

Endoscopic Assessment of Esophagitis with Transnasal Esophagoscopy in the Prediction of Treatment Response

Eun-Jae Chung, MD, PhD¹, Min-Woo Park, MD² and Kwang-Yoon Jung, MD, PhD²

¹Department of Otolaryngology-Head and Neck Surgery, Hallym University College of Medicine, Seoul; and

²Department of Otolaryngology-Head and Neck Surgery, Korea University College of Medicine, Seoul, Korea

= Abstract =

Objectives : The purpose of this study was to investigate the endoscopic evidence of esophagitis in laryngopharyngeal reflux disease (LPRD) patients using transnasal esophagoscopy (TNE) and to correlate these findings with treatment response. **Methods** : Fifty patients underwent TNE at Korea University Anam Hospital from July 2007 to Feb 2009. Participants were selected from patients that presented with various laryngeal symptoms. One experienced otolaryngologist assessed esophagitis according to the Los Angeles classification system using the TNE findings. **Results** : Fifteen of 50 LPR patients (30%) were found to have esophagitis (12 patients with Grade A, 3 patients with Grade B, no patients with grade C/ D esophagitis). Among the 15 patients positive for esophagitis based on the endoscopic findings, 12 (80%) showed symptom improvement after pharmacological therapy. Symptom improvement was correlated with evidence of esophagitis ($p=0.002$) but not with RFS ($p=0.749$). **Conclusion** : Endoscopic evaluation of esophagitis using TNE is a potentially valuable tool for predicting treatment response in LPRD patients.

KEY WORDS : Laryngopharyngeal reflux · Transnasal esophagoscopy · Los Angeles classification.

Introduction

A considerable number of patients present to laryngologists with complaints consistent with laryngeal irritation, such as throat clearing, mucus in the throat, and hoarseness. This complex of symptoms is commonly considered to be indicative of laryngopharyngeal reflux disease (LPRD). However, the current diagnosis of LPRD is fraught with many problems, including overdiagnosis due to reliance on 'soft' signs combined with poor diagnostic tests and high levels of intra- and interobserver variability. These facts leave physicians with little alternative but to treat patients empirically with expensive drugs over a prolonged period. Unfortunately, although it is clear that refluxed stomach acid can cause irritation of the larynx, it remains difficult to determine if this is the cause of laryngeal irritation.¹⁾

The endoscopic esophageal changes caused by reflux disease are not only diagnostically helpful but can also help iden-

tify patients with a significant risk of disease chronicity.²⁾ Furthermore, the severity of esophagitis provides useful guidance to the likelihood of success of particular treatments for gastroesophageal reflux disease (GERD).²⁾ The purpose of this study was to investigate the evidence of esophagitis in LPRD patients using transnasal esophagoscopy and to correlate the TNE findings with treatment response.

Materials and Methods

1. Patient population

We enrolled 50 patients scheduled to undergo TNE at Korea University Anam Hospital from July 2007 to Feb 2009. The study group was composed of 20 men and 30 women (mean age : 55.28 years ; range 19–78 years). Participants were selected from patients who presented with various laryngeal symptoms. The most prominent symptom reported by the subjects was foreign body sensation, followed by hoarseness and throat clearing. LPRD was diagnosed on the basis of typical symptoms and laryngoscopic findings and confirmed by symptom improvement or resolution due to appropriate pharmacologic therapy. Transnasal esophagoscopy was performed to verify the presence of esophagitis. The study protocol was approved by the Institutional Review Board of our hospital. All

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Address for correspondence: Kwang-Yoon Jung, MD, PhD, Department of Otolaryngology-Head and Neck Surgery, Korea University College of Medicine, 73 Incheon-ro, Seongbuk-gu, Seoul 136-705, Korea
Tel: 02-920-5486, Fax: 02-925-5233
E-mail: kyjungmd@gmail.com

participants were provided with a detailed explanation of the study and provided written informed consent.

2. Laryngeal evaluation : symptom questionnaire and laryngoscopic examination

The study participants were interviewed to determine symptoms relevant to LPR. A common self-administered questionnaire, the Reflux Symptom Index (RSI) developed by Belafsky et al.,³⁾ was used during the interview for symptom assessment. Subjects with a summed RSI score greater than 13 were considered to be positive. A veteran otolaryngologist evaluated the appearance of the larynx using a laryngoscope and assessed laryngeal findings according to the Reflux Finding Score (RFS).⁴⁾ Total scores can range from 0 (normal) to 26 (worst), and an RFS total score greater than 7 is regarded as positive.

3. TNE technique

Topical nasal anesthesia and decongestion were achieved with intranasal pontocaine and neosynephrine, and a short spray of 10% benzocaine was used in the oropharynx for further analgesia. Patients were examined fully awake and sitting upright with a Pentax flexible endoscope (VE-1530, Pentax Precision Instrument Corporation, Orangeburg, New York). A lidocaine gel was used as a lubricant on the endoscope. The endoscope was advanced along the floor of the nose into the nasopharynx and turned inferiorly to allow visualization of the nasopharynx, oropharynx, supraglottis, and glottis. The patient was then asked to burp and swallow several times to allow visualization of the postcricoid space, and the endoscope was gently advanced until it entered the esophagus. The entire length of the esophagus was evaluated after air insufflation,

with special attention to the gastroesophageal junction. Slow withdrawal of the endoscope allowed re-evaluation of the esophagus and optimal examination of the postcricoid area. If mucosal lesions or irregularities were noted, biopsy forceps were passed through the working channel, and multiple biopsies were obtained.

4. Endoscopic assessment of esophagitis using the Los Angeles classification system

One experienced otolaryngologist assessed esophagitis according to the Los Angeles classification system with the assistance of a veteran gastroenterologist (Table 1, Fig. 1). The criteria used by the Los Angeles classification system focus on the description of the extent of visible mucosal breaks in the belief that this is of the greatest diagnostic and prognostic value. A mucosal break is defined as “an area of slough or erythema with a discrete line of demarcation from the adjacent more normal looking mucosa”.²⁾ Minor features such as erythema, blurring, friability at the squamocolumnar junction, diffuse/patch erythema, and increased vascularity in the distal esophagus were not considered to be positive features.

5. Treatment response analysis

Patients were followed-up for a mean of 13.2 weeks (range, 4–21 weeks). Treatment responses were analyzed based on patient symptoms after a minimum of 1 month of proton pump inhibitor (lansoprazol) treatment, and responses were categorized as improved, no interval changes, or worse.

6. Analysis

Univariate analysis was performed using Fisher’s exact testing the SPSS statistical package (SPSS Inc, Chicago, IL, USA). A p-value less than 0.05 was considered significant.

Table 1. The Los Angeles classification system for esophagitis²⁾

Grade A	One (or more) mucosal breaks no longer than 5 mm that do not extend between the tops of two mucosal folds
Grade B	One (or more) mucosal breaks longer than 5 mm that do not extend between the tops of two mucosal folds
Grade C	One (or more) mucosal breaks that are continuous between the tops of two or more mucosal folds but that involve less than 75% of the circumference
Grade D	One (or more) mucosal breaks that involve at least 75% of the esophageal circumference

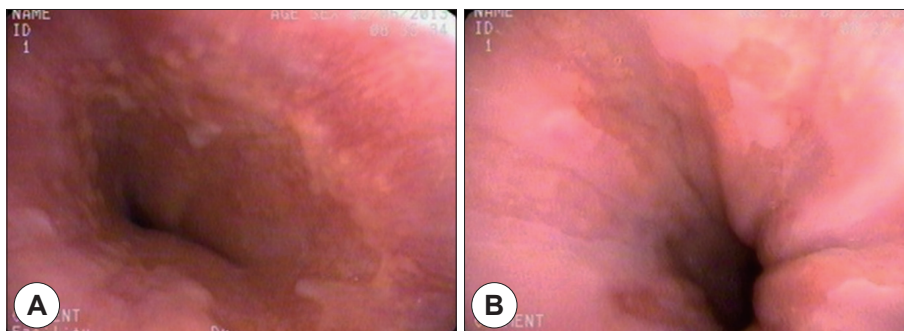


Fig. 1. Endoscopic finding with transnasal esophagoscopy. A : The Los Angeles class A. Mucosal breaks confined to the mucosal fold, each no longer than 5 mm. B : The Los Angeles class B. At least one mucosal break longer than 5 mm confined to the mucosal fold but not continuous between two folds.

Table 2. The relationship between symptom improvement and RFS/ endoscopic evidence of esophagitis

		Symptom improvement after treatment	
		Positive	Negative
RFS	>7	10	12
	≤7	14	14
	p-value	0.749	
Endoscopic evidence of esophagitis	Positive	12	3
	Negative	12	23
	p-value	0.002*	

*RFS : Reflux finding score

Results

No serious complications occurred during the transnasal esophagoscopy procedure. Fifteen of 50 LPR patients (30%) were found to have esophagitis (12 patients with Grade A, 3 patients with Grade B, no patients with grade C/ D esophagitis). The mean RFS of the whole population was 6.56, while that of patients who had evidence of esophagitis was 6.83 for grade A patients and 8.67 for grade B patients (compared to 7.2 for patients with no evidence of esophagitis). Among the 15 patients with positive esophagitis based on the endoscopic findings, 12 (80%) showed symptom improvement after pharmacological treatment. Symptom improvement was correlated with the evidence of esophagitis ($p=0.002$) but not with RFS ($p=0.749$)(Table 2).

Discussion

LPRD is known to be one of the extra-esophageal syndromes of GERD.⁵⁾ The closeness of the larynx to the upper esophagus enables direct contact and subsequent reflux flow into the laryngeal region. In contrast to the esophagus, the laryngeal mucosa normally does not encounter gastric refluxate and does not contain neutralizing agents such as saliva or bicarbonate,⁶⁾ making it more susceptible to gastric acid. Therefore, investigators have attempted to correctly diagnose and manage laryngeal symptoms associated with GERD. In general, however, both diagnosis and treatment of LPRD are imprecise.

Laryngoscopy has limited ability to diagnose GERD. In blinded and placebo-controlled studies designed to determine the impact of acid suppressive therapy, there was no statistical difference in the laryngoscopic findings before and after treatment.⁷⁾ A prospective, randomized, blinded trial of laryngoscopic findings from five observers revealed poor correlation and significant intra- and interobserver variability in these findings.⁸⁾ Milstein et al.⁹⁾ reported at least one sign of tissue

irritation in 93% of 156 normal subjects. Belafsky et al.⁴⁾ developed a scoring system (reflux finding score, RFS) to rate the severity of eight laryngeal signs. They reported a two observer intra-observer reliability of 95% and an inter-observer reliability for the same two observers of 90%. However, Park et al.¹⁰⁾ found that RFS showed low specificity and there was no significant difference between the test and control groups according to the results of 24-hour double-probe ambulatory pH monitoring.

Pharyngeal pH monitoring, once considered to be the gold standard for detecting reflux, has been shown to be inaccurate because there is no consensus as to how much reflux in the hypopharynx is normal. A further difficulty is that, overall, only 54% of patients with suspected laryngoscopic signs of GERD have abnormal esophageal acid exposure.¹¹⁻¹³⁾

Although esophagitis is not essential for LRPD, in our study, the patients that were diagnosed with esophagitis based on an endoscopic exam showed a better treatment response. Qua et al.¹⁴⁾ also showed that laryngitis symptoms and signs improved in the GERD group only when both GERD and non-GERD patients were treated with proton pump inhibitors. In conclusion, endoscopic evaluation of esophagitis using TNE is a potentially valuable tool for predicting treatment response in LPRD patients.

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