ADVANCES IN GERD

Current Developments in the Management of Acid-Related GI Disorders

Section Editor: Joel E. Richter, MD

New Tests for the Evaluation of Laryngopharyngeal Reflux

Michael F. Vaezi, MD, PhD, MS
Clinical Director, Division of Gastroenterology, Hepatology, and Nutrition
Director, Center for Swallowing and Esophageal Disorders
Professor of Medicine
Vanderbilt University Medical Center
Nashville, Tennessee

G&H What is laryngopharyngeal reflux?

MV Laryngopharyngeal reflux (LPR) is a term often used by ear, nose, and throat (ENT) physicians to refer to laryngeal findings suspected of being caused by reflux disease. Gastroenterologists more commonly use the terms chronic laryngitis or reflux-related laryngitis. This group of patients commonly complain of throat issues, such as chronic cough, throat clearing, hoarseness, or sore throat, which is why they are initially referred to ENT physicians.

G&H What are the most common methods currently being used to evaluate this condition?

MV Laryngoscopic evaluation is the initial form of evaluation used in patients with chronic throat-related symptoms who are referred to ENT physicians. Laryngeal irritation (such as erythema and edema) identified during laryngoscopy often leads to the suspicion of LPR. However, laryngoscopic findings are not specific for reflux. Other factors—such as exogenous irritants, allergies, medications, or vocal cord overuse or abuse—may also lead to similar findings. Nonetheless, patients are empirically treated with proton pump inhibitor therapy and are then referred to a gastroenterologist if symptoms persist. Given the nonspecificity of laryngoscopic findings, the main issues in this group of patients are to make sure that reflux is ruled out and that a search for other nonreflux-related causes is initiated.

It is often mistakenly thought that an abnormality with any of the current reflux detection technologies suggests reflux as the cause of LPR. In this difficult group of patients, caution must be exercised in attributing reflux as the cause of patients' symptoms, particularly in those who remain symptomatic despite aggressive acid suppressive therapy. In this group, I strongly recommend abandoning the current practice of searching for a methodology to find an abnormality in order to assign reflux as the cause in favor of seeking other potential contributing factors for patients' laryngeal symptoms.

G&H Why is a new test needed for the evaluation of LPR? What limitations are associated with the existing tests?

MV The most common tests currently utilized by gastroenterologists in patients suspected of reflux-related laryngeal symptoms or LPR are endoscopy and pH monitoring. Both tests suffer from poor sensitivity. Endoscopy is normal in over 80% of patients, and pH monitoring is either normal or shows mild reflux in approximately 70–80% of patients. Some gastroenterologists have advocated the use of proximal or hypopharyngeal pH monitoring, but these 2 probes have sensitivities of only 40–50% at best, limiting their utility. Thus, there is a need for a better test with increased sensitivity for patients suspected of having LPR.

G&H What tests have recently been developed for the evaluation of LPR, and how are they different in testing for reflux?

MV Recently, 2 tests have become available, with the hope of increasing the sensitivity of detecting reflux in patients with LPR. These tests are oropharyngeal

pH monitoring (also called Restech pH probe) and salivary pepsin testing. The Restech pH probe is placed in the oropharynx, instead of the hypopharynx, and is purported to detect not only liquid but also vaporized acid refluxate, which some physicians suggest may be important in patients with LPR. Salivary pepsin testing with a noninvasive rapid pepsin lateral flow device (LFD) uses 2 monoclonal antibodies to human pepsin to detect the presence of pepsin in the saliva. The primary premise of this test is that, as a constituent of gastric milieu, salivary pepsin would only be present if a patient has reflux; thus, a positive salivary pepsin test may confirm LPR.

G&H What has been reported regarding pepsin testing thus far?

MV With this device, my colleagues and I recently conducted in vitro and clinical studies in patients with gastroesophageal reflux disease. We found that only 22% of patients with documented reflux according to endoscopy and pH monitoring had abnormal salivary pepsin. However, the prevalence of abnormal test results increased to 55% in patients with esophagitis. Overall, we found both a sensitivity and specificity of 87%, a positive predictive value of 81%, and a negative predictive value of 78% for the salivary pepsin test in patients with gastroesophageal reflux disease. Thus, the salivary pepsin measurement has acceptable test characteristics; however, future outcome studies are needed in patients with LPR to assess whether it can predict treatment response.

G&H What are the advantages of the pepsin LFD?

MV The role of the pepsin LFD is intriguing because it provides a convenient, office-based, noninvasive, quick, and inexpensive technique that is different from the tools currently available. However, before determining whether this test is useful, researchers must be diligent in their approach and must better understand its clinical utility.

G&H What limitations and contraindications are associated with this test?

MV There are no contraindications to this test because it merely requires patients to spit in a cup and then it undergoes analysis. It is noninvasive.

One important limitation of this device is the uncertainty of the optimal timing of the sample collection. Should it be during a symptom or at any time? Before meals or after meals? During the day or at night? These important questions await future studies.

G&H Is the pepsin LFD currently being used by physicians to evaluate LPR?

MV The pepsin LFD is currently being used in patients with suspected LPR. However, caution should be exercised in the interpretation of the results. Does a negative test rule out reflux? Does a positive test suggest a causal link between gastroesophageal reflux disease and laryngeal symptoms? This assumption cannot be made based on the data currently available.

G&H What is the Restech pH probe, and how can it be used to evaluate LPR?

MV This oropharyngeal-placed pH probe was developed with the hopes of increasing sensitivity for acid reflux detection in patients with extraesophageal reflux, including patients with LPR. The device uses a small catheter (1.5 mm in diameter) with a sensor and flashing light-emitting diode light to guide proper catheter placement. This device does not need manometry for placement because it is positioned transnasally into the posterior oropharynx. A recent study conducted by my colleagues and I suggests that this device has increased sensitivity compared with a traditional pH catheter and that it may detect more reflux in patients with LPR. However, future outcome studies are needed to better position the importance of this pH device in patients with LPR.

G&H What are the advantages of this method?

MV Advantages of this device are that it does not require manometry or endoscopy and that its sensor design allows for capturing liquid reflux events as well as purported aerosolized acid exposure. Some physicians have also suggested that patients tolerate this catheter better because it does not traverse the upper esophageal sphincter.

G&H What limitations and contraindications are associated with the Restech pH probe?

MV Since the probe is still introduced transnasally, it is important to make sure that there are no nasal or sinus issues that would prevent its use. Additionally, given that it might irritate the nasal cavity during placement, physicians should be cautious with patients on anticoagulant therapy.

An important limitation relates to the uncertainty that a reflux event detected by this device truly originates from the stomach, as there are no concomitant esophageal probes. Eating acidic foods may register as reflux and result in false-positive readings. Thus, I recommend careful documentation of meal times and close examination of pH tracings.

G&H Is this device currently being used by physicians to evaluate LPR?

MV The Restech pH probe is currently being used in patients with LPR, predominately by ENT physicians. Many studies have been published in the ENT literature using this probe, with some suggesting superiority over traditional pH probes for predicting reflux-related events in patients with LPR. Several academic gastroenterology centers, such as ours, are in the midst of studying the clinical utility of this device. I remain hopeful about its clinical utility, but, as always, well-designed outcome studies are needed before recommending the widespread use of the probe.

G&H Are there any other promising tests in development for the evaluation of LPR?

MV What the field of reflux, including LPR, needs is better detection of the chronic effect of reflux on esophageal or laryngeal tissue. Most of the tests currently available measure the presence of reflux but do not measure the long-term consequences of gastroesophageal reflux disease, which is a significant limitation of the current platforms. Recently, my colleagues and I developed a novel technology to assess mucosal conductivity changes as a result of chronic mucosal exposure to gastroduodenal contents. This test is called mucosal impedance. We are hopeful that devices such as these, which may have improved sensitivity and specificity for the diagnosis of gastroesophageal reflux disease, may be employed in the future in patients with any reflux-related condition, including patients with LPR.

Suggested Reading

Saritas Yuksel E, Hong SK, Strugala V, et al. Rapid salivary pepsin test: blinded assessment of test performance in gastroesophageal reflux disease. *Laryngoscope*. 2012;122:1312-1316.

Abou-Ismail A, Vaezi MF. Evaluation of patients with suspected laryngopharyngeal reflux: a practical approach. *Curr Gastroenterol Rep*. 2011;13:213-218.

Sun G, Muddana S, Slaughter JC, et al. A new pH catheter for laryngopharyngeal reflux: normal values. *Laryngoscope*. 2009;119:1639-1643.

Barry DW, Vaezi MF. Laryngopharyngeal reflux: more questions than answers. *Cleve Clin J Med*. 2010;77:327-334.

Saritas Yuksel E, Vaezi MF. New developments in extraesophageal reflux disease. *Gastroenterol Hepatol (N Y)*. 2012;8:590-599.