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Original Research Article

LARYNGOPHARYNGEAL MANIFESTATIONS OF GASTRO-ESOPHAGEAL REFLUX DISEASE IN ADULTS: A CROSS- SECTIONAL STUDY

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ABSTRACT

Background: Gastro-esophageal reflux disease (GERD) is commonly associated with extra-esophageal manifestations, particularly laryngopharyngeal reflux (LPR), which can significantly affect the quality of life. Early recognition of laryngopharyngeal manifestations is important for timely diagnosis and management. The aim is to study the laryngopharyngeal manifestations of gastro-esophageal reflux disease in adults.

Materials and Methods: This hospital-based cross-sectional study was conducted among 100 adult patients with GERD. Demographic details and personal habits including smoking, alcohol consumption, and spicy food intake were recorded. All participants were evaluated using the Reflux Symptom Index (RSI) and Reflux Finding Score (RFS). Laryngopharyngeal manifestations were documented and their association with LPR was analyzed. Statistical analysis was performed using Chi-square test and Fisher's exact test, with $p < 0.05$ considered statistically significant.

Results: The mean age of the participants was 39.4± 10.6 years, with females constituting 68% of the study population. LPR was identified in 45% of subjects. Significant associations were observed between LPR and smoking ($p=0.01$), alcohol consumption ($p=0.003$), and spicy food intake ($p=0.004$). Heartburn/regurgitation was the most common manifestation, followed by dysphagia and globus sensation. Elevated RSI (>13) and RFS (>7) showed significant association with LPR ($p<0.001$).

Conclusion: Laryngopharyngeal manifestations are common among adults with GERD and are significantly associated with elevated RSI and RFS scores. Lifestyle factors such as smoking, alcohol use, and spicy food consumption contribute significantly to LPR. Early assessment using RSI and RFS may facilitate timely diagnosis and management.

Keywords: Gastro-esophageal reflux disease (GERD), Laryngopharyngeal reflux (LPR), Reflux Symptom Index (RSI).

INTRODUCTION

Gastro-esophageal reflux disease (GERD) is a common gastrointestinal disorder characterized by the retrograde movement of gastric contents into the esophagus and upper aerodigestive tract. Among its extra-esophageal manifestations, laryngopharyngeal reflux (LPR) has gained increasing clinical importance because of its association with chronic throat and voice symptoms.[1,2] LPR occurs when gastric acid, pepsin, and other refluxate reach the larynx and pharynx, leading to mucosal irritation and inflammation. Unlike classical GERD, many patients with LPR may not present with typical symptoms such as heartburn or regurgitation, making diagnosis challenging and often delayed.[3]

Common laryngopharyngeal manifestations include hoarseness, chronic cough, throat clearing, globus sensation, dysphagia, sore throat, and laryngitis, which significantly affect quality of life and vocal performance.[4] Laryngopharyngeal manifestations of GERD are frequently encountered in

otolaryngology practice and account for a substantial proportion of patients presenting with chronic voice disorders.[5]

Persistent reflux-related inflammation may result in vocal cord edema, granuloma formation, contact ulcers, and chronic laryngeal irritation. Early recognition is essential, as untreated disease may lead to recurrent respiratory complications and premalignant mucosal changes. Diagnosis is generally based on clinical evaluation, laryngoscopic findings, reflux symptom scoring systems, and selective use of pH monitoring.[6]

Current management strategies include lifestyle modification, dietary regulation, proton pump inhibitor therapy, and adjunctive anti-reflux measures. Despite advances in diagnostic modalities, the relationship between GERD and laryngopharyngeal symptoms remains complex, warranting further clinical research to improve diagnostic accuracy and therapeutic outcomes. Hence this study was undertaken to understand the laryngopharyngeal manifestations of gastro-esophageal reflux disease in adults.

Aim: To study the laryngopharyngeal manifestations of gastro- esophageal reflux disease in adults.

Objectives: 1) To estimate the incidence of laryngopharyngeal reflux among adult patients with gastro- esophageal reflux disease (GERD). 2) To assess laryngopharyngeal reflux using the Reflux Symptom Index (RSI) and Reflux Finding Score (RFS). 3) To determine the association between laryngopharyngeal manifestations and gastro-esophageal reflux disease. 4) To compare demographic characteristics (age and gender) and personal habits such as alcohol consumption, smoking, spicy food intake, and body mass index (BMI) between subjects with and without laryngopharyngeal reflux.

MATERIALS AND METHODS

Study Area: A tertiary care institute

Study Design: Cross- sectional study

Study Period: 12 months

Study Population: Patients diagnosed with gastro-esophageal reflux disease (GERD) attending the Department of Otorhinolaryngology.

Inclusion Criteria: Adult patients aged above 18 years with symptoms suggestive of GERD.

Exclusion Criteria: Patients with prior laryngeal surgery, malignancy, active respiratory infection, neurological disorders affecting swallowing or voice, and those unwilling to participate were excluded.

Sample Size: Considering the incidence of LPR as 46% it will be used as basis for the present study sample size estimation.

$N = Z^2_{1-\alpha/2} P (1- p)/ L^2$

N= 0.9542/0.01

N= 96

The minimum sample size required for the study was 96 and was rounded of 100 patients.

Study Tools: Reflux Symptom Index (RSI) questionnaire and Reflux Finding Score (RFS).

Methodology: Detailed history regarding demographic characteristics, smoking, alcohol consumption, spicy food intake, and body mass index (BMI) was recorded. All participants were evaluated using the Reflux Symptom Index (RSI) questionnaire and underwent laryngoscopic examination for assessment of the Reflux Finding Score (RFS). Laryngopharyngeal reflux (LPR) was diagnosed based on RSI >13 and/or RFS >7. Data were entered in Microsoft Excel and analyzed using appropriate statistical software. Categorical variables were expressed as frequencies and percentages, while continuous variables were expressed as mean and standard deviations. Association between variables was assessed using Chi-square test or Fisher's exact test, and a p-value <0.05 was considered statistically significant.

RESULTS

[Table 1] shows the socio-demographic characteristics where the mean age of the subjects was 39.4± 10.6 years. Females constituted the majority of the study population (68%), while males accounted for 32%. Among the participants, 15% were smokers, 22% reported alcohol consumption, and 42% had a history of spicy food consumption.

[Table 2] presents the incidence rate of LPR was present in 45%. A significantly higher proportion of LPR was observed among smokers (11/15; p= 0.01), alcohol consumers (16/22; p= 0.003), and individuals consuming spicy food (26/42; p= 0.004), indicating a significant association between these personal habits and LPR.

[Table 3] shows the RSI score >13 was observed in 42% of subjects, while 58% had scores ≤13, with a mean RSI of 12.7± 2.5. Similarly, 45% of participants had an RFS >7, whereas 55% had scores ≤7, with a mean RFS of 7.4± 1.6. These findings indicate that a considerable proportion of subjects demonstrated clinically significant laryngopharyngeal reflux symptoms and laryngoscopic findings.

[Table 4] demonstrates a significant association between laryngopharyngeal reflux (LPR) and both Reflux Symptom Index (RSI) and Reflux Finding Score (RFS). Among subjects with RSI >13, the majority had LPR (40/42), whereas most subjects with RSI ≤13 did not have LPR (53/58), showing a statistically significant association (p< 0.001). Similarly, all subjects with RFS >7 had LPR, while none of the subjects with RFS ≤7 had LPR, indicating a highly significant association between elevated RFS and LPR (p= 0.001).

[Figure 1] illustrates among the 45 patients with laryngopharyngeal reflux (LPR), heartburn/indigestion/regurgitation was the most

common manifestation (33 cases), followed by dysphagia (21 cases), globus sensation (19 cases), and coughing after eating (15 cases). Hoarseness (9 cases) and throat clearing (7 cases) were less common, while mucus/post-nasal drip and breathing difficulties/choking episodes were the least frequent manifestations (4 cases each).

All laryngopharyngeal manifestations showed a statistically significant association (p<0.001) with laryngopharyngeal reflux (LPR) as shown in [Table 5]. Heartburn/indigestion/regurgitation was the most commonly associated manifestation.

Figure 1: Laryngopharyngeal manifestations (n= 45)

Table 1: Sociodemographic Distribution

Variable	Frequency	Percent
Mean age	39.4± 10.6 years	
Male	32	32%
Female	68	68%
Smokers	15	15%
Alcohol	22	22%
Spicy food consumption	42	42%

Table 2: Laryngopharyngeal Reflux (LPR) Findings

LPR	Frequency	Percent/ p-value
Yes	45	45%
No	55	55%
Smokers	11/15	0.01
Alcohol consumers	16/ 22	0.003
Spicy food consumers	26/ 42	0.004

Table 3: Reflux Symptom Index (RSI) And Reflux Finding Score (RFS) Distribution

RSI	Frequency	Percent
≤13	58	58%
>13	42	42%
Mean RSI: 12.7± 2.5		
RFS		
≤7	55	55%
>7	45	45%
Mean RFS: 7.4± 1.6		

Table 4: Association between LPR with RSI and RFS levels

RSI	LPR		Total	p- value
	Yes	No		
≤13	5	53	58	<0.001
>13	40	2	42	
RFS				
≤7	0	55	55	<0.001
>7	45	0	45	

Table 5: Association between LPR and Manifestations

Manifestation	LPR present (n= 45)	LPR absent (n= 55)	P -value
Heartburn, indigestion/ regurgitation	33	-	<0.001
Dysphagia	21	-	<0.001
Globus sensation	19	-	<0.001
Coughing after eating	15	-	<0.001
Hoarseness	9	-	<0.001
Throat clearing	7	-	<0.001
Mucus/post-nasal drip	4	-	<0.001
Breathing difficulties/choking episodes	4	-	<0.001

DISCUSSION

The present study findings were similar to a study by Massawe WA et al,[7] in which mean age of study subjects was 41.38± 13.94 years. Dawood MR et al,[8]| also in their study reported mean age of 40.4 years. In the current research females were higher than males which was concurrent with Ebrahim SA et al.[9]

The present study findings were similar to a study by Printza A et al,[10] in which 29.6% were smokers. Belete M et al,[11] in which 68.6% gave the history of consumption of spicy food and 90.1% were tobacco chewers and 37.6% were alcoholics.

Wu Y et al,[12] in which incidence of LPR in GERD was 46.3% which was almost close to the present study findings. The present study findings were similar to a study by Lopez- Colombo A et al,[13] in which smokers and spicy food (>20 times/month) were found to be significantly associated with GERD and LPR. Alrashed AA et al,[14] reported smoking and spicy food and consumption of fast food were found to be significant predictors of GERD and LPR among GERD patients.

Spyridoulias A et al,[15] in their study reported 87% had RSI >13. Dawood MR et al,[8] reported a mean RSI was 18.6. The present study findings were similar to a study by Printza A et al,[10] in which RSI score was 19.[9] and this difference was statistically significant between LPR present and absent. In this study, 55% had the reflux finding score as ≤7 and in 45% the score was >7. The study findings were consistent with a study by Spyridoulias A et al,[15] in which 51% of patients had RFS >7. Shilpa C et al. 16 reported mean RFS value was 9.2. All the subjects with RFS >7 had LPR which was statistically significant.

The present study findings were similar to a study by RK Koul et al,[17] in which a significant association was found between smoking and fatty food and spicy food consumption with GERD and this association was found to be positively correlated among LPR patients. The present study findings concurred with a study by Wang M et al,[18] in which higher odds were found with smoking, alcoholism and spicy food for laryngopharyngeal reflux manifestations.

The present study findings were consistent with a study by Shilpa C et al,[16] in which the predominant symptoms were heartburn, globus and dysphagia. Massawe WA et al,[7] reported the commonest symptoms were globus sensation, hoarseness of voice and excessive urge to clear the throat.

CONCLUSION

Laryngopharyngeal reflux is a common extra-esophageal manifestation of gastro-esophageal reflux disease and is frequently associated with symptoms such as heartburn, dysphagia, and globus sensation. Significant associations were observed between LPR and higher RSI and RFS scores. Personal habits including smoking, alcohol consumption, and spicy food intake showed a significant correlation with LPR. Early identification and evaluation using RSI and RFS can aid in prompt diagnosis and management of affected patients.

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