

# Clinical Correlation of Reflux Finding Score with Reflux Symptom Index in Diagnosis & Management of Laryngopharyngeal Reflex Disease in A Tertiary Care Hospital, Western Up

## Abstract

**Objective:** The retrograde flow of gastric contents to the upper aerodigestive tract is known as laryngopharyngeal reflux disease (LPRD). It is also known as extraesophageal reflux disease and is a common condition seen in otolaryngology practice. Diagnosis of LPRD is difficult as the patients present with vague and indistinct symptoms. Reflux symptom index (RSI) is a 9-item questionnaire for evaluating symptoms of LPR, whereas the reflux finding score (RFS) is an 8-item clinical severity scale used to interpret the most common laryngoscopic findings related to LPR. In this study, we aimed to correlate RSI with RFS in symptomatic patients to investigate the reliability of RSI in the diagnosis of LPRD.

**Methods:** In this study, we included 100 patients attending the Otorhinolaryngology OPD at Santosh Hospital, Ghaziabad, India, with symptoms suggestive of reflux disease. The patients were asked to fill the RSI scoresheet in the first stage and patients with RSI >13 were chosen for the study. A total of 81 patients were chosen and examined by video-assisted 70° direct laryngoscopy to determine the RFS. The correlation between RSI and RFS were investigated.

**Result:** The study group included 81 patients presented with various symptoms of LPR. Upon investigating further with RFS and RSI we observed that only 7 patients of 81 had a positive score on RSI with a negative score on RFS.

**Conclusion:** According to the results of our study, RSI scoring alone is a fast and reliable method for the evaluation and diagnosis of LPR. Our study shows a high correlation between RSI scoring and RFS.

**Keywords:** GERD, laryngopharyngeal reflux disease, laryngoscopy, reflux finding score, reflux symptom index, western Uttar Pradesh

## Introduction

The retrograde flow of gastric contents to the upper aerodigestive tract is known as laryngopharyngeal reflux disease (LPRD). It is also known as extraesophageal reflux. This may cause inflammation and symptoms resulting in chronic laryngeal symptoms and signs. It is a clinical entity related to, but also distinct from, gastroesophageal reflux disease (GERD). LPR is considered to be the most common extraesophageal manifestation of GERD.

The symptoms of LPR are a result of exposure of the upper aerodigestive tract to gastric juice; this causes a variety of symptoms such as voice change (hoarseness), sore throat, dysphagia, postnasal drip, chronic cough, chronic throat clearing, and excessive phlegm in the throat.

The most frequent complaints with which the patient presents to the physician are cervical dysphagia (33%), followed by a globus sensation in the throat (19%), sore throat (17%), and chronic throat clearing (14%). It has been estimated that of the total patients attending the otolaryngology clinic, almost 4%-10% have symptoms and/or signs related to LPR.

LPR has been found to be related to chronic pharyngitis and laryngitis, contact ulcer, granuloma, subglottic stenosis, vocal fold nodules, and laryngospasm.<sup>1</sup> It is also believed to be



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**Cite this article as:** Gaur S, Panakal AS, Arora U, Singh V. Clinical Correlation of Reflux Finding Score with Reflux Symptom Index in Diagnosis & Management of Laryngopharyngeal Reflex Disease in A Tertiary Care Hospital, Western Up. *ENT-Updates*. 2021; 11(1): 14-17.

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Received: January 27, 2021  
Accepted: February 2, 2021

implicated in premalignant lesions and squamous cell carcinoma of the larynx.

### Aim and Objectives

To correlate clinically the significance of reflux finding score (RFS) with reflux symptom index (RSI) and to use RSI in diagnosis and management of LPRD.

Sex	Total	Prevalence %
Male	66	81.40
Female	15	18.60

Figure 1. Sex distribution

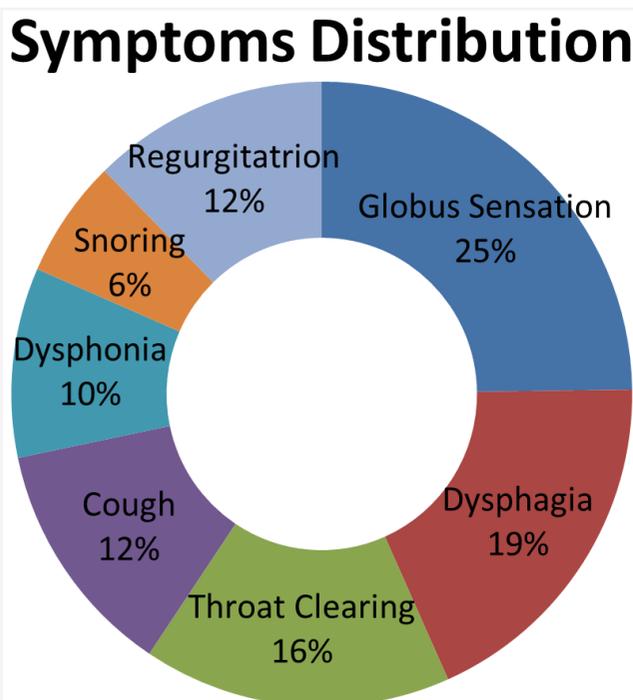


Figure 2. Primary Symptoms Distribution in the Patients

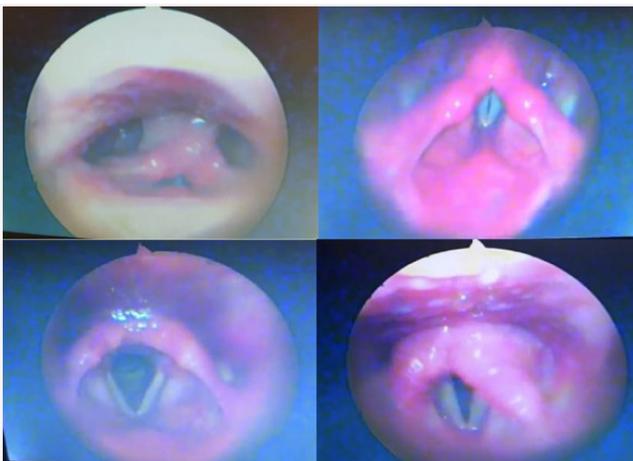


Figure 3. Findings in 70° direct laryngoscopy suggestive of laryngopharyngeal reflux disease

### Methods

A random sample of 100 patients attending the Otorhinolaryngology OPD at Santosh Hospital, Ghaziabad, India, between November 2019 and March 2020 with symptoms suggestive of reflux disease were chosen. The age of the patients varied from 19 to 88 years with a mean age of 52.44 years (standard deviation [SD] = 13.89). Patients with rhinitis, pharyngitis, and tumor lesions were excluded. In addition, patients with a previous history of laryngeal intervention and those with chronic diseases who were on medication were excluded from the study.

In the first stage, patients were asked to fill the RSI score sheet and patients with an RSI >13 were chosen for the study. From the total sample of 100 patients, only 81 patients with an RSI >13 were chosen for the study. These patients underwent 70° direct laryngoscopy examination. A single surgeon performed the direct laryngoscopic examination in all the patients.

Of the 81 patients, 66 were men, and 15 were women. We classified all the patients according to their age and sex and ranked them by their main results.

The symptom questionnaire and the classification proposed by Belafsky et al.<sup>2</sup> were used.

The correlations between RSI and RFS were investigated.

**Table 1. Reflux Finding Score**

Finding	Score
(Source: Belafsky et al. <sup>19</sup> with permission from Lippincott, Williams and Wilkins.)	
Subglottic edema	2 = present 0 = absent
Ventricular obliteration	2 = partial 4 = complete
Erythema/hyperemia	2 = arytenoids only 4 = diffuse
Vocal cord edema	1 = mild 2 = moderate 3 = severe 4 = polypoid
Diffuse laryngeal edema	1 = mild 2 = moderate 3 = severe 4 = obstructing
Posterior commissure hypertrophy	1 = mild 2 = moderate 3 = severe 4 = obstructing
Granuloma/granulation	2 = present 0 = absent
Thick endolaryngeal mucus/other	2 = present 0 = absent

**Table 2. Reflux Symptom Index**

Within the last month, how did the following problems affect you?	Score					
	0	1	2	3	4	5
<b>RSI &gt;13 = Abnormal</b>						
Source: Belafsky et al. <sup>6</sup> with permission from Elsevier Science						
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 mucus 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. Sensation 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

## Results

We excluded 19 of the 100 patients because they did not meet the criteria of RSI or RFS despite the clinical suspicion. The study group included 81 patients. The main complaints were globus sensation in 20 (24.7%) patients, cough in 10 (12.3%), dysphonia was present in 8 (9.8%), throat clearing in 13 (16.0%), snoring in 5 (6.1%), dysphagia in 15 (18.5%), and regurgitation in 10 (12.3%).

The RFS mean was 9.53 with the score ranging from 3 to 19 (SD = 2.64).

RSI ranged from 13 to 42, and the mean RSI was 20.7 (SD = 6.67).

RSI was considered as positive when the reflux score was  $\geq 13$  and/or RFS  $\geq 7$ . Only 7 patients of 81 had a positive score on RSI with a negative score on RFS.

## Discussion

The pressure gradient between the positive intraabdominal pressure and the negative pressure in the thorax/hypopharynx causes GERD or gastro esophago hypopharyngeal reflux. The transient relaxations of the lower esophageal sphincter (LES) also plays a role in the reflux. Distension of the gastric walls post prandially and stretch receptors in the gastric wall trigger the transient relaxation of LES.<sup>3</sup> These relaxations release swallowed air by belching and are followed by contraction of the LES.

The esophagus acts as a passage for transfer of material from the pharynx to the stomach and also allows for some retrograde flow of gasses and gastric contents. In LPR, the esophageal refluxate, although normal in range, causes damage to the sensitive laryngeal epithelium.

The larynx and pharynx are devoid of the normal acid clearance mechanism found in the esophagus. For the esophagus even up to 50 episodes of reflux per day are considered normal, whereas for the larynx even 3 episodes per week are seen to be associated with a significant disease.<sup>4</sup> The reflux can be either gas, liquid, or both.

The two predominant pathophysiological mechanisms for LPR are direct and indirect exposure of the larynx to injurious gastric contents.<sup>5</sup> The direct exposure is because of acid, pepsin, and bile acid exposure to laryngopharyngeal mucosa. The indirect mechanism is thought to be a result of refluxate interactions with structures distal to the larynx, evoking a vagus nerve mediated response to bronchoconstriction.

GERD is readily recognized by symptoms, but the symptomatology of LPR is more diverse and not easily recognized. LPR and GERD can occur simultaneously.<sup>6</sup>

Belafsky et al.<sup>7</sup> developed RSI; it is a preset questionnaire answered by the patient to determine the severity of LPR on 5-point scale. An RSI of more than 13 indicates LPR disease. Physical examination is vital for the diagnosis of LPR. Video laryngoscopy is used to examine the larynx. This helps not only in visualizing subtle changes in the larynx, but also helps in documenting the effects of treatment. Belafsky et al.<sup>7</sup> have developed an endoscopic grading scale for LPR. The RFS is an 8-item clinical severity scale used to interpret the most common laryngoscopic findings related to LPR, including vocal fold edema, ventricular obliteration, diffuse laryngeal edema, erythema/hyperemia, posterior commissure hypertrophy, subglottic edema (pseudo-sulcus), granuloma, and excessive, thick endolaryngeal mucus.

## Conclusion

In most patients who presented to our hospital, RSI and RFS were positive. This demonstrates that RSI is an important clinical parameter that can be taken into consideration for the diagnosis of LPRD. Physicians can use RSI independently to evaluate the condition and to conclude whether or not to proceed with other tests.

An RSI score more than 7 can be used as a clinical indicator of LPRD. RSI and RFS can be used as objective parameters in routine ENT investigations with low cost and good practicality.

**Ethics Committee Approval:** Ethics committee approval was received from the Ethical Committee of Santosh Medical College, Ghaziabad (Decision number SU/2019/14531[9], Date: 18/10/2019)

**Informed Consent:** Written informed consent was obtained from all participants who participated in this study.

**Peer-review:** Externally peer-reviewed.

**Author Contributions:** Concept - S.G.; Design - S.G., A.P.; Supervision - K.S.S., M.S.; Materials - A.P.; Data Collection and/or Processing - S.G.; Analysis and/or Interpretation - U.A., V.S.; Literature Search - V.S.; Writing - U.A., V.S.; Critical Reviews - S.G., A.P., U.A., V.S.

**Acknowledgement:** The authors would like to acknowledge the support of faculty members and colleagues of Department of ENT, Santosh Medical College, and Ghaziabad for completion of this study.

**Conflict of Interest:** The authors have no conflict of interest to declare.

## REFERENCES

1. Koufman JA, Aviv JE, Casiano RR, Shaw GY. Laryngopharyngeal reflux: Position statement of the committee on speech, voice, and swallowing disorders of the American Academy of Otolaryngology-Head and Neck Surgery. *Otolaryngol Head Neck Surg.* 2002; 127(1): 32-35. [\[Crossref\]](#)
2. Belafsky PC, Postma GN, Koufman JA. Validity and reliability of the reflux symptom index (RSI). *J Voice.* 2002; 16(2): 274-277. [\[Crossref\]](#)
3. Moraes-Filho JP, Chinzon D, Eisig JN, Hashimoto CL, Zaterka S. Prevalence of heartburn and gastroesophageal reflux disease in the urban Brazilian population. *Arq Gastroenterol.* 2005; 42(2): 122-127. [\[Crossref\]](#)
4. Mearin F, Ponce J, Ponce M, Balboa A, González MA, Zapardiel J. Frequency and clinical implications of supraesophageal and dyspeptic symptoms in gastroesophageal reflux disease. *Eur J Gastroenterol Hepatol.* 2012; 24(6): 665-674. [\[Crossref\]](#)
5. Eckley CA, Costa HO. Comparative study of salivary pH and volume in adults with chronic laryngopharyngitis by gastroesophageal reflux disease before and after treatment. *Braz J Otorhinolaryngol.* 2006; 72(1): 55-60. [\[Crossref\]](#)
6. Park KH, Choi SM, Kwon SU, Yoon SW, Kim SU. Diagnosis of laryngopharyngeal reflux among globus patients. *Otolaryngol Head Neck Surg.* 2006, 134(1): 81-85.
7. Belafsky PC, Postma GN, Koufman JA. The validity and reliability of the r(RFS) *The Laryngoscope.* 2009; 111(8): 1313-1317. [\[Crossref\]](#)