Prevalence and Symptomatology of Laryngopharyngeal Reflux Disease in a Medical College Hospital in Kerala

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ABSTRACT

BACKGROUND

Laryngopharyngeal reflux is a common clinical condition encountered in Otolaryngology practice. It is one of the major causes of laryngeal inflammation. It presents with a constellation of symptoms making the diagnosis difficult. Reflux Symptom Index and Reflux Finding Score are two tools which aid in diagnosis of Laryngopharyngeal reflux. The main objective of this study was to study the agent, host and environment factors of epidemiology of patients with laryngopharyngeal reflux disease using Reflux Symptom Index and Reflux Finding Score.

METHODS

A descriptive study was conducted on 100 patients attending the Department of Otorhinolaryngology, Government Medical College and Hospital, Thrissur, Kerala. The study period was for one year from December 2017 to December 2018. Demographic data of the patients was recorded, and patients were evaluated for Laryngopharyngeal reflux disease using Reflux Symptom Index and Reflux Finding Score using 70 degree / flexible nasopharyngolaryngoscopy. The clinical data collected was then tabulated and analysed.

RESULTS

From the study conducted in 100 patients, 59 % were females and 41 % males. Most common symptom noted was frequent clearing of throat which was present in 88 % cases. Least frequent symptom was choking episode (in 5 %).

CONCLUSIONS

The prevalence of Laryngopharyngeal Reflux Disease was commonest in the 31 to 40 years age group with mean age was 37.8 ± 2.35 years. The male to female ratio were 1:1.43. The disease was common in labourers and housewives. Risk factors were consumption of tea/coffee, inadequate sleep of less than 6 hrs. Lower socioeconomic group populations were more vulnerable than higher income group. The RSI score was between 13 and 15 in 53 % of the patients.

KEYWORDS

Laryngopharyngeal Reflux, Reflux Symptom Index, Reflux Finding Score

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BACKGROUND

Laryngopharyngeal Reflux (LPR) was found to a common disease occurring in the general public with either acute or chronic symptoms. LPR was usually either under diagnosed or over diagnosed by the physicians due to the absence of characteristic symptoms of gastroesophageal reflux disease (GERD).

It was possible for General Practitioners (GPs) in their primary care to diagnose LPR patients provided they are aware of certain "red flags" which would prompt them to refer the LPR patients to the Gastroenterologist or an Otolaryngologist. The regular use of questionnaires prepared, based on patient-reported outcomes in diagnosing LPR patients. This method precludes the necessity for special instrumentation that is not available with the GPs. In this algorithm, the GPs would have to exclude allergy and other causes of pharyngolaryngitis and "red flags". They would have to prescribe certain empirical treatment protocols which are based on diet and behavioural changes with or without medication, depending on the symptom severity. The American Academy of Otolaryngology Head and Neck Surgery in 2002 defined Laryngopharyngeal Reflux (LPR) as the back flow of gastric contents into the Laryngopharynx.[1] The definition was modified further to include all upper aerodigestive tract mucosa by pepsin, bile salts and other gastro duodenal proteins.[2] It was observed lately that LPR was acting as an aetiological factor in the causation of certain laryngeal,[3] rhinological[4] and otological[5,6] conditions. The latest definition of LPR is that it is an inflammatory disease of the upper aerodigestive tract tissues due to the direct and indirect contact of gastric or duodenal content reflux contents with the mucosa of upper aerodigestive tract inducing morphological changes in it.[2] In clinical practice LPR is considered to have two types according to the evolution of complaints over time-acute and chronic LPR.[7] Acute LPR consists of sporadic development, which could be well-treated with an adequate treatment.[8] Those patients with acute LPR do not present with chronic course of symptoms.[9]

Whereas chronic LPR troubles the patients with chronic course of the LPR symptoms with no response to therapeutic trials, with recurrences of symptoms frequently over time (> 2 episodes yearly), requiring repeated therapeutic trials. In both definitions, LPR may be diagnosed with objective testing or empirical treatment. This paper aims to overview the current literature about LPR epidemiology, diagnosis and treatment.

Based on the recent literature findings, we aim to provide practical findings and clinical algorithm for non-otolaryngologist and primary care physicians to manage LPR.

Aim of the Study

To conduct an epidemiological study of Laryngopharyngeal reflux in patients attending a tertiary care Hospital in Kerala.

Objectives

To observe the incidence of age, gender, risk factors, smoking, alcoholism, sleep patterns and socioeconomic status of the patients.

METHODS

This study was conducted in the department of Otolaryngology Government Medical College Thrissur for a period of one year from December 2017 to November 2018. Prior to commencement the study was approved by the ethical committee of the medical college. The study was conducted on 100 patients who presented to the ENT department with symptoms of Laryngopharyngeal reflux disease.

Study Design

A Descriptive study.

Study Setting

Department of ENT, Govt. Medical College Thrissur.

Sample Size

Anagha Atul Joshi, Bhagyashree, Ganesh Chiplunker et al[10] conducted a study on 100 patients and found that the mean value of RFS at the time of evaluation was 11.84 with a standard deviation of 5.01

$$\mathrm{N} = \frac{(Z\alpha)^2 * (SD)^2}{d^2}$$

Z=1.96 for α at 0.05
SD=5.01
d=absolute precision (value between 1 - 5)

$$= \frac{4 * (5.01)^2}{1 * 1} = 100$$

Hence Sample size: 100

Study Period

1 year: from December 2017 – November 2018.

Participants

Patients consulted in department of ENT with features of Laryngopharyngeal reflux disease.

Inclusion Criteria

1. Patients aged above 18 years
2. Patients presenting with symptoms and signs of LPRD (RSI > 13 and RFS > 7)

Exclusion Criteria

1. Children and adolescents below 18 years of age.
2. Patients suspected to have laryngeal malignancy.
3. Cases of paralytic Dysphonia.

Methodology

Patients reported in the department of ENT with clinical signs and symptoms of LPRD were included in the study. A written

informed consent was obtained. Inclusion criteria and exclusion criteria were validated with the principal investigator taking pertinent history from the patients recruited in the study on an individual basis. RSI Scores were calculated for all patients in the study. History included Reflux Symptom Index (RSI) score calculation, age, sex, occupation, tea or coffee intake, history of addictions, food habits, duration etc. RSI was a 9 item self-administered outcome tool.

RSI[4,5] Included

1. Hoarseness or problem with voice 0 1 2 3 4 5
2. Frequent clearing of throat 0 1 2 3 4 5
3. Excess throat mucus or post nasal drip 0 1 2 3 4 5
4. Difficulty swallowing food, liquids or pills 0 1 2 3 4 5
5. Coughing after having eaten 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 of something sticking in the throat 0 1 2 3 4 5
9. or a lump in the throat
10. Heart burn, chest pain, indigestion or 0 1 2 3 4 5 Stomach acid coming up

Each point was ranked from 0 (no problem) to 5 (severe problem). (0 - never, 1-occasionally, 2 - sometimes, 3 - often, 4 - always, 5 - severe, affecting quality of life) RSI ranges from 0 to 45 (worst score). RSI > 13 is considered to indicate LPR.[6] The physical examination entailed a general examination and ENT evaluation with emphasis on indirect Laryngoscopic examination. All patients are also evaluated with 70 degree rigid laryngoscope/Flexible nasopharyngolaryngoscopy. Findings were noted and scored according to Reflux Finding Score (RFS).

RFS[4,5] Included

1. Pseudo sulcus 0 absent, 2 present
2. Ventricular obliteration 0 none, 2 partial, 4 complete
3. Erythema or hyperaemia 0 none, 2 arytenoid only, 4 diffuse
4. Vocal cord edema 0 none, 1 mild, 2 moderate, 3 severe, 4 obstructing (polypoidal)
5. Diffuse laryngeal edema 0 none, 1 mild, 2 moderate, 3 severe, 4 obstructing
6. Posterior commissure hypertrophy 0 none, 1 mild, 2 moderate, 3 severe, 4 obstructing
7. Granuloma 0 absent, 2 present
8. Thick endolaryngeal mucus 0 absent, 2 present

RFS ranged from 0 (lowest possible) to 26 (highest possible). RFS >7 have greater probability of having LPR.[6] For patients with clinical findings of LPRD with RFS score >7 and RSI score >13 were given a standard treatment protocol followed in the ENT department using Tab. Pantoprazole 40 mg twice daily before food.

Data Analysis

Data collected from each patient was entered in to an excel sheet after coding of variables and appropriate analysis was done with the help of SPSS 17 software. The collected data was subjected to suitable statistical analysis which includes percentage analysis and graphical analysis. Results are presented as Mean ± SD values for continuous data and frequencies as numbers.

RESULTS

Among the 100 patients whose data was analysed, 33 belonged to the age group of 31 to 40 years, 28 belonged to the age groups of 21 to 30 years, 18 were aged between 41 to 50 years and 15 were aged between 51 to 60 years. Patients aged below 20 years were 2 and patients aged above 60 years were 4 (Table 1). Among the 100 patients with LPR there were 41 males and 59 females with a male to female ratio of 1:1.43 (Table 1). In this study out of 100 patients 34 % were manual labourers, 25 % were housewives, 30 % were professionals and patients with other occupations were 11 % (Table 1).

	Observation	Number
Age	< 20	2
	21 - 30	28
	31 - 40	33
	41 - 50	18
	51 - 60	15
	> 60	04
Gender	Male	41
	Female	59
Occupation	Manual Laborer	34
	Housewife	25
	Professional	30
	Others	11

Table 1. Distribution of Patient Sample Based on their Age, Gender and Occupation (n - 100).

Complaints (Multiple)	No. of Cases	Percentage
1, 2, 3, 7, 8	7	7.0
1, 2 ,4, 6	4	4.0
1, 2, 7, 9	4	4.0
1, 3, 4, 5	52	52.0
1, 3, 4, 5, 6, 7, 8	1	1.0
1, 3, 4, 7, 8	5	5.0
1, 4, 7	1	1.0
2, 4, 5, 6, 7, 8	25	25.0
5, 6, 8, 9	1	1.0
Total	**100**	**100.0**

Table 2. Distribution of Patients Sample Based on RSI Score Chart of Presenting Complaints (n - 100)

The presenting complaints of the patients were analyzed using the RSI score chart and found that 52 % of the patients presented with complaint numbers of 1, 3, 4 and 5, 25 % of the patients presented with complaint numbers 2, 4, 5, 6, 7, and 8. The remaining patients showed a combination of symptoms as shown in the table 2.

The incidence of individual symptoms of the 100 patients were analyzed and found that frequent clearing of throat was observed in 88 % of the patients, hoarseness or problem with voice was observed in 79 % of the patients, sensation of something sticking in throat or lump in throat was observed in 74 % of the patients and heart burn, chest pain, indigestion or stomach acid coming up was observed in 65 % of the patients.

The symptoms of coughing after having eaten or after lying down was found in 42 % of the patients, difficulty swallowing food, liquid, or pills was found in 40 % of the patients and excess mucus in the throat was found in 31 % of the patients (Table 3).

Complaints	No. of Cases	Percentage
1) Sensation of something sticking in throat or lump in throat	74	74.0
2) Difficulty swallowing food, liquid, or pills	40	40.0
3) Heart burn, chest pain, indigestion or stomach acid coming up	65	65.0
4) Frequent clearing of throat	88	88.0
5) Hoarseness or problem with voice	79	79.0
6) Excess throat mucus	31	31.0
7) Coughing after having eaten or after lying down	42	42.0
8) Troublesome or annoying cough	39	39.0
9) Breathing difficulties or choking episodes	5	5.0

Table 3. Distribution of Sample Based on the Incidence of Individual Presenting Symptoms (n - 100)

Intake of coffee or tea was observed in 66 % of the patients with more than 2 cups per day consumption and no habit of consuming coffee or tea was observed in 34 % of the patients (Table 4). The incidence of sleep pattern was observed in the 100 patients and it was found that 59 % of the patients had less than 6 hours sleep as a routine and 41 % of the patients had more than 6 hours sleep as a routine (Table 4).

Occurrence of agent factors such as addictions and physical dependence in the causation of LPR among the 100 patients was observed and found that no incidence of addictions noted in 87 % of the patients, chronic alcoholism in 4 %, chronic smoking in 3 % and both smoking and alcohol intake together in 4 % of the patients (Table 4). Social status of the patients was observed and found that 54 % were below poverty line and 46 % were above poverty line (Table 4).

	Observation	Number
Sleep pattern < 6 Hrs	Yes	59
	No	41
Tea/Coffee Intake	Yes	66
(> 2 Cups / Day)	No	34
Addictions	No Addictions	87
	Chronic Smoker	03
	Chronic Alcohol	04
	Smoker & Alcoholic	04
	Occasional	02
Socio-economic status	Below Poverty Line	54
	Above Poverty Line	46

Table 4. Distribution of Sample Based on Tea/Coffee Intake, Sleep, Addictions and Socio Economic Status (n - 100)

The RSI scores were calculated for all the patients in the study and found that 53 % patients had RSI score between 13 and 15, 26 % of the patients had their RSI score between 26 and 30 and 12 % of them had RSI score between 21 and 25; 9 % had RSI score between 16 and 20 (Table 5).

RSI Range	At the Time of Examination
0 - 12	-
13 - 15	53
16 - 20	9
21 - 25	12
26 - 30	26
Total	**100**

Table 5. Distribution of Sample with Corresponding RSI Score (n - 100)

On clinical and endoscopic examination of LPR disease patients the RFS score was calculated. It was found that among them 56 % patients had RFS range between 11 and 15, 38 % had RFS range between 8 to 10, 6 % patients had RFS range between 16 and 20 (Table 6).

RFS Range	At Beginning
0-7	-
8 - 10	38
11 - 15	56
16 - 20	6
Total	**100**

Table 6. Distribution of Sample with Corresponding RFS Score (n - 100)

DISCUSSION

Considering the standard epidemiological methods to include the patients in the study among the available data for LPR, RSI score and RFS scores are recommended. In 1991, Jamie Koufman estimated the LPR incidence at 10 % of a general ENT outpatient clinic.[11] Koufman found that 30 % of patients had documented an acid pharyngeal reflux event based on dual-probe pH monitoring. At the same time, Gaynor evaluated that 1 % of patients who visited a primary care physician had symptoms suggestive of LPR, but no testing was performed to confirm the diagnosis.[12] Other studies also evaluated the prevalence of LPR related symptoms in the general population through patient-reported outcome questionnaires. The incidence from such studies showed a variation of 5 to 30 % among the general populations,[13,14] Based on geographical, diet and lifestyle habits variations, it is estimated that LPR symptoms could be found in 5 to 30 % of individuals.[2] This study conducted in 100 patients with features suggestive of Laryngopharyngeal reflux presented in Government Medical College Thrissur during the period of last one year from December 2017 to November 2018. The results and observations of the above study have been interpreted and discussed as following. In the present study of 100 patients, age group varied between 18 - 66 years. 33 % of cases were in 31 - 40 age group, 28 % cases in 21 - 30 age groups. Only 2 % cases in < 20 age group and 4 % cases in > 60 age group. Mean age was 37.8. An important factor in sex distribution was the female predominance in study. Out of 100 cases, 59%cases are females and 41 % males. In a study conducted by Pokharel M et al[15] about Laryngopharyngeal reflex in 82 patients, also observed female predominance (65 %) and the mean age as 35.02 yrs. The study also showed that 34 % cases were manual laborers and 25 % housewives. Also, professionals comprise 30%.This data shows that all occupational groups are affected in a similar fashion. The study also showed 88 % cases of Laryngopharyngeal reflux disease had frequent clearing of throat followed by problem with voice in 79 % cases. Sensation of lump in throat was present in 74 % cases followed by heart burn, chest pain, indigestion or stomach acid coming up in 65 % cases. 42 % patients had coughing after having eaten followed by difficulty in swallowing food, liquid or pills in 40 % cases. Troublesome cough was present in 39 % cases, excess throat mucus in 31 % cases. Only 5

% patients had breathing difficulties or choking episodes. Similar findings were observed in a study conducted by Park W et al.[9] In their prospective study evaluating optimal dose of proton pump inhibitor therapy in Laryngopharyngeal reflux disease, the most predominant symptom was throat clearing which was observed in 84 % cases, followed by hoarseness in 80 %cases, cough (71 %), sore throat (61 %), globus sensation (50 %), and dysphagia in 45 % cases. Koufman et al[2] conducted a study to find the prevalence of reflux in 113 patients with laryngeal and voice disorders. The study also observed chronic throat clearing in 88 % cases, hoarseness in 87 % cases, and chronic cough in 55 % cases and heart burn in 33 % cases. Thus, frequent throat clearing is also an important symptom which should not be missed while doing clinical assessment in Outpatient clinics. One of the main observations of this study was the association of Laryngopharyngeal reflux symptoms with tea / coffee intake and sleep duration. The study showed that 66 % of patients consumed > 2 cups of tea / coffee per day and also 59 % patients had inadequate sleep of < 6 hrs. As majority of cases in study were females, 87 % of patients had no addictions. Addictions were present in 13 % cases. The study conducted by Pokharel M et al,[15] observed tea and coffee intake(in 60.97 %) as one of the main risk factors of Laryngopharyngeal reflux disease. Smoking and alcoholism were noted as risk factor in 22 % cases. Their study also had female predominance (65 %). The correlation between inadequate sleep and Laryngopharyngeal symptoms cannot be clearly made. Whether LPRD causes inadequate sleep or inadequate sleep causes reflux symptoms is unsure. This study also showed that 54% of patients belonged to lower socioeconomic status and 46% to upper socioeconomic status.

CONCLUSIONS

The prevalence of Laryngopharyngeal Reflux Disease was commonest among the 31 to 40 years age group. The mean age was 37.8 ± 2.35 years. The ratio between males and females was 1:1.43. The disease was common in labourers and housewives. More than 88% patients presented with complaint of frequent clearing of throat, followed by voice problems in 79 % cases. Risk factors were consumption of more than 2 cups of tea/coffee per day and inadequate sleep of less than 6 hrs. Majority (> 87 %) had no addictions. Lower socioeconomic group populations were vulnerable than higher income group. The RSI score was between 13 and 15 in 53 % of the patients.

Data sharing statement provided by the authors is available with the full text of this article at jebmh.com.
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