Original Article

A Cross Sectional Study on the Prevalence Risk Factors and Clinical Presention of Laryngopharyngeal Reflux Disease at a Tertiary Care Hospital

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Abstract

Background: Laryngopharyngeal reflux disease is an extraesophageal variant of gastro-esophageal reflux disease. It is a disease with high prevalence which is usually under reported or misdiagnosed due to lack of definite diagnosis. It can affect the quality of life of the patients. Hence, it is important to identify the risk factors associated with the disease.

Methods: This was a hospital based cross sectional study conducted in a tertiary care hospital of Kerala for a period of one year. All patients with more than 18 years of age presented with throat and voice symptoms for more than six weeks were included in our study. A questionnaire based on Reflux Symptom Index (RSI) put forward by Belafsky were distributed to the patients and the responses were collected. Out of patients who responded, those who had an RSI score > 13 were diagnosed to be suffering from LPRD. Additional questions were included in the questionnaire to assess the risk factors. All patients having RSI >13 underwent flexible endoscopic examination to establish Reflux Finding Score (RFS) put forward by Belafsky et al. Patients having a score of 7or higher were classified as having LPRD.

Conclusion: In our study we found the prevalence of laryngopharyngeal reflux to be 20.89%.The most common symptoms among the LPRD positive patients in our studygroup were sensation of lump in throat and heart burn, chest pain, indigestion or stomach acid coming up.

Keywords: Laryngopharyngeal reflux, prevalence, risk factors

Introduction

Laryngopharyngeal reflux disease (LPRD) was first observed by von Leden and Moore in 1960 and was largely accepted in otolaryngology practice with Koufman's landmark thesis on the subject in 1991[1,2]. Laryngopharyngeal reflux is the retrograde flow of gastric contents into the pharynx and larynx where it comes in contact with the tissues there and cause symptoms[2].The prevalence of LPRD ranges from 5 to 30% worldwide. The incidence of patients presenting with reflux symptoms in otolaryngology clinics has been estimated to be 4 to 10%[3]. The other terminologies for LPRD includes extra esophageal

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reflux, chronic laryngitis and supra esophageal complication of gastro-esophageal reflux. The common symptoms of LPRD include hoarseness, globus sensation, frequent throat clearing, chronic cough, vocal fatigue, excessive throat mucous etc. Laryngopharyngeal reflux is a multi-factorial disease with a varying clinical presentation. Because of the high prevalence of laryngopharyngeal reflux and the potential complications associated with it, we should be familiar with the various perspectives of this disorder. We conducted this study in order to find laryngopharyngeal reflux disease prevalence in our area and the different habits of the people that are associated with increased risk of developing the condition.

Materials and Methods

This was a hospital based cross sectional study conducted for a period of one year from December 2021 to November 2022in a tertiary care medical college hospital in Kerala. All patients with more than 18 years of age presented with throat and voice symptoms for more than six weeks were included in our study. An informed written consent was taken from all the patients before they were included in the study. A questionnaire based on Reflux Symptom Index (RSI) put forward by Belafsky[4] were distributed to the patients and the responses were collected. Out of patients who responded, those who had RSI score > 13 were diagnosed to be suffering from LPRD. Additional questions were included in the questionnaire to assess the risk factors. All patients having RSI >13 underwent flexible endoscopic examination to establish Reflux Finding Score (RFS) put forward by Belafsky et al[5].RFS is an eight-item severity rating score based on endoscopic findings. Patients having a score of 7or higher were classified as having LPRD. Patients with other laryngeal pathologies and malignancies were excluded from our study. For analysis all patients who were found positive for LPRD were included in group 1 and others were included in group 2.

Questionnaire

Table 1: Questionnaire

SL No	QUESTIONNAIRE	RESPONSE
1.	Name	
2.	Age	
3.	Habit of smoking /alcoholism	YES/NO
4.	Consumption of spicy/fatty food	YES/NO
5.	Habit of drinking carbonated drinks	YES/NO
6.	Lying down in less than 2 hours after a meal	YES/NO
7.	Habit of regular exercising	YES/NO

PATIENT SYMPTOMS

Table 2: Reflux Symptom Index(Reflux Symptom Index (RSI) put forward by Belafsky[4])

REFLUX SYMPTOM INDEX (0:NoIssue, 5:Severe Issue)	0	1	2	3	4	5
HOARSENESS OR PROBLEM WITH YOUR VOICE	0	1	2	3	4	5
CLEARING YOUR THROAT	0	1	2	3	4	5
EXCESS THROAT MUCOUS OR POSTNASAL DRIP	0	1	2	3	4	5
DIFFICULTY SWALLOWING FOOD, LIQUID OR PILLS	0	1	2	3	4	5
COUGHING AFTER YOU ATE OR AFTER LYING DOWN	0	1	2	3	4	5
BREATHING DIFFICULTIES OR CHOKING EPISODES	0	1	2	3	4	5
TROUBLESOME OR ANNOYING COUGH	0	1	2	3	4	5
SENSATIONS OF SOMETHING STICKING IN YOUR THROAT OR LUMP IN THE THROAT	0	1	2	3	4	5
HEARTBURN, CHESTPAIN, INDIGESTION OR STOMACH ACID COMING UP	0	1	2	3	4	5
TOTAL						

ENDOSCOPIC FINDINGS

Table 3: Reflux Finding Score (RFS)(Reflux Finding Score (RFS) put forward by Belafsky et al[5])

REFLUX FINDING SCORE(RFS)				
SUBGLOTTIC EDEMA	0 - Absent / 2 – Present			
VENTRICULAR OBLITERATION	Partial - 2		Complete - 4	
ERYTHEMA/ HYPEREMIA	Arytenoids only - 2		Diffuse – 4	
VOCAL FOLD EDEMA	Mild - 1	Moderate - 2	Severe - 3	Polypoid – 4
DIFFUSE LARYNGEAL EDEMA	Mild - 1	Moderate - 2	Severe - 3	Obstructive - 4
POSTERIOR COMMISSURE HYPERTROPHY	Mild - 1	Moderate - 2	Severe - 3	Obstructive - 4
GRANULOMA/ GRANULATION TISSUE	0 - Absent / 2 – Present			
THICK ENDOLARYNGEAL MUCOUS	0 - Absent / 2 – Present			

Results

The questionnaire was distributed, and data was collected from 201 patients. Out of the 201 patients 129 were females and 72 were males. The patients were distributed across all ages. The youngest age in the LPRD positive group was 24 years and the oldest was 61 years. Out of the 201 patients 42 patients had RSI score more than 13 and were considered as suffering from LPRD. 159 patients have RSI < 13 and were considered as not having LPRD. The prevalence of laryngopharyngeal reflux disease in the study group was found to be 20.89%. Out of the total positive patients of LPRD 73.8% (31) were females and (26.2%) 11 were males. The prevalence of LPRD in females was 24.03 and in males it was15.27. In our study group 38 % (16) of patients with LPRD had the habit of smoking /alcoholism. 82% (32) of patients with LPRD in our study group had the habit of consuming spicy or fatty food. 66% (28) of patients with LPRD in our study population had the habit of lying down in less than 2 hours after a meal. In our study out of the 42 patients with laryngopharyngeal reflux disease 29 patients (70%) were consuming carbonated drinks frequently. In our study 27 patients with LPRD did not have any regular exercise.

TABLE SHOWING ASSOCIATION OF RISK FACTORS WITH LPRD

Table 4: Association of risk factors with LPRD

Variables	Categories	Group 1(n=42)	Group 2(n=159)	P value
Smoking /Alcoholism	Yes	16(38.1)%	22(13.8%)	0.001
	No	26(61.9%)	137(86.2%)	
Spicy /Fatty food	Yes	32(82.1%)	7(17.9%)	0.001
	No	9(5.6%)	152(94.4%)	
Lying <2hr after meal	Yes	28(66.7%)	14(33.3%)	0.001
	No	14(8.8%)	145(91.2%)	
Carbonated drinks	Yes	29(70.7%)	12(29.3%)	0.001
	No	13(8.2%)	146(91.8%)	
Regular exercises	No	27(50.0%)	27(50.0%)	0.001
	Yes	15(10.2%)	132(89.8%)	

All the risk factors showing significant (<0.05) association with laryngopharyngeal reflux disease.

TABLE SHOWING THE SCORES OF THE SYMPTOMS IN LPRD POSITIVE PATIENTS

Table 5: Scores of the symptoms in LPRD Positive Patients

Variables	Scores	Group 1 (n=42)
HOARSENESS OR PROBLEM WITH YOUR VOICE	0	27(64%)
	1	10(24%)
	2	3(7%)
	3	2(5%)
CLEARING YOUR THROAT	0	1(2%)
	1	1(2%)
	2	17(40%)
	3	15(36%)
	4	7(7%)
	5	1(2%)
EXCESS THROAT MUCOUS OR POSTNASAL DRIP	0	2(5%)
	1	5(12%)
	2	17(40%)
	3	12(29%)
	4	3(7%)
	5	3(7%)
DIFFICULTY SWALLOWING FOOD, LIQUID OR PILLS	0	23(55%)
	1	13(31%)
	2	4(10%)
	3	2(5%)
COUGHING AFTER YOU ATE OR AFTER LYING DOWN	0	11(26%)
	1	13(31%)
	2	8(19%)
	3	10(24%)
BREATHING DIFFICULTIES OR CHOKING EPISODES	0	35(83%)
	1	7(17%)
TROUBLESOME OR ANNOYING COUGH	0	12(29%)
	1	12(29%)
	2	14(33%)
	3	4(10%)
SENSATIONS OF SOMETHING STICKING IN YOUR THROAT OR LUMP IN THE THROAT	0	0(-)
	1	0(-)
	2	19(45%)
	3	18(43%)
	4	2(5%)
	5	3(7%)
HEARTBURN, CHESTPAIN, INDIGESTION OR STOMACH ACID COMING UP	0	0(-)
	1	1(2%)
	2	9(21%)
	3	18(43%)
	4	11(26%)
	5	3(7%)

In our study among the LPRD positive patients 15 patients had hoarseness (35.71%) 41 patients (97.6%) had frequent clearing of throat. Excess throat mucous or postnasal drip was present in 40 patients (95.23%).19 patients (45.23%) had difficulty in swallowing food. 31 patients (73.80%) had the symptom of coughing after eating food or lying down. 7 patients (16.6 %) had breathing difficulties or choking episodes.30 patients (71.4%) had symptoms of annoying cough. 100 % of patients had the symptoms of heart burn and sensation of lump in throat. Thus, the most common symptoms among the LPRD positive patients in our study group were sensation of lump in throat, chest pain, heart burn and indigestion or stomach acid coming up. The least common symptoms among LPRD positive patients in our study group were difficulty in breathing, choking episodes and hoarseness of voice.

REFLUX FINDINGS FREQUENCY DISTRIBUTION

Table 6: Reflux findings frequency distribution

Variable	Scores	Frequency	Percentage
Subglottic edema	Absent	42	100.0
Ventricular obliteration	Absent	30	71.4
	Present	12	28.6
Erythema /Hyperemia	Present	42	100.0
Vocal fold edema	Present	42	100.0
Diffuse laryngeal edema	Present	42	100.0

Continue.....

Posterior commissure hypertrophy	Present	42	100.0
Granuloma/Granulation tissue	Absent	32	76.2
	Present	10	23.8
Thick Endo laryngeal mucous	Absent	23	54.8
	Present	19	45.2

In our study erythema, vocal fold edema, diffuse laryngeal edema and posterior commissure hypertrophy were the reflux findings found in the majority of our patients. Subglottic edema (0%), ventricular obliteration (12%) and thick endo-laryngeal mucous (19%) were the less frequent findings.

Discussion

Laryngopharyngeal reflux is one of the major health problems in developing countries like India. The prevalence of LPRD is different in different countries[6].It's prevalence ranges from 5 to 30%. The prevalence of laryngopharyngeal reflux has been increasing at a rate of 4% every year according to El-Seraj[7].In a study conducted by Prasun Mishra, Deeksha Agarwal, the prevalence of LPRD in Indian population was found to be 11%[8]. The overall prevalence of LPRD in our study was found to be 20.89%. The prevalence of LPRD in females was 24.03 and in males was 15.27. In a study conducted by Willyboard A. Massawe, AslamNkya et al. in a tertiary hospital Tanzania showed the overall prevalence of LPRD to be 18.4%, in males the prevalence was 19.1% and in females 17.6%[6]. This was comparable to the results in our study.

In our study factors like smoking and alcoholism, consumption of spicy/fatty food, frequent use of carbonated drinks, lack of regular exercise, lying down in less than 2 hours were found to be significantly associated with LPRD. In a study conducted by Nikolas Spantideas, Eirini Drosou et al. smoking and alcoholism was found to be risk factors of LPRD[9]. In a study conducted by Kesari SP, Chakraborty S et al. in Sikkimese population found that reflux symptoms were higher in alcoholics, people with frequent usage of aerated drinks and in those having spicy food. The study also showed that reflux was more in those going to bed immediately after dinner[10]. In our study group 38 % (16) of patients with LPRD had the habit of smoking /alcoholism. 82% (32) of patients with LPRD in our study group had the habit of consuming spicy or fatty food. 66% (28) of patients with LPRD in our study population had the habit of lying down in less than 2 hours after a meal. In our study, out of the 42 patients with laryngopharyngeal reflux disease, 29 patients (70%) were consuming carbonated drinks frequently. In a study conducted by MeiguiWang, Tingting Mo et al. carbonated drink consumption was found to be a risk factor of LPRD[11]. The most common symptoms among the LPRD positive patients in our study group was sensation of lump in throat, chest pain, heart burn and indigestion or stomach acid coming up. The least common symptoms among LPRD positive patients in our study group were breathing difficulties or choking episodes and hoarseness. In a study conducted by Raghvendra Singh Gaur et al. the common symptoms were sensation of foreign body in the throat followed by frequent throat clearing[12]. In a study conducted by Willyboard A. Massawe et al. in Tanzania the commonest symptoms were foreign body sensation, hoarseness and frequent throat clearing[6]. In a study conducted by Nikolaos Spantideas, Eirini Drosouet al. the common symptoms of LPRD were heart burn, chest pain and stomach acid coming up[8].In our study erythema, vocal fold edema, diffuse laryngeal edema and posterior commissure hypertrophy were the reflux findings found in majority of the patients. Subglottic edema (0%), ventricular obliteration (12%) and thick endolaryngeal mucous (19%) were the less frequent findings. In a study conducted by WillybroadAMassawe et al. the most frequent findings were thick endolaryngeal mucus followed by partial ventricular obliteration[6] and vocal fold edema. In the study conducted by Belafsky and Koufman posterior commissure hypertrophy was the most frequent finding[5].

Conclusion

The prevalence of LPRD is high in our population. There are many risk factors associated with LPRD. Further studies are required to identify the factors

associated with the development of LPRD. Health programs should be conducted to create awareness among the public for the early identification and treatment of the condition.

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Conflict of Interest: Nil

Funding: Self

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