

The Profile of Laryngopharyngeal Reflux Patients at Dr. Soetomo Teaching Hospital, Surabaya Indonesia

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Abstract

Introduction: Laryngopharyngeal reflux (LPR) is a collection of symptoms due to gastric contents or gastroduodenal backflow reflux fluid. The prevalence of LPR is very difficult to determine because of the limitations of the gold standard and the considerable variation in LPR symptoms.

Aim: to determine the profile of laryngopharyngeal reflection patients

Method: This research used analytic retrospectively, the data obtained from the medical record of outpatient unit of the Otolaryngology-Head and Neck Surgery Outpatient Unit, Dr. Soetomo Teaching Hospital. The data obtained in the study are displayed in tables and analyzed descriptively. The research sample was taken according total sampling from January 2017 to December 2018 who met the inclusion criteria.

Result: 42 samples met the requirements. 64.29% patient were female and 35.71% were male with the majority of patient was patient was 41-50 years old (26.19%). Most of the comorbidities had a history of GERD about 76.2%. The mean of the reflux symptom index score performed was 18.38, with a standard deviation of ± 8.01 and the reflux findings scores was 9.11, with a standard deviation of ± 4.25 . The most frequent complaints experience was frequent mucus or clearing of the throat (90.48%) and the most frequent finding in laryngeal endoscopy was erythema/hyperemia (88.1%).

Conclusion: Profiles of patients with laryngopharyngeal reflux were mostly female with age between 41 and 50 years old. The main complaint of the throat felt blocked, and the most comorbidities were GERD.

Keywords: patient profile, laryngopharyngeal reflux, LPR, GERD, extra-esophageal reflux

Introduction

Laryngopharyngeal reflux (LPR) is a collection of symptoms due to gastric contents or gastroduodenal backflow reflux fluid. It contains acid, pepsin, and other digestive enzymes to the esophagus, larynx, and hypopharynx, causing contact and injury to the tissue

in the upper aerodigestive tract. Laryngopharyngeal reflux has hoarseness, throat clearing, chronic cough, globus sensation, postnasal drip, dysphagia, and sore throat.¹⁻³ Laryngopharyngeal reflux has no specific or pathognomonic symptoms.^{1,2} Laryngopharyngeal reflux may be a symptom continuation of gastroesophageal reflux.^{2,4}

Gastroesophageal reflux disease (GERD) is a condition that can be differentiated and separated from LPR.^{1,3} The most prominent clinical symptoms of GERD are heartburn, regurgitation and difficulty swallowing.² The prevalence of LPR is not known with certainty, but it is estimated that 20-30% of patients with laryngeal complaints are LPR patients. The incidence of the population with symptoms of LPR in the UK studied

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by Kamani et al. was 34.4%. Research conducted by Koufman was cited by Kamani showing symptoms and signs of LPR in about 4-10% of patients coming to Otolaryngology-Head and Neck Surgery doctors.⁵ The prevalence in America in 2016 was 9.7% of all those who went to otolaryngology doctors. The prevalence of LPR is very difficult to determine because of the limitations of the gold standard and the considerable variation in LPR symptoms.³

The diagnosis of LPR is based on history, clinical symptoms and laryngoscope examination.³ Belafsky, et al., Developed the Reflux Symptom Index (RSI) and Reflux Finding Score (RFS) to simplify the diagnosis of LPR. The RSI questionnaire consisted of nine items to assess various symptoms associated with LPR. Each piece has a scale ranging from zero (no complaints) to five (severe complaints), with a maximum of 45 indicating the most severe symptoms. An RSI score higher than 13 is considered abnormal and shows an LPR.⁶ The RFS score uses an endoscopic examination of the larynx with eight criteria. An RFS score more magnificent than seven means an LPR.⁷ Based on the description above, this study aims to determine the profile of patients with laryngopharyngeal reflux who are examined at the Otolaryngology-Head and Neck Surgery Outpatient Unit of Dr. Soetomo Teaching Hospital, Surabaya.

Distribution of Age

The youngest age who experienced LPR was 20 years old, while the oldest age who experienced LPR was ≥ 71 years.

Table 1. Distribution of Age

Age (year)	Number	Percentage (%)
20 – 30	9	21,43
31 – 40	7	16,67
41 – 50	11	26,19
51 – 60	8	19,05
61 – 70	4	9,52
≥ 71	3	7,14
Total	42	100

Methods

This study is a retrospective study using secondary data from the Otolaryngology-Head and Neck Surgery Outpatient Unit (URJ), Dr. Soetomo Teaching Hospital, Surabaya Indonesia. The research data were taken from the medical records of LPR patients examined from January 2017 to December 2018.

The research sample was of a population that met the inclusion and exclusion criteria. The inclusion criteria in this study were laryngopharyngeal reflux patients over 18 years of age who had undergone RSI and RFS examinations at the Otolaryngology-Head and Neck Surgery Outpatient Unit of Dr. Soetomo Teaching Hospital, Surabaya. The exclusion criteria in this study were age less than 18 years and abnormalities in the larynx.

Results

LPR patients who checked at the Otolaryngology-Head and Neck Surgery Outpatient Unit, Dr. Soetomo Teaching Hospitals from January 2017 to December 2018 showed 73 patients, 31 patients did not meet the inclusion and exclusion criteria, so only 42 samples met the requirements. A total of 27 LPR patients (64.29%) were female, and 15 (35.71%) were male.

Distribution of Comorbidities

Most of the comorbidities had a history of GERD as many as 32 patients (76.2%), followed by hypertension in 8 patients (19.04%). Two patients (4.76%) had no comorbidities.

Table 2. Distribution of Comorbidities

Comorbidities	Number	Percentage (%)
GERD	32	76,20
Hypertension	8	19,04
No comorbidities	2	4,76
Total	42	100

Major Complaints

The main complaint that was rarely felt was lumpy throat in 15 patients (35.71%).

Table 3. Distribution of Major Complaints

Major Complaints	Number	Percentage (%)
Throat feels lumpy	15	35,71
Hoarse voice	12	38,58
Swallowing pain	6	14,29
Difficulty swallowing	4	9,52
Throat feels dry	3	7,14
Heartburn	2	4,76
Total	42	100

RSI and RSF Score

The mean of the RSI score performed on LPR patients was 18.38, with a standard deviation of ± 8.01 . The mean RFS score in LPR patients was 9.11, with a standard deviation of ± 4.25 .

Table 4. RSI and RSF Score

Assessment	Mean	Standard Deviation (SD)
RSI	18,38	$\pm 8,01$
RFS	9,11	$\pm 4,25$

Reflux Symptom Index

Frequent mucus or clearing of the throat in 38 patients (90.48%) of the total sample of 42 were the most frequent complaints experienced by LPR sufferers.

Table 5. Distribution of Reflux Symptom Index

RSI	Number	Percentage (%)
Hoarseness	28	66,67
Frequent mucus	38	90,48
Excessive mucus / PND (post nasal drip)	35	83,34
Trouble swallowing	23	54,76
Cough after eating / lying down	18	42,86
Difficulty breathing / choking	17	40,48
Annoying cough	22	52,38
A lump in the throat	37	88,09
Heart burn, chest pain, indigestion, acid regurgitation	33	78,57

Distribution of Reflux Findings Scores

Erythema/hyperemia of the larynx in 37 patients (88.1%) from 42 total samples was the most frequent finding in laryngeal endoscopy.

Table 6. Distribution of Reflux Findings Scores

Finding	Number	Percentage (%)
Subglottic Udim	24	57,14
Ventricular obliteration	25	59,52
Erythema/hyperemia of the larynx	37	88,10
Udim the vocal cords	36	85,71
Udim the larynx thoroughly	34	81,00
Posterior commissural hypertrophy	23	54,76
Granuloma / granulation tissue	6	14,29
Thick endolaryngeal mucus	17	40,48

Discussion

The ratio between men and women is one to three. A similar study was conducted by Kesari et al. On 200 LPR patients consisting of 123 (61.5%) women and 77 (38.5%) men.⁸ Another study conducted by Andriani, et al., for 51 patients with LPR, there were female (62.75%) and male (37.25%) patients.⁹ The youngest age of LPR patients who sought treatment was 20 years old, and the oldest was more than 71 years. The largest age group with LPR was 41 to 50 years old, with 11 patients (26.19%) (Table 1). The results of this study were the same as those conducted by Ratunanda, et al., with the largest age group 40-49 years as many as 41 patients (47.6%).¹¹

Over 40 years of age, there has been a change in the laryngeal mucosa, namely the superficial layer of edema in the lamina propria, especially in women after menopause. Mucus production is reduced due to changes in the glands in the larynx. Old age histologically, the endoplasmic granular reticulum and Golgi apparatus in the mucus and serosa of the larynx are small so that the quality and quantity of secretions are reduced. Other changes occur in the epithelial mucosa of the vocal cords, which becomes thinner so that at the age of over 40, the larynx is susceptible to acidic substances.

The comorbidities of LPR sufferers in this study were GERD totaling 32 patients (76.2%) (Table 3). This study follows Nennstiel et al., where most comorbidities were GERD in 12 patients (57%).¹³ Reflux gastroesophageal disease is a physiological backflow of gastric content into the esophagus, which can occur 50 times a day, especially after eating. Inflammation of the larynx can be a cause of GERD. Laryngopharyngeal reflux is a supraesophageal manifestation of GERD caused by gastric contents' backflow into the laryngopharynx, thus showing a significant correlation between GERD and LPR. The backflow of acid in LPR is acted by GERD.¹⁴ Patients who have GERD and LPR are related to each other.

LPR sufferers found that the main complaints that caused patients to go to the hospital were 15 patients (35.71%) of the throat felt blocked (35.71%) and the hoarse voice of 12 patients (28.58%) (Table 3). This study follows the one conducted by Lechien et al., The main complaint that many people feel is a lump in the throat and hoarseness of 16 patients (20%). 12 Putri conducted a similar study, et al., The main complaint was the feeling of a lump in the throat of 43 patients (91.5%).¹⁵ Some

of the clinical symptoms of LPR sufferers can include irritation of the throat, changes in voice, and trouble swallowing. Symptoms of throat irritation can include a dry or itchy feeling in the throat, throat clearing or clearing the throat, a sensation of mucus, chronic cough, globus sensation, and sore throat.¹⁶

Reflux causes the mucosal barrier to be damaged, causing trauma, inflammation, and dysfunction of the respiratory cilia, causing clinical symptoms of a blocked throat, pharyngeal globus, and throat clearing. Reflux also increases nasal secretions and the sensation of secretions in the back of the nose.¹⁵ The mean RSI score in this study was 18.38, with SD \pm 8.01 (Table 5). This study follows the one conducted by Karakaya et al., The mean RSI score was 18.3, with SD \pm 4.4.17. Another study conducted by Asyari, et al., obtained a mean RSI score of 18.53 with an SD 4.46.10 Mean RFS score at This study was 9,11 with SD \pm 4,25 (Table 5). Following the research conducted by Nunes et al., the mean RFS score was 9.53, with SD \pm 2.64.14. This indicated that the patient who came to the Dr. Soetomo hospital was an LPR.

RSI complaints most often experienced by patients with LPR in this study often had mucus or cleared their throat in 38 patients (90.48%) and a lump in the throat of 36 patients (76.19%) (Table 5). This study was similar to that conducted by Lechien, et al., Complaints according to the RSI score were the throat-clearing of 38 patients (92.68%).¹² This study follows the one conducted by Karakaya et al., According to the RSI score, 48 patients (92.7%) and a feeling of blockage in the throat of 37 patients (71.3%) .¹⁷ A similar study conducted by Asyari, et al., stated that the most frequent complaints of the clearing were experienced by 30 patients (100%) and 27 patients (90%).¹⁰ The study's results are similar to the study by Ratunanda, et al., Showing that the complaints according to the RSI score were clearing 86 patients (100%) and a lump in the throat of 86 patients (100%).¹¹

There are two theories about the mechanism by which stomach acid can provoke clinical signs and symptoms of LPR disorder. The first theory is due to the direct trauma of pepsin acid to the larynx and surrounding tissue. The second theory is that acid in the distal esophagus stimulates reflex mediated by the vagus nerve resulting in bronchoconstriction, which results in clearing and coughing, resulting in mucosal lesions. Symptoms develop due to direct mucosal trauma or damage to the cilia, resulting in mucus stasis, clearing,

and coughing.

Complaints of dysphagia, globus sensation, and odynophagia can cause mucosal inflammation of the upper aerodynamic tract.^{16,19} Hypersecretion of thick mucus causes mucosal irritation because pepsin reduces mucin expression and bicarbonate secretion. These complaints can also be caused by the stimulation of the lower aerodigestive chemoreceptors by refluxate. Symptoms of postnasal drip, throat clearing, globus, and cough are caused by mucus accumulation. Symptoms of dysphonia are a more difficult mechanism and undergo macroscopic and microscopic changes in the mucosa of the vocal cords.

The findings of the RFS score in this study were erythema or laryngeal hyperemia of 37 patients (88.1%) and edema of the vocal cords of 36 patients (85.71%) (Table 6). This study is following that conducted by Andriani et al., The findings of the most RFS scores were 51 patients (100%) of laryngeal erythema, 34 patients (65.38%) of the vocal cords, 9 This study was similar to that conducted by Asyari, et al., the findings of the most RFS scores were laryngeal erythema in 30 patients (100%) and udim of the vocal cords as many as 26 patients (96.67%).

Belafsky et al. Said that RFS is a method that can be used to diagnose and evaluate LPR therapy.⁷ The severity of inflammation and the presence or absence of lesions on the RFS score are associated with LPR. An RFS score is easy to do with a score above seven, having a 94% probability of experiencing LPR. Subglottic edema is associated with non-acid reflux. Posterior commissural hypertrophy and ventricular obliteration were associated with reflux exposure time but not the number of reflux events.¹⁶

Conclusion

Profiles of patients with laryngopharyngeal reflux were mostly female, the most common age was between 41 and 50, the main complaint of the throat felt blocked, and the most comorbidities were GERD. According to the RSI score, the most common complaint of patients was the frequent clearing of the throat, and endoscopic findings with the RFS score were erythema or laryngeal hyperemia.

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