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Clinical assessment of laryngo-pharyngeal reflux disease by reflux symptom index and reflux finding score in a tertiary care hospital, Madhya Pradesh

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ABSTRACT

Background: Laryngopharyngeal reflux (LPR) or LPR disease (LPRD) is a commonly diagnosed clinical entity caused by the back-flow of gastric contents into the laryngo-pharynx. Diagnosis was made by a set of non-specific clinical symptoms, endoscopic laryngeal examination signs, reflux symptom index (RSI), and reflux finding score (RFS). **Aims and Objectives:** The aims and objectives of the present study were to establish the diagnosis and treatment of LPR by assessment of the RSI and RFS and also evaluate the impact of proton pump inhibitor (PPI) therapy on LPR. **Materials and Methods:** A total of 60 clinically suspected patients attending the ENT outpatient department presenting LPRD signs and symptoms were enrolled in the present study. LPR symptoms were assessed using the RSI, and LPR signs were assessed by laryngoscopic examination of the larynx using the RFS. Patient having an RSI score of ≥13 and an RFS of >7 was included in the present study and it was also considered for starting LPR treatment. We have again calculated the both the score (RSI and RFS) after 3 months of successful PPI therapy and compared them with the initial scores. **Results:** Out of total 60 patients, 50 (83.4%) had RSI score >13 and RFS >7 indicating severe LPRD. Most common symptoms were troublesome/annoying cough (95%), sensation of something sticking in throat (95%), heartburn(95%), frequent throat clearing (91%), and excess throat mucous (87.9%), whereas the most common sign noted on laryngoscopic examination were arytenoids erythema (86.66%), partial ventricular obliteration (83.33%), vocal cord edema (56.7%), posterior commissure hypertrophy (51.7%), and diffuse laryngeal edema (50%). Majority of the patients significantly responded on 3 months PPI therapy. Reduction of clinical signs, symptoms of LPR and also observed significant reduction of RSI and RFS score after successful PPI therapy. **Conclusions:** In the present study, most of the patients suffering from severe LPRD who presented in our hospital RSI and RFS scored that were clinically significant in current study. After 3 months of proton-pump inhibitor therapy, there was a significant reduction in clinical signs and symptoms of LPR as well as RSI/RFS scores, indicating that PPI therapy was the mainstay of LPRD treatment in the current era.

Key words: Laryngopharyngeal reflux; Reflux finding score; Reflux symptom index

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INTRODUCTION

Laryngopharyngeal reflux disease (LPRD) is defined as the back flow of stomach contents into the larynx and pharynx upto the esophagus. Recent evidence suggests that LPRD is a significant public health problem that affects quality of life.[1]

Under the main heading of reflux disease, laryngopharyngeal reflux (LPR) and gastroesophageal

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reflux disease (GERD) are different concepts; esophagitis and heart burn are commonly present in GERD while they are rare in LPR. In LPR Reflux in day time or upright position while in GERD reflux in nocturnal or supine position. LPR is more to the related upper esophageal sphincter; GERD is more related to the lower esophageal sphincter. It has been scientifically proven that LPR and GERD are separate entities.[2] Common presenting symptoms of LPR include hoarseness, globus sensation, sore throat, dysphonia, dry throat, throat-clearing, chronic cough, dysphagia, post nasal drip, and excess viscous secretions in the throat.[3,4] Diagnosis of LPR may be difficult due to atypical signs and symptoms, some common risk factors associated with LPR such as infection, allergy, smoking, and poor voice hygiene.[5] The diagnosis of LPRD is based on a combination of the patient's history, symptoms, and laryngeal signs observed during laryngoscopy, reflux symptom index (RSI),reflux finding score (RFS),dysphagia handicap index, Dual-Sensor pH Probe monitoring, and Upper Gastrointestinal Endoscopy were the various tools for LPRD diagnosis: Ambulatory 24-hdual-probe pH monitoring was the gold standard test previously, but not now because of its invasiveness, less sensitivity, and high cost.[6,7] Multichannel intraluminal impedance-pH monitoring, a more recently developed technique, was the most reliable method for the diagnosis of LPRD, whereas no gold standard test was available for the diagnosis of LPRD.[8] The current management of LPRD includes life style changes, behaviors modifications, dietary modifications, weight reduction, exercise, histamine-2 receptor antagonist (H2RA) therapy, proton pump inhibitor (PPI) therapy, or a combination of H2RA and PPI therapies, and last resort surgery[9] The cause of laryngeal abnormalities (signs or symptoms) in LPR may be due to direct injury by contact of acid and pepsin with laryngeal mucosa. Alternatively, traumatic injury to laryngeal mucosa could be due to acid reflux mediated by the vagus nerve, resulting in chronic cough and throat clearing.[10]

Aims and objectives

The aims and objectives of the present study were diagnosis of Laryngopharyngeal reflux disease by the clinical assessment of RFS and RSI and evaluate the impact of PPI therapy on LPRD treatment in our tertiary care hospital.

MATERIALS AND METHODS

This is a cross-sectional analytical study conducted in the Department of Otorhinolaryngology (ENT), M.G.M. Medical College and M.Y. Group of Hospitals, Indore, MP, over the duration of one year (May2018-May2019). A total of 60 patients' aged 18–58 years were enrolled in the study, with the signs and symptoms of LPR being enrolled in the study. Informed consent was obtained for the laryngoscopic examination procedure from all the study participants. The RSI was calculated on the basis of nine main symptom categories (Table 1), this index describes the effect of LPR on the quality of life. Video-laryngoscopic examination was done by using standard precautions and the RFS was calculated on the basis of laryngoscopic signs in eight areas of the larynx (Table 2), which helped us quantify the effect of LPR. Patients having an RSI of >13 and/or RFS of >7 were included in our study. Patients in whom RFS was >7 and RSI >13 were proposed an empirical therapeutic trial including behavioral therapy and dietary recommendations and a 3-month twice daily proton-pump inhibitor therapy. We followed the patient for up to 3 months after starting the PPI therapy, After 3 months of follow-up, the RSI and RFS scores were again calculated and compared with the initial score.

All results were analyzed and calculated statistically using the Statistical Package for the Social Sciences Programme version 22. The mean and standard deviation of various statistical data were calculated.

Normative data suggest that a RSI of greater than or equal to 13 is clinically significant. As a result, a RSI> 13 may be indicative of significant reflux disease and was considered for LPR treatment.

RESULTS

A total of 60 clinically suspected patients of LPRD who meet the RSI or RFS criteria were enrolled in the present study. This study included 60 patients whose age range was between18 to 58 years, the mean age and SD was 41.3±5.2 years. The majority of the patients 24,(40%) belonged to the 29–38 year age groups while a minimum number of patients 6 (10%) were belonged to the age group of 49–58years. Details of age wised distribution are shown in Table 3.

Out of the total 34, (56.66%) patients were females and 26, (43.44%) were males. The most common symptoms were a bothersome/annoying cough (95%), a sensation of something stuck in the throat (95%), heart burn (95%), frequent throat clearing (91%), and an excess of throat mucous (87.9%). Coughing after eating or lying down was present in (50%), breathing difficulties/choking episodes in 48.2%, hoarseness in 30% cases, and difficulty in swallowing in 3.33% cases. Details description of symptoms according to RSI is shown in Table 4.

Table 1: Reflux symptom index (Source: Belafsky et al. [11])

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 post nasal drip	0	1	2	3	4	5
4	Difficulty in 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 or something sticking 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:							

Table 2: Reflux finding score

Finding	Score
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
Total	

Table 3: Age group wise distribution of the LPRD patients

Agegroups	Frequency	Percentage
18–28 years	14	23.4
29–38 years	24	40
39–48 years	16	26.6
49–58 years	6	10
Total	60	100

LPRD: Laryngopharyngeal reflux disease

The most common clinical signs observed during video-laryngoscopic examination were arytenoids erythema (86.66%), partial ventricular obliteration (83.33%), moderate vocal cord edema (56.7%), mild posterior commissure hypertrophy (51.7%), mild diffuse laryngeal edema (50%), and Subglottic edema (45%). Details of laryngeal signs according to the RFS are shown in table 5.

Table 4: Distribution of symptoms of suspected LPR patients according to RSI

Symptom	No. and percentage of patients (n=60)		
	Mild (%)	Severe (%)	Total (%)
Hoarseness (change in voice)	17 (28.3)	1 (1.66)	18 (30)
Clearing of throat	18 (30)	37 (61.6)	55 (91.6)
Excess throat mucous/post nasal drip	22 (36.6)	32 (53.3)	54 (90)
Difficulty in swallowing	1 (1.66)	1 (1.66)	2 (3.33)
Cough after eating/ lying down	30 (50)	2 (3.33)	32 (53.3)
Breathing difficulties or choking	28 (46.6)	1 (1.66)	29 (48.3)
Troublesome or annoying cough	45 (75)	12 (20)	57 (95)
Sensations or something sticking in your throat	17 (28.3)	39 (65)	56 (93.3)
Heartburn/chest pain	50 (83.3)	7 (11.6)	57 (95)

LPR: Laryngopharyngeal reflux, RSI: Reflux symptom index

Table 5: Sign on video-laryngoscopic examination of larynx in suspected LPR patients according to RFS

Clinical sign	No. and percentage of patients (n=60) (%)
Subglottic edema	Present 27 (45)
Ventricular obliteration	Partial 53 (88.33), complete 7 (11.7)
Erythema/hyperemia	Arytenoids 52 (86.6), diffuse 8 (13.3)
Vocal cord edema	Mild 19 (31.6), Moderate 34 (56.7), Severe 7 (11.6)
Diffuse laryngeal edema	Mild 30 (50), Moderate 26 (43.3), Severe 4 (6.6)
Posterior commissure hypertrophy	Mild 31 (51.6), Moderate 22 (36.7), Severe 7 (11.6)
Granuloma/granulation	Absent 0
Thick endolaryngeal mucus/other	Present 9 (15)

LPR: Laryngopharyngeal reflux, RFS: Reflux finding score

Video-laryngoscopic picture-showing diffuse laryngeal edema, ventricular obliteration and posterior commissure hypertrophy are shown in Figure 1

Video-laryngoscopic picture showing ventricular obliteration with intralaryngeal mucous and congested arytenoids are shown in Figure 2.

Out of 60 patients, RSI was more than 13 in 50 patients, (83.34%) and 13 or <13 in 10 (16.66%). The RFS was >7 in 50 patients (83.34%) and 7 or <7 in 10 patients (16.66%). After 3 months, both RSI and RFS were 13 or <13 and 7 or <7 in 37 out of 50 patients, respectively.

DISCUSSION

LPRD was highly prevalent in general population. The diagnosis of laryngopharyngeal reflux is not a straight forward task, controversies regarding LPR still exist. However, the combination of characteristic symptoms and laryngoscopic signs may be more suggestive of LPR.[12] in the current study, a combination of the symptoms, video-laryngoscopic findings, and symptomatic improvement on successful empirical PPI therapy was used for the diagnosis of LPR. In this study, symptoms of laryngopharyngeal reflux disease were more common in females as compared to males, which was in accordance with Mahmoud et al.[13] The most common symptoms in our current study were a dry, irritating cough, a sticking sensation in the throat, throat clearing, heart burn, excess throat mucous, and breathing difficulties, also reported by Rade et al.[14] and Dilen da Silva et al.[15] in contrast to that, Gaur et al.[16] reported cervical dysphagia, globus sensation in the throat, hoarseness, and sore throat were the most common symptoms in their study. In the present study, the most common laryngoscopic sign was arytenoids oedema accordance with Alam et al.[17] other predominant laryngoscopic signs were partial ventricular obliteration, vocal cord edema, posterior commissure hypertrophy, diffuse laryngeal edema, and Subglottic edema in concordance with Kim et al.[18] Granuloma was not found in any of the patients in the current study, as was the case with Dilen da Silva et al.[15] but in contrast, Ylitalo et al.[19] discovered contact with Granuloma in 65–74% of the patients in their study. Current study observed significant reduction (74%) of both RSI & RFS and also improvement of clinical sign and symptoms after completion of twice daily PPI therapy, concordance to other studies like Vaezi et al.[5] and Campagnolo et al.[20] Out of 50 patients who showed severe LPR (RSI>13) 8 (16%) were lost to follow-up and 5 (10%) did not show significant reduction of clinical signs and symptoms after PPI therapy, this could be due to not taking proper/incomplete therapy, or non-adherence to therapy, these patients may require another course of PPI therapy. Patient's education, life style modification, behavioral change, and PPI were the mainstay of LPR treatment found in the present study accordance to the Charles et al.[7] The majority of the patients in the current study (50 out of 60,or 83.4%) had severe LPR (RSI >13 or RFS>7).

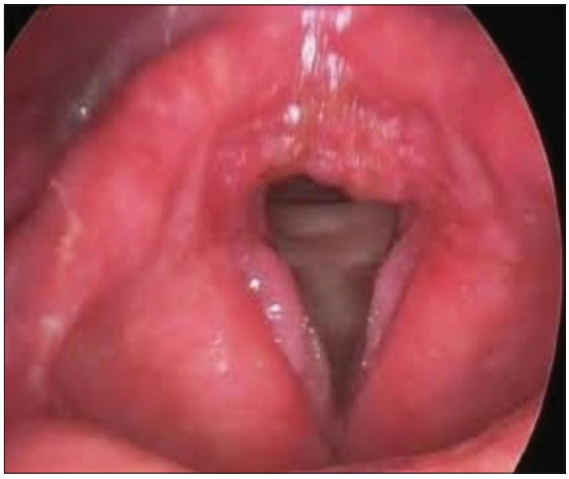

Figure 1: Video-laryngoscopic picture-showing diffuse laryngeal edema, ventricular obliteration and posterior commissure hypertrophy

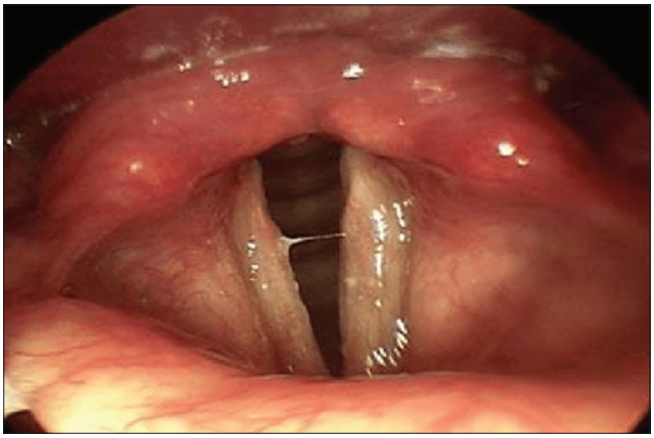

Figure 2: Video-laryngoscopic picture showing ventricular obliteration with intralaryngeal mucous and congested arytenoids

This study found a strong correlation between reductions of RSI/RFS with the course of PPI therapy, a similar finding was also observed by Fathima et al.[21] A significant successful rate of PPI therapy among LPR treatments was observed in our present study.

Limitations of the study

There are certain limitations of our study

1. Some patients were loss to follow-up may be altered the interpretation of the study

2. Future studies are required to clarify the Pathophysiology and treatment of LPRD

CONCLUSIONS

We conclude that RSI and RFS scores were clinically significant in the current study, indicating that the majority of patients with severe LPRD who presented to our hospital had these scores. A significant reduction in RSI and RFS scores was seen after 3 months of proton-pump inhibitor therapy, indicating that PPI therapy was the mainstay of LPRD treatment in the current era. Proper behavioral therapy, dietary recommendations and PPI therapy definitely help in LPRD management.

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ETHICAL APPROVAL

The study was approved by the Institutional Ethics Committee.

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SB-Concept and design of the study, prepared first draft of manuscript; **AV-** Interpreted the results; reviewed the literature and manuscript preparation; **JV-** Concept, coordination, statistical analysis and interpretation; **RA-** Preparation of manuscript, revision of the manuscript and correspondence of the manuscript.

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