The Laryngoscope
Lippincott Williams & Wilkins, Inc., Philadelphia

Prevalence of Esophagitis in Patients With pH-Documented Laryngopharyngeal Reflux

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Objective: **To report the prevalence of esophagitis in patients with pH-documented laryngopharyngeal reflux.** ***Study Design:*** **Prospective study of 58 consecutive patients with documented laryngopharyngeal reflux, all of whom underwent transnasal esophagoscopy as part of their reflux evaluations.** ***Methods:*** **All patients with a diagnosis of laryngopharyngeal reflux confirmed by abnormal pharyngeal pH monitoring over a 5-month period were included, and all subjects completed a self-administered reflux symptom index and underwent transnasal esophagoscopy with directed biopsy.** ***Results:*** **Of the 58 study patients with pH-documented laryngopharyngeal reflux, the mean age was 49 years (± 13 y), and 53% (31 of 58) were women. Of the study group, 40% (23 of 58) had heartburn and 48% (28 of 58) had abnormal esophageal reflux (by pH monitoring criteria); by transnasal esophagoscopy with biopsy, 12% (7 of 58) had esophagitis and another 7% (4 of 58) had Barrett's metaplasia. Thus, 60% of the study cohort had *no* heartburn, and 81% (47 of 58) had normal esophageal epithelium (i.e., *no* esophagitis or Barrett's metaplasia).** ***Conclusions:*** **In the present series of patients with documented laryngopharyngeal reflux the prevalence of esophagitis and Barrett's metaplasia was only 19%. These data confirm the clinical impression that the patterns, mechanisms, and manifestations of laryngopharyngeal reflux differ from those of classic gastroesophageal reflux disease. Unlike gastroesophageal reflux disease, patients with laryngopharyngeal reflux uncommonly have esophagitis. Thus, although esophagoscopy may be an excellent method for screening the esophagus, it is not the method of choice for diagnosing laryngopharyngeal reflux.**

Key Words: **Gastroesophageal reflux disease, gastroesophageal reflux, laryngopharyngeal reflux, esophagoscopy, esophagitis, Barrett's metaplasia.**
Laryngoscope, **112:1606–1609, 2002**

INTRODUCTION

Laryngopharyngeal reflux (LPR), the backflow of stomach contents into the laryngopharynx, differs from classic gastroesophageal reflux disease (GERD) in many ways.[1–10] Patients with LPR routinely report symptoms of dysphonia, globus pharyngeus, cough, chronic throat clearing, dysphagia, and excessive throat mucus, but usually do not complain of heartburn.[6–8] However, heartburn is a common symptom of GERD.[1–8] Preliminary reports suggest that patients with LPR typically do not have esophagitis.[6,7] This may be because the patterns and mechanisms of LPR and GERD are different. Double-probe pH monitoring and manometric data of patients with LPR show that patients with LPR are predominantly upright (daytime) "refluxers" with normal esophageal motility and acid clearance.[10] Conversely, patients with GERD are typically supine (nocturnal) refluxers with esophageal dysmotility and prolonged periods of esophageal exposure to gastric contents.[4,7,8] We hypothesize that the above differences account for differences in the symptoms and manifestations of LPR and GERD and, specifically, that patients with LPR usually do *not* have esophagitis, considered the *sine qua non* of GERD.

Diagnostic assessment of patients with laryngopharyngeal symptoms using pH monitoring of the esophagus was first reported in the 1980s,[3–7] but Wiener et al.[2] were the first to use simultaneous esophageal and pharyngeal pH monitoring in this group. This technique accurately determines acid reflux events above the upper esophageal sphincter, at the laryngeal inlet, and within the esophagus. When guided by manometry, double-probe pH monitoring remains the gold standard for the diagnosis of LPR.[10–16]

Screening of the esophagus in patients with GERD for associated disease (e.g., esophagitis, Barrett's metaplasia, stricture, neoplasm) has long been the standard

Presented at the Meeting of the Western Section of the Triological Society, Pasadena, CA, February 2, 2002.

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Editor's Note: This Manuscript was accepted for publication April 30, 2002.

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TABLE I.
Reflux Symptom Index.

Within the last month, how did the following problems affect you?	0 = No problem 5 = Severe problem					
1. Hoarseness or a problem with your voice	0	1	2	3	4	5
2. Clearing your throat	0	1	2	3	4	5
3. Excess throat mucous or postnasal drip	0	1	2	3	4	5
4. Difficulty swallowing food, liquids, or pills	0	1	2	3	4	5
5. Coughing after you ate or after lying down	0	1	2	3	4	5
6. Breathing difficulties or choking episodes	0	1	2	3	4	5
7. Troublesome or annoying cough	0	1	2	3	4	5
8. Sensations of something sticking in your throat or a lump in your throat	0	1	2	3	4	5
9. Heartburn, chest pain, indigestion, or stomach acid coming up	0	1	2	3	4	5
				Total		

of medical practice.[7,8,12,17] Before the availability of transnasal esophagoscopy (TNE),[18,19] most otolaryngologists relied on barium esophagography to screen the esophagus for related disease because it was a relatively noninvasive method.[17] However, barium studies have a relatively low sensitivity for esophagitis and Barrett's metaplasia[7,12]; reflux is radiographically apparent in only 33% of patients with pH-documented GERD[12] and in only 25% of patients with endoscopically proven esophagitis.[17]

Esophagoscopy is a far more sensitive and specific test for esophagitis and associated pathological conditions, particularly when coupled with biopsy of the esophageal mucosa. Transnasal esophagoscopy is a relatively new technology that has the additional advantages of allowing esophagoscopy to be performed in the office with the patient seated and not sedated, requiring only topical anesthesia.[18,19] Currently at our center, we routinely employ TNE as a screening and as a diagnostic tool. We have virtually abandoned barium esophagography as a part of our reflux testing battery. The purpose of the present investigation was to determine the prevalence of endoscopically and histologically demonstrated esophagitis in otolaryngologic patients with pH-documented LPR.

MATERIALS AND METHODS

All patients presenting with otolaryngologic symptoms and a diagnosis of LPR established by ambulatory 24-hour double-probe (simultaneous esophageal and pharyngeal) pH monitoring between November 1, 2000, and March 31, 2001, were enrolled in the study. Specifically included were patients who demonstrated abnormal pharyngeal reflux (i.e., pH probe-documented LPR). In our laboratory, pH probe location is routinely determined by manometry so that both the proximal and distal pH probes are placed with precision.[15] The pharyngeal probe is placed just above the upper esophageal sphincter, just behind the laryngeal inlet. Our technique of pH monitoring has been previously reported.[7,13–15]

Pharyngeal reflux events below pH 4.0 are considered diagnostic for LPR. For interpretation of the distal esophageal probe data, abnormal studies are defined by the percent time the pH is less than 4.0: either ≥8.1% of the time in the upright position, ≥2.9% of the time in the supine position, and/or ≥5.5% of the total time constitute abnormal results. In addition, more than 51 esophageal reflux episodes within a 24-hour period is considered abnormal. These standards have been previously reported[7] and are similar to those from other laboratories.[20,21]

Each patient completed a reflux symptom index (RSI) during his or her initial evaluation. This is a self-administered nine-item survey instrument used to document the severity and treatment efficacy in patients with LPR. Normative data have been established for this index, and it has demonstrated excellent validity and reliability.[22,23] The prevalence of heartburn was obtained from RSI data.

Transnasal esophagoscopy with directed biopsies was performed on all study subjects. Our technique of TNE has been reported.[19] The prevalence of esophagitis and of Barrett's metaplasia was calculated from TNE data.

RESULTS

Fifty-eight patients with pH-documented LPR were included. The mean age of the cohort was 49 ± 13 years, and 53% (31 of 58 patients) were women. The mean RSI ± SD of the entire cohort was 18 ± 11. The overall prevalence of esophagitis was 12% (7 of 58). The overall prevalence of Barrett's metaplasia was 7% (4 of 58). Only 40% (23 of 58) of the cohort had heartburn.

In addition to LPR, 48% of the study subjects had abnormal esophageal reflux by pH parameters. In other words, using strictly pH criteria, 48% of the study group had LPR *and* GERD. Within that subgroup, 39% (11 of 28) experienced heartburn, 25% (6 of 28) had esophagitis, and 11% (3 of 28) had Barrett's metaplasia.

DISCUSSION

As recently as the early 1980s, many clinicians questioned whether the backflow of gastric contents

into the throat could account for laryngopharyngeal symptoms in the absence of heartburn, the primary symptom of GERD. Indeed, LPR documented by pharyngeal pH monitoring was not reported until 1986.[2] Before that time, many of these head and neck symptoms were presumed to result from vagally mediated reflexes, not from LPR.[24]

Today, many otolaryngologists still rely on gastroenterologists to evaluate their patients in whom they suspect LPR. In many cases, the otolaryngologist is frustrated because esophageal pH studies and endoscopy may not demonstrate reflux. Today, it is apparent that the pattens, mechanisms, symptoms, and findings of LPR and GERD differ. Therefore, these differences must be reflected in the choice of diagnostic methods. Esophagoscopy and biopsy have a low yield and unacceptable sensitivity for diagnosing LPR. In addition, the same can be said of single-probe esophageal pH monitoring: in this series its sensitivity was only 48%.

Since the 1991 report by Koufman[7] of a large series of patients with LPR, there has been considerable emphasis on identifying how patients with LPR and those with GERD differ. The majority of patients with LPR do not complain of heartburn, the principal symptom of GERD. The majority of patients with LPR have upright (daytime) reflux with normal esophageal acid clearance, a good overall measure of esophageal function.[10] As a result, in many patients with LPR, the amount and duration of esophageal reflux are in the normal range. Although this level of esophageal reflux does not cause heartburn and esophagitis, the more fragile laryngeal epithelium may still be injured. For the esophagus, up to 50 reflux episodes a day is considered normal.[7,11,21] For the larynx, as few a three reflux episodes a week has been shown to be associated with the development of significant disease.[7,25] The difference appears to be due to the fact that the extrinsic and the intrinsic defenses of the laryngeal epithelium are much weaker than those of the esophagus.[25,26]

The data presented in the current report strongly support the clinical impression that LPR is different from GERD. In view of the fact that 81% (47 of 58) of the reported patients with LPR had normal esophageal epithelium, it is obvious that esophagoscopy (even with biopsy) is not the diagnostic test of choice in LPR.

CONCLUSION

The present study demonstrated a relatively low prevalence of biopsy-proven esophagitis in pH-documented patients with LPR; 12% had esophagitis and another 7% had Barrett's metaplasia. Of the study patients, 60% had no heartburn, and 81% (47 of 58) had normal esophageal epithelium (i.e., *no* esophagitis or Barrett's metaplasia). The mechanisms and patterns of LPR and GERD appear to differ, and those differences may account for differences in the symptoms and esophageal manifestations. Esophagoscopy with biopsy is not the diagnostic method of choice in LPR.

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