may be useful in determining the proper doses of medications among patients with acid-related conditions of the stomach and duodenum (for example, peptic ulcers). It also is possible to place a catheter with two acid sensors so that one sensor is in the stomach and the other is in the lower esophagus. With this catheter, it is possible to evaluate both acid esophageal reflux and the effectiveness of acid-suppressing medications.

The pH sensor may be placed in the upper esophagus or in the pharynx just above the upper esophageal sphincter in patients with unexplained symptoms of sore throat, hoarseness, or cough. In these patients, the demonstration of acid reflux into the upper esophagus or pharynx suggests that acid reflux may be the cause of the symptoms.

What are the side effects of esophageal pH monitoring?

There are very few side effects of esophageal pH monitoring. Although there may be mild discomfort in the back of the throat while the catheter is in place, particularly during swallows, the vast majority of patients have no difficulty eating, sleeping, or going about their daily activities. Most patients, however, prefer not to go to work because they feel self-conscious about the catheter protruding from their nose.

Are there alternatives to esophageal pH monitoring?

There are no alternatives for obtaining the information that esophageal pH monitoring provides.