Diagnostic and Interventional Endoscopy

Research Article

Comparison of Routine Upper Gastrointestinal Endoscopy and Laryngeal Examination in the Detection of Laryngopharyngeal Lesions in Patients With or Without Gastroesophageal Reflux

Çağdaş Erdoğan

Department of Gastroenterology, Ankara Etlik City Hospital, University of Health Sciences, Ankara, Turkey

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Correspondence author: Çağdaş Erdoğan, e-mail: cagdas_erdogan@hotmail.com

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Abstract

Objective: The objective of this research was to determine if laryngopharyngeal lesions identified by an endoscopist during the upper gastrointestinal endoscopy in individuals with or without gastroesophageal reflux disease (GERD) are consistent with the lesions found by an otolaryngologist during a laryngopharyngeal examination.

Methods: Patients who underwent esophagogastroduodenoscopy (EGD) under anesthesia were prospectively evaluated, and digital video recordings of all patients were taken. The endoscopic laryngopharyngeal findings of the patients were evaluated by the gastroenterologist during the procedure, and the video recordings were evaluated by the otorhinolaryngologist blindly.

Results: The incidence of GERD-related symptoms and laryngopharyngeal symptoms was statistically significantly higher in the laryngopharyngeal pathology (LPP)-positive group [13 (56.5%), 11 (47.8%), respectively] compared to the LPP-negative group [26 (12.9%), 25 (12.4%), respectively] (both, $P < .001$). Among all patients, while endoscopic LPP was detected in 23 (10.3%) patients, pathology was detected in 27 (12.1%) patients during otolaryngologist examination; this difference was not statistically significant ($P = .360$). Posterior laryngitis was the most common pathology in both endoscopy 8 (3.6%) and laryngopharyngeal examination 9 (4%). Other significant endoscopic and laryngopharyngeal findings were mucous retention cyst [5 (2.2%), 5 (2.2%)], vocal cord nodule [4 (1.8%), 4 (1.8%), respectively], hypertrophy of the pharyngeal tonsil [3 (1.3%), 4 (1.8%)], leukoplakia [2 (0.9%), 2 (0.9%)], and Reinke's edema [1 (0.4%), 3 (1.3%), respectively].

Conclusion: The evaluation of the laryngopharyngeal region by the endoscopist during EGD is similar to the evaluation by the otolaryngologist. Laryngopharyngeal lesions are detected more frequently, especially in patients reporting GERD symptoms.

Keywords: Laryngopharyngeal lesions, upper GI endoscopy, gastroesophageal reflux disease, otolaryngologist examination, laryngopharyngeal examination

INTRODUCTION

Esophagogastroduodenoscopy (EGD) includes evaluation of the oropharynx, esophagus, stomach, and proximal duodenum. Esophagogastrod uodenoscopy can be performed with indications such as dyspeptic complaints that do not respond to medical treatment, the presence of alarm symptoms, upper gastrointestinal symptoms occurring after the age of 50, dysphagia, persistent vomiting, or upper gastrointestinal bleeding.[1] Esophagogastroduodenoscopy applications are increasing every year. However, the laryngopharyngeal area is rarely evaluated during endoscopy. Because of the laryngopharyngeal area is passed quickly, as the patients often feel uncomfortable. On the other hand, the value of laryngopharyngeal evaluation during the endoscopic procedure has been shown in current studies, and pathological findings were detected in 0.9%-3.5% of the patients.[2-4] Lesions such as leukoplakia, mucinous retention cyst, posterior laryngitis, tonsillar hypertrophy, and vocal cord nodules can be easily detected in endoscopy (Figure 1-3).

Gastroesophageal reflux disease (GERD) is defined as esophageal mucosal damage or the presence of esophageal symptoms due to reflux of gastric juice into the esophagus above the physiological limits and usually has a nocturnal course.[6] In a systematic review of 15 epidemiological studies, the prevalence of GERD in western countries was found to be between 10% and 20%.[7] About 4%-10% of patients present to ear, nose, and throat (ENT) physicians because of their symptoms.[8] As a result of pH monitorizations performed at and after otolaryngologist examinations, the symptoms of patients with chronic laryngitis and chronic sore throat were mostly associated with acid reflux.[9] There are many publications in the literature indicating that laryngopharyngeal pathologies have developed related to GERD.[10-12]

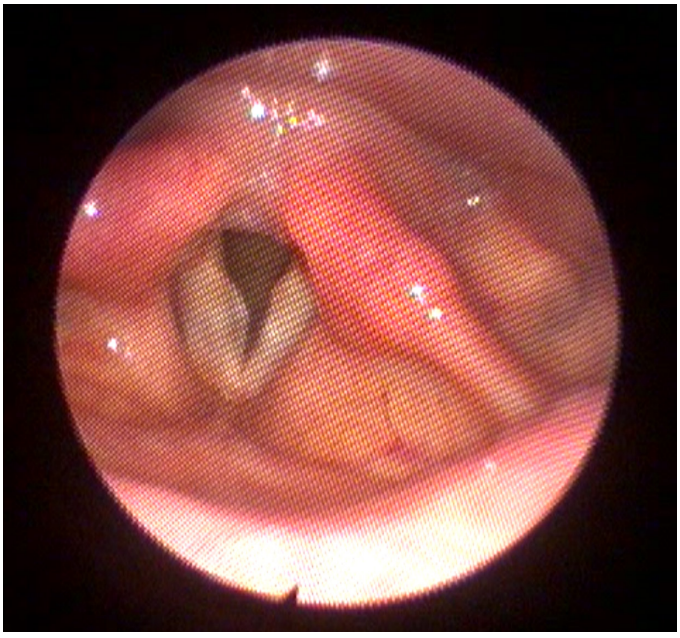

Figure 1. Reinke's edema.

In this study, we evaluated laryngopharyngeal pathological findings detected during endoscopic imaging and the relationship of these findings with diseases such as gastroesophageal reflux. In this way, while the necessity of investigating gastrointestinal (GI) tract pathologies in patients with laryngopharyngeal findings can be predicted, clinically important laryngopharyngeal diseases such as leukoplakia will not be overlooked.

METHODS

Our study was approved by Ankara City Hospital Scientific Research Evaluation and Ethics Committee (Date: October 21, 2021, Number: E1-21-2052). The procedures implemented were carried out at Ankara City Hospital. This study was conducted in line with the ethical principles of the Declaration of Helsinki, revised in 2013.

Patients who underwent endoscopy with indications such as regurgitation, heartburn, reflux, dyspepsia, dysphagia, and iron deficiency anemia between September 2021 and December 2021 were prospectively included in the study. The patients to be included in the study were selected among the patients who would undergo an anesthetic procedure. The procedure was started after obtaining informed consent for the procedure and procedure recording from all patients. Digital video recordings of all patients were taken from the beginning to the end of the endoscopy procedures.

MAIN POINTS

- Routine upper gastrointestinal (GI) endoscopy may reveal laryngopharyngeal lesions. The condition known as gastroesophageal reflux disease (GERD) is linked to these lesions.
- In our study, we sought to discover whether there was a difference between the laryngopharyngeal findings identified by the otolaryngologist and those identified by the endoscopist during upper GI endoscopy. We also investigated the relationship between GERD and laryngopharyngeal findings.
- The group with laryngopharyngeal pathology was shown to have a considerably greater incidence of GERD-related symptoms and laryngopharyngeal symptoms.
- The results of the endoscopist's evaluation of the laryngopharyngeal region during esophagogastroduodenoscopy are similar to those of the otolaryngologist's evaluation.
- There were no findings that otolaryngologists regarded as normal but gastroenterologists thought were pathological.

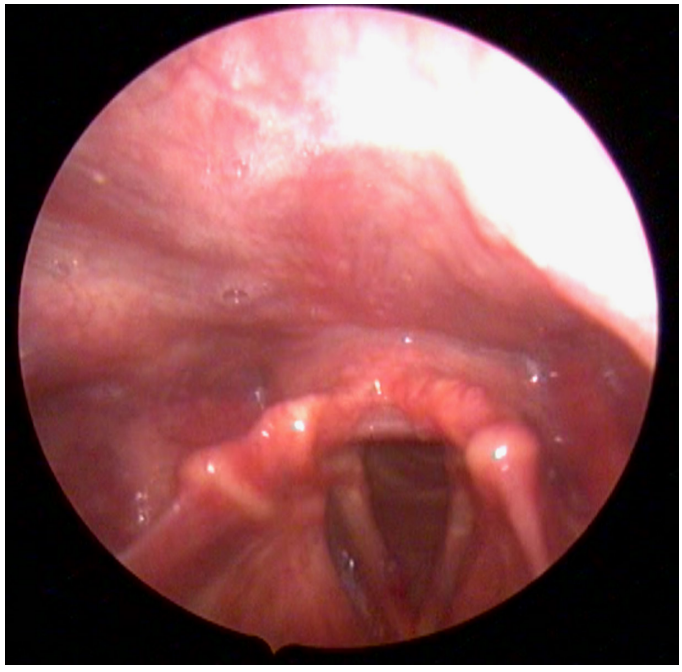

Figure 2. Vocal cord nodule.

The laryngopharyngeal findings of the patients were evaluated and recorded endoscopically both at the beginning of the procedure and at the end of the procedure. Then, the video recordings were evaluated by the ENT physician separately, and blindly, and the findings were recorded. Patients with poor video recording quality and those who could not tolerate the examination were excluded from the study. Again, patients who underwent the procedure without anesthesia were excluded. A biopsy for *Helicobacter pylori* was obtained from all patients during endoscopy. The biopsy results were recorded.

Figure 3. Posterior laryngitis.

Table 1. Baseline Characteristics and Clinical and Endoscopic Data of the Study Group and Laryngopharyngeal Pathology-Positive and -Negative Subgroups

	Total (n = 224)	LPP-positive group (n = 23)	LPP-negative group (n = 201)	*P*
Age, years	49.72 ± 15.94	53.78 ± 14.03	49.25 ± 16.11	.198
Gender, female, n (%)	112 (50)	11 (47.8)	101 (50.2)	.826
Smoking, n (%)	83 (37.1)	12 (52.2)	71 (35.3)	.113
Alcohol consumption, n (%)	18 (8)	1 (4.3)	17 (8.5)	.702
Helicobacter pylori, n (%)	63 (28.1)	7 (30.4)	56 (27.9)	.795
GER-related symptom, n (%)	39 (17.4)	13 (56.5)	26 (12.9)	**<.001**
Laryngopharyngeal symptom, n (%)	36 (16.1)	11 (47.8)	25 (12.4)	**<.001**
Laryngopharyngeal findings on endoscopy				**<.001**
Hypertrophy of the pharyngeal tonsil, n (%)	3 (1.3)	3 (13)	—	
Leukoplakia, n (%)	2 (0.9)	2 (8.7)	—	
Mucous retention cysts, n (%)	5 (2.2)	5 (21.7)	—	
Posterior laryngitis, n (%)	8 (3.6)	8 (34.8)	—	
Reinke's edema, n (%)	1 (0.4)	1 (4.3)	—	
Vocal cord nodule, n (%)	4 (1.8)	4 (17.4)	—	
Laryngopharyngeal findings on examination				**<.001**
Hypertrophy of the pharyngeal tonsil, n (%)	4 (1.8)	3 (13)	1 (0.5)	
Leukoplakia, n (%)	2 (0.9)	2 (8.7)	—	
Mucous retention cysts, n (%)	5 (2.2)	5 (21.7)	—	
Posterior laryngitis, n (%)	9 (4)	8 (34.8)	1 (0.5)	
Reinke's edema, n (%)	3 (1.3)	1 (4.3)	2 (1)	
Vocal cord nodule, n (%)	4 (1.8)	4 (17.4)	—	

Results are expressed as mean ± SD or frequency (%).
Significant *P*-values are in bold.
GER, gastroesophageal reflux; LPP, laryngopharyngeal pathology.

Demographic findings of the patients, such as age, gender, smoking, and alcohol history, were recorded. A detailed history was taken from all patients before the procedure. The patients were questioned in detail in terms of gastroesophageal reflux symptoms and laryngopharyngeal symptoms.

Endoscopic evaluation was performed with Olympus brand GIF-Q260 model gastroscopes. Before the procedure, patients were given sedoanalgesia accompanied by an anesthesiologist.

Statistical Analysis

The normality of the distribution of continuous variables was analyzed using the Kolmogorov–Smirnov test. Continuous variables were given as mean ± SD. They were compared via the Student's *t*-test. Categorical variables were defined as frequencies (%). They were compared via the Chi-square test or the Fisher's exact test, as appropriate. A 2-tailed $P < .05$ was considered significant. Statistical Package for Social Science Statistics version 25.0 software (IBM Corp.; Armonk, NY, USA), was used for statistical analyses.

RESULTS

A total of 224 patients were included in the study. The mean age of the study group was 49.72 ± 15.94 years, and 112 (50%) of the patients were female. No statistically significant difference was found between the groups in terms of age, gender, smoking, alcohol consumption, or the incidence of *H. pylori* (for all, $P > .05$). The incidence of GERD-related symptoms and laryngopharyngeal symptoms was statistically significantly higher in the laryngopharyngeal pathology (LPP)-positive group compared to the LPP-negative group (for both, $P < .001$). While LPP was detected in 23 (10.3%) patients endoscopically, pathology was detected in 27 (12.1%) patients in laryngopharyngeal examination, and the difference was not statistically significant ($P = .360$). Posterior laryngitis was the most common pathology in both endoscopy and laryngopharyngeal examinations (Table 1). The rate of endoscopic esophagitis detection was statistically significantly higher in the group with posterior laryngitis.

In Table 2, the rates of laryngopharyngeal pathological findings are given according to specialties. Gastroenterologists detected less LPP than otolaryngologists (1 pharyngeal tonsillar hypertrophy, 1 posterior laryngitis, and 2 Reinke's edemas were detected less). There were no findings that gastroenterologists thought to be pathological and that were considered normal by otolaryngologists (Table 2).

DISCUSSION

In this study, laryngopharyngeal findings detected during routine endoscopic examination and the relationship of these findings with gastroenterological pathologies such as gastroesophageal reflux were investigated, and laryngopharyngeal pathologies detected by the gastroenterologist during endoscopy were compared with the pathological findings detected by the otolaryngologist. As a result of our study, the incidence of GERD-related symptoms and laryngopharyngeal symptoms was found to be significantly higher in the group with LPP. In

Table 2. Laryngopharyngeal Findings by Area of Clinical Specialty

	Gastroenterologist	Otolaryngologist
Laryngopharyngeal findings		
Hypertrophy of the pharyngeal tonsil, n (%)	3 (1.3)	4 (1.8)
Leukoplakia, n (%)	2 (0.9)	2 (0.9)
Mucous retention cysts, n (%)	5 (2.2)	5 (2.2)
Posterior laryngitis, n (%)	8 (3.6)	9 (4)
Reinke's edema, n (%)	1 (0.4)	3 (1.3)
Vocal cord nodule, n (%)	4 (1.8)	4 (1.8)

addition, there was no statistically significant difference between laryngopharyngeal pathologies detected endoscopically and laryngopharyngeal pathologies detected by an otolaryngologist. Again, there was no finding that gastroenterologists thought to be pathological and that was considered normal by otolaryngologists.

Mullhaupt et al[13] examined 1191 patients, and LPP was suspected in 62 patients. Twenty-six of them were confirmed by an otolaryngologist. Another study by Jonaitis et al[14] examined 108 patients and a control group of 90 individuals to evaluate laryngopharyngeal GERD by calculating the laryngoscopic reflux index, and they found that laryngoscopy is superior to endoscopic evaluation. In our study, 224 patients were included, and LPP was detected endoscopically in 23 (10.3%) patients. All the pathological findings we detected endoscopically were confirmed by the otolaryngologist, and a total of 27 (12.1%) lesions were detected by the otolaryngologist, including 4 lesions that could not be detected in the endoscopy. There was no statistically significant difference in the lesion detection between the endoscopist and the otolaryngologist in our results. It was thought that our high detection rate compared to the literature and its compatibility with the otolaryngologist were due to the fact that the patient's intolerance approached 0 because the procedures were performed under anesthesia. In addition, the fact that the endoscopic examination was performed both at the beginning and at the end and from the video recording increased the rate of lesion detection.

Byrne et al[15] investigated the presence of laryngopharyngeal reflux in 276 patients with GERD, and laryngopharyngeal reflux was statistically significantly detected in these patients. In our study, GERD symptoms were found to be statistically significantly higher in patients with endoscopic LPP. In addition, the most common pathology among 23 patients with LPP was posterior laryngitis (8/23).

In the study of Vavricka et al[16] in 2007 with 1209 patients, 132 patients with endoscopic findings of GERD and 132 patients in the control group with normal esophageal findings were compared, and no significant difference was found between the 2 groups in terms of laryngopharyngeal findings. On the contrary, our study indicated that patients with LPP had statistically significantly higher rates of both GERD-related symptoms and laryngopharyngeal symptoms. Additionally, more endoscopic esophagitis was found, particularly in the posterior laryngitis group, which was statistically substantially greater. We hypothesized that the considerable difference found in our study was caused by reducing the margin of error by thoroughly assessing the patients both in-procedure and from the post-procedure video recording.

In a study by Katsinelos et al with 1130 patients, LPP was suspected in 44 (3.89%) patients, and it was confirmed by an otolaryngologist. Eight lesions that were not detected during endoscopy were detected by an otolaryngologist. In this study, posterior laryngitis was the most common lesion with 16 patients, and leukoplakia was found in 4 patients and Reinke's edema in 2 patients. A significant correlation was found between GERD and posterior laryngitis. In our study, in parallel with this study, the most common lesion was posterior laryngitis, and it was found to be significantly associated with GERD symptoms. Leukoplakia, which is also a clinically important entity and a lesion that may carry the risk of oral malignancy, was detected endoscopically in 2 patients in our study, and these patients were referred for further examination. Since the leukoplakia lesion is mostly an overlooked and asymptomatic lesion, it can be detected if a laryngopharyngeal examination is performed during the endoscopic examination, and it can allow the necessary examinations and treatments to be performed.

The strengths of our study are that it is a prospective study and that the evaluation was made both during endoscopic evaluation and by examining digital video recordings. In addition, blind evaluation by the otolaryngologist after endoscopy, rather than simultaneously, allowed the evaluation of the endoscopist's effectiveness in detecting laryngopharyngeal lesions. The small number of patients and the relatively low number of lesions detected due to this can be considered as the weaknesses of our study.

CONCLUSION

As a result of our study, the evaluation outcomes of the laryngopharyngeal region by the endoscopist during EGD are similar to the evaluation by the otolaryngologist. Laryngopharyngeal lesions are detected more frequently, especially in patients reporting GERD symptoms. Therefore, it is important to evaluate the laryngopharyngeal region during EGD. When a laryngopharyngeal lesion is suspected, patients should be referred to an otolaryngologist for a detailed laryngeal evaluation.

Ethics Committee Approval: This study complied with the ethical guidelines of the 1975 Helsinki Declaration, which was then modified in 2008. The study protocol was approved by the Ankara City Hospital Ethics Committee (Date: October 20, 2021, Number: E1-21-2052).

Informed Consent: Written informed consent was obtained from all patients.

Peer-review: Externally peer-reviewed.

Declaration of Interests: The author has no conflicts of interest to declare.

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