

UTILITY OF REFLUX FINDING SCORE AND REFLUX SYMPTOM INDEX IN DIAGNOSIS OF LARYNGOPHARYNGEAL REFLUX DISEASE

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Abstract

Objective: The study aimed to determine the utility of reflux finding score (RFS) and reflux symptom index (RSI) in diagnosis of laryngopharyngeal reflux disease (LPRD) in Dar es Salaam, Tanzania **Design:** Hospital based descriptive cross sectional study. **Participants:** Patients with throat and voice complaints for more than a month provided they have no other underlying cause such as tumors of the aerodigestive system or chronic irritants of the larynx such as cigarette smoking or those with misuse of voice such as choir singers, teachers. **Main outcome measures:** Statistical analyses described the utility of RFS and RSI in diagnosis of LPRD as designed by Belafsky et al where the diagnosis of reflux was made when the patient had an aggregate RSI score >13. **Results:** In this study, a total of 2500 patients were recruited, out of which 800 (32.0%) were males and 1700 (68.0%) were female. Out of the 2500, 1520 (60.8%) patients were found to have a RSI of >13. Out of the 1520 patients subjected to 70-degree laryngoscopy, 1425 patients (95.0%) were found to have a RFS >7. Of the 1425 patients with RFS >7, 260 were males (18.2%) and 1165 were females (81.8%). **Conclusion:** RFS and RSI have shown utility in diagnosing LPRD and they remain to be applicable even in resource-limited settings. There should be universal treatment protocol for LPRD since it vary among countries and health systems

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Conclusion: RFS and RSI have shown utility in diagnosing LPRD and they remain to be applicable even in resource-limited settings. There should be universal treatment protocol for LPRD since it vary among countries and health systems.

Keywords: Prevalence; laryngopharyngeal; reflux, disease; Tanzania

KEY POINTS

1. LPRD is commonly encountered in routine otorhinolaryngology practice
2. Establishing the diagnosis of LPRD is important to cut off frequent hospital visits and improve the quality of life of the affected patients
3. Prompt treatment of LPRD is important to prevent its associated consequences such as laryngeal cancer
4. RFS and RSI are of importance in establishing the diagnosis of LPRD
5. Laryngoscopy remains to be an essential examination in resource limited settings so as to diagnose LPRD

INTRODUCTION

Laryngopharyngeal reflux (LPR) refers to a phenomenon where there is back flow of contents of the stomach into the lowermost part of the pharynx.¹⁻³ It has been described as an extraesophageal variant of GERD.¹⁻⁵ It is believed that the primary defect in LPR might be upper esophageal sphincter dysfunction in less than half of LPR patients with GERD.^{2,4,6-9} For the larynx, as few as three episodes of reflux in a week have been shown to be associated with the development of significant disease.²

It has been estimated that 4%–10% of the patients referred to an otolaryngology clinic have symptoms and/or signs related to LPR.² The LPR may be manifested as laryngeal symptoms, such as cough, sore throat, hoarseness, dysphonia, and globus, as well as signs of laryngeal irritation at laryngoscopy.^{1-4,6,8,10-12}

Studies have found the prevalence of GERD to increase almost every year and in the study which was conducted by El-Serag, such prevalence was found to increase by 4% every year since 1976,¹³ and similarly Altman et al found a significant increase in hospital visits due to similar complaints and such increase has been found to account for the majority of cases of dysphonia.^{5,9}

A diagnosis of LPR may be established by asking patients about specific symptoms, laryngoscopy or 24-hour double probe pH monitoring which remains to be the diagnostic test for LPRD.^{1,2,10-12}

In recent decades, there has been an association between LPR and certain clinical conditions laryngeal cancer and chronic laryngitis.² It is important that Otorhinolaryngologists do not miss the diagnosis of LPRD as it is difficult to identify and presents with non-specific symptoms. This study was designed to describe the utility of reflux finding score and reflux symptom index in diagnosis of LPRD at Tanzania's largest city.

MATERIALS AND METHODS

Study design, setting and duration

This was a hospital based descriptive cross sectional study that was conducted from to June 2017 to June 2018 in Dar es Salaam, the largest Country's city.

Inclusion criteria

Patients with throat and voice complaints for more than a month provided they have no other underlying cause such as tumors of the aerodigestive system or chronic irritants of the larynx such as cigarette smoking or those with misuse of voice such as choir singers, teachers.

Exclusion criteria

Those patients with throat and voice complaints for a duration of less than a month or those having other possible underlying causes of voice changes such as tumors of the aerodigestive system or chronic irritants

of the larynx such as cigarette smoking or those with misuse of voice such as choir singers, teachers.

Statistical analysis

SPSS version 21 was used to analyze data in this study. Quantitative variables were expressed in terms of frequencies and percentages. Accuracy and consistency prior analysis was ensured by cross checking the entered data to ensure all variables were well fed to completion.

Data collection tool

Assessment of symptoms related to LPRD was done using the reflux symptom index (RSI).¹ Each item ranges from 0 (Absent problem) to 5 (significant problem), with a maximum score of 45 (**Table 1**). A diagnosis of reflux was made if the patient had a RSI score >13. Patients were followed up in one-month intervals up to three months and 70-degree rigid laryngoscopy was repeated every month to notice any improvement in the RFS of the studied patients.

Meanwhile, diet and lifestyle modifications were insisted to patients such as regular exercise, avoiding spicy and oily foods, timely intake of meals, cease cigarette smoking, tobacco or alcohol consumption. Proton pump inhibitors (PPI) twice a day before meals were administered to patients.

Patients who were found to have a RSI score >13 were subjected to 70-degree rigid laryngoscopy and their laryngeal findings were noted and scored according to the Reflux Finding Score (RFS).^[8] (**Table 2**).

The scoring tool used to scale the features of LPRD evaluates eight items such as: subglottic edema, ventricular obliteration, erythema or hyperemia, vocal fold edema, generalized laryngeal edema, posterior commissure hypertrophy, granuloma or granulation tissue, and excess laryngeal mucus. Individual items were scored according to severity, anatomical site, and presence or absence of the relevant finding, for a total score of 26 (Table 2). Patients who had a score of 7 or higher were considered to have LPRD.

RESULTS

A total of 2500 patients had voice and throat complaints for more than a month in the department of Otorhinolaryngology at Ekenywa Specialised Hospital where 800 (32.0%) were male and 1700 (68.0%) were females. Out of the 2500, 1520 (60.8%) patients were found to have a RSI of >13. Out of the 1520 patients subjected to 70-degree laryngoscopy, 1425 patients (95%) were found to have a RFS >7. Of the 1425 patients with RFS >7, 1165 were females (81.8%) and 260 were males (18.2%). (**Table 3**).

Regarding symptoms reported by patients with LPRD as per RSI and RFS, the most common symptom from RSI was sensation of a lump or foreign body in the throat, followed by excess throat mucus and throat clearing and episodes of cough following eating or lying down. The most common sign noted on RFS was hyperemia/erythema of the endolarynx, followed by thick endolaryngeal mucus and posterior commissure hypertrophy.

Upon scheduled follow up at the clinic, majority of the patients showed improvement in RFS scores in the first month of initiation of treatment for LPRD. Out of 1425 patients only 15 patients (1.05%) failed to show any improvement after three-months therapy comprising proton pump inhibitors (PPIs) and antacid twice daily. Those with refractory response to the scheduled regimen for LPRD were counseled to undergo esophagogastroduodenoscopy and were then treated accordingly by specialists including medical and surgical gastroenterologists.

Discussion

This study had an objective of describing the epidemiological profile of patients with LPRD among those with throat and voice complaints for more than a month. Laryngopharyngeal reflux is often an underdiagnosed entity in clinical practice especially when it falls under physicians' care. Of all the 1425 study participants with RFS>7, majority (81.8%) were females contrary to what has been reported by other studies.^{2,10,12}

The most frequently encountered symptom in this study was globus/lump sensation, followed by pooling of mucus on the throat and frequent throat clearing, episodes of cough upon feeding or lying down and a chronic irritating cough. Patients with such complaints often overlook these symptoms. The majority of patients were initially treated as cases with allergic triggers and thus given antihistamines and cough syrups without relief. This calls for the need for Otorhinolaryngologists to execute proper management of these patients to avoid prolongation of sufferings.

The study also has shown that RSI and RFS are of importance in establishing the diagnosis of LPRD without delays when patients seek consultation from Otorhinolaryngologists. This tends to be in line with what was standardized so as to design RSI and the RFS to aid in the diagnosis of LPRD.^{8,11} Both scores were easily reproducible thus aiding in the follow up of the patients and helping monitor treatment outcomes.

The duration of treatment for LPRD to date remains unstandardized. In our study, treatment was advocated for three months with a PPI twice a day and antacids along with dietary and lifestyle modification. Following three months of treatment, patients were advised to adhere to the recommended dietary and lifestyle modification. This calls for the urgent need to establish standardized treatment protocols for LPRD similar to what has been practicable with GERD. Regarding response to treatment as per our study, the results were promising and encouraging since only 15 patients (1.05%) out of the 1425 participants failed to show any improvement with PPIs and antacids. The few patients who came back with relapse of symptoms after three months of treatment were put on PPIs until resolution of symptoms was noted. Therefore, long-term follow-up of patients with LPRD remain to be important during the course of their treatment.

This was a single institutional based study and therefore the study findings cannot be generalizable and thus a limitation of this study.

CONCLUSION

Globus sensation, pooling of mucus on the throat and frequent throat clearing were the commonest symptoms while hyperemia/erythema of endolarynx, thick endolaryngeal mucus and posterior commissure hypertrophy were also the commonest endoscopic findings and thus are important pointers of LPRD. RFS and RSI have shown their utility in management of patients with LPRD.

ETHICAL CONSIDERATIONS

Ethics and research committee of the Hospital granted an ethical clearance on 12th January 2017 with an approval number ESH/2017/10. A written informed consent for participants' participation and similarly a consent for sharing the research findings was obtained. All research procedures complied with 2013 Geneva declaration.

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LIST OF TABLES AND FIGURES

Table 1: Reflux Symptom Index (RSI)

| Impact of the below symptoms since the previous month. (Circle the appropriate response) | 0=Absent problem 5=Significant problem | 0=Absent problem 5=Significant problem | 0=Absent problem 5=Significant problem | 0=Absent problem 5=Significant problem | 0=Absent problem 5=Significant problem | 0=Absent problem 5=Significant problem |
|--|---|---|---|---|---|---|
| Hoarseness of voice | 0 | 1 | 2 | 3 | 4 | 5 |
| Excessive throat clearing | 0 | 1 | 2 | 3 | 4 | 5 |
| Excess throat mucus or postnasal drip | 0 | 1 | 2 | 3 | 4 | 5 |
| Difficulty in swallowing solid, liquid foods and tablets | 0 | 1 | 2 | 3 | 4 | 5 |
| Episodes of cough following eating or lying down | 0 | 1 | 2 | 3 | 4 | 5 |

| Impact of the below symptoms since the previous month. (Circle the appropriate response) | 0=Absent problem 5=Significant problem | 0=Absent problem 5=Significant problem | 0=Absent problem 5=Significant problem | 0=Absent problem 5=Significant problem | 0=Absent problem 5=Significant problem | 0=Absent problem 5=Significant problem |
|--|---|---|---|---|---|---|
| Difficulty in breathing or episodes of choking | 0 | 1 | 2 | 3 | 4 | 5 |
| Irritable cough | 0 | 1 | 2 | 3 | 4 | 5 |
| Globus/lump sensation | 0 | 1 | 2 | 3 | 4 | 5 |
| Heartburn, chest pain, sense of indigestion or reflux of gastric acid | 0 | 1 | 2 | 3 | 4 | 5 |

Table 2: Reflux Finding Score (RFS)

| | |
|----------------------------------|--|
| Subglottic edema | 0=Absent 2=Present |
| Ventricular obliteration | 0=Absent 2=Partial 4=Complete |
| Erythema/Hyperemia of endolarynx | 0=Absent 2=Only in arytenoids 4=Diffuse |
| Vocal fold edema | 0=Absent 1=Mild 2=Moderate 3=Severe 4=Polypoidal |
| Diffuse laryngeal edema | 0=Absent 1=Mild 2=Moderate 3=Severe 4=Obstructing |
| Posterior commissure hypertrophy | 0=Absent 1=Mild 2=Moderate 3=Severe 4=Obstructing |
| Granuloma/Granulation tissue | 0=Absent 2=Present |
| Thick endolaryngeal mucus | 0=Absent 2=Present |

Table 3: Distribution of study participants by RFS and RSI

| | Males, n(%) | Females, n(%) | Total, n |
|---------------------|-------------|---------------|----------|
| Participants | 800 (32.0%) | 1700 (68.0%) | 2500 |
| RSI>13 | 320(21.1%) | 1200 (78.9%) | 1520 |
| RFS>7 | 260 (18.2%) | 1165(81.8%) | 1425 |