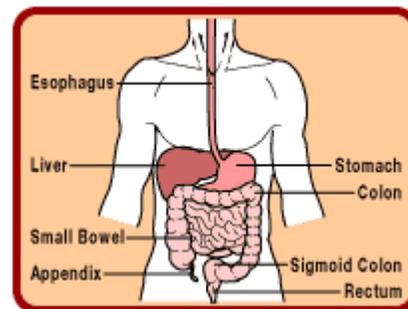


Dr. Hamish Hwang Inc.

General Surgery, GI Endoscopy & Esophageal Physiology

PATIENT HANDOUT: Esophageal pH

The esophagus is the muscular tube that carries food and liquid from the throat to the stomach. However, it is not a rigid tube. The muscles in the wall of the esophagus automatically contract when a person swallows. This type of contraction, called peristalsis, occurs as a sweeping wave down the esophagus. It literally squeezes the food or liquid along from the mouth to the stomach. Another important part of the esophagus is the Lower Esophageal Sphincter (LES). It is a strong muscular ring located where the esophagus enters the stomach. This specialized muscle remains tightly closed most of the time. It is supposed to open only to allow food and liquid to enter the stomach. Occasionally the LES opens at the wrong time, allowing caustic stomach acid and bile to splash up into the esophagus. This is called acid reflux. It is reflux that is responsible for the discomfort of heartburn. Almost everyone has experienced heartburn occasionally, and it is nothing to be concerned about. However, when it happens on a regular basis, it can lead to damage and scarring in the esophagus.



pH is a measure of acidity or alkalinity. Most people are familiar with pH tests done on soil or swimming pools. An esophageal pH test measures how often stomach acid flows into the lower esophagus and the degree of acidity during a 12-24 hour period.

Equipment

The equipment for esophageal pH consists of a small, thin probe at the end of tubing. This probe measures acidity. The tubing is gently inserted through the nose, down to the end of the esophagus. It is attached to a portable recorder that is carried at the waist. Over 12 to 24 hours, the acidity in the lower esophagus is recorded on a paper tape. When the patient experiences reflux or other symptoms, he/she presses a button on the recorder. This marks the time so as to see how it relates to the acidity levels measured by the probe. The recording is then analyzed, and a full report is sent back to the physician.



Reason for the Exam

There are a number of symptoms that originate in the esophagus, including heartburn, difficulty swallowing food or liquid, and chest pain. A measurement of esophageal pH is of great importance in evaluating these symptoms and allowing the physician to treat problems of acid reflux. Additionally, measurement of pH may be helpful in determining the success of treatment for acid reflux. So, this exam is often done before and after medical and especially surgical treatment of acid reflux into the esophagus.

X-ray examination (known as upper GI series or barium swallow), and endoscopy are other diagnostic tests often used when these symptoms are present in the esophagus. Endoscopy is a visual examination of the esophagus and stomach with a thin, lighted, flexible tube.

Preparation

The preparation for esophageal pH measurement is very simple. The patient should take no food or liquid for about 8 hours before the exam. In most cases, the physician will want to study the esophagus in its natural state. In other words, there should not be any medicine in the body that can affect the function of the esophagus.

Patients should review all medications they are taking with their physicians, so they can be advised which they should and should not be taking before the test.



Dr. Hamish Hwang Inc.

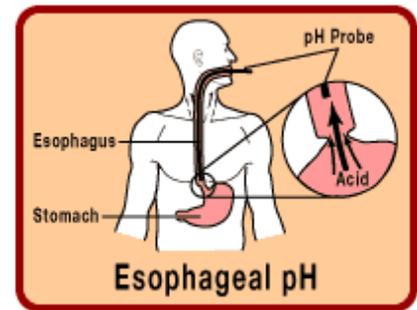
General Surgery, GI Endoscopy & Esophageal Physiology

Generally, the following list of drugs may affect how much acid flows into the esophagus. They usually need to be discontinued at least 48 hours before the test. However, do not stop taking any medication without consulting the physician.

- Caffeine (coffee, tea, cola, chocolate)
- Alcohol
- Reglan (generic: metoclopramide)
- Urecholine (generic: bethanechol)
- Erythromycin (E-Mycin, and others)
- Nitroglycerin (Isordil, and others)
- Calcium channel blockers, (Procardia, Adalat, Calan, Cardizem, and others)
- Beta blockers (Corgard, Inderal, Lopressor, and others)
- Donnatol
- Librax
- Levsin
- Tagamet (generic: cimetidine)
- Zantac (generic: ranitidine)
- Pepcid
- Axid
- Prilosec
- Prevacid

The Procedure

It takes about 10-15 minutes to insert and place the pH probe. While the patient is seated in a chair or lying on his/her side, a thin soft tubing is gently passed through the nose, or occasionally the mouth. Upon swallowing, the tip of the tube enters the esophagus and the medical technician or nurse then quickly passes it down to the desired level. There is usually some slight gagging at this point, but it is easily controlled by following instructions. The tubing is then attached to the waist recorder, and the patient is sent on to his or her regular daily activities.



Results

Normally there are several mechanisms that keep acid out of the esophagus. The first is swallowed saliva which helps neutralize stomach acid. Second are the sweeping muscle contractions that act to cleanse the lower esophagus of acid reflux. Third is the protective contraction of the LES. Generally, the esophageal pH test will show a small amount of acid seeping into the esophagus at various times during the day and night. This is normal for almost everyone, and the patient may not even be aware of symptoms. However, if the above protective actions of the esophagus do not function properly, the test will show a greater degree and duration of stomach acid in the esophagus.

Benefits and Alternatives

The primary benefit of the exam is that the physician has clear documentation of the degree and duration of acidity in the esophagus. With this information a specific treatment program can be outlined, or reassurance can be provided if the exam is normal.

While there are other examinations used to study the esophagus, such as upper GI series and endoscopy, nothing really takes the place of esophageal pH measurement. Esophageal pH is often done in association with a pressure recording of the esophagus, known as Esophageal Manometry.

Side Effects and Complications

Generally, there are no serious problems associated with the esophageal pH test. Once the tube is in place, it is usually easily tolerated.

Summary

Esophageal pH is a valuable method of determining the severity of acid reflux into the esophagus. With this information, the physician can usually develop effective treatment for most patients who have acid disorders in the lower esophagus.