

Original Article

Laryngopharyngeal reflux disease and risk factor among staff of the tertiary care hospital of Kathmandu, Nepal

Neeta Shakya Malla¹, Supri Raj Shrestha², Deepa Shah³

1Asst. Prof., Department of ENT, Janaki Medical College, Janakpurdham, Nepal

2Lecturer, Nepal Medical College and Teaching Hospital, Kathmandu, Nepal

3Lecturer, Manmohan Memorial College and Teaching Hospital, Kathmandu, Nepal

ABSTRACT

Background and Objectives: Laryngopharyngeal reflux causes significant impairment to quality of life and also predicts serious laryngeal and esophageal pathology. The aim of this study was to diagnose laryngopharyngeal reflux disease (LPRD) using Reflux Symptom Index (RSI) score among the hospital staffs and to know the risk factors associated with it.

Material and Methods: The observational descriptive cross-sectional study was done among hospital staffs selected using simple random sampling method working at Manmohan Memorial Hospital, Swoyambhu, Nepal. A self-structured questionnaire prepared was used to collect the demographic data and risk factors associated. Reflux Symptom Index (RSI) a validated self-administered questionnaires introduced by Belafsky et al. was used to differentiate laryngopharyngeal reflux subject from non-laryngopharyngeal reflux subject. Analysis of data was done and report was prepared.

Results: The prevalence of LPRD in the studied population with the use of RSI score was 48.88% (n=78) among 170 participants. The mean RSI score in patient with LPRD was 16.5±2.83 compared to non-LPRD with significant p-value. All the RSI symptoms score has p-value <0.005 between LPRD and non-LPRD which is of significance. Among 62 subjects representing the age group of 30-39 years, half of the percentage had LPRD according to the RSI score. Smoking was found to be related with LPRD.

Conclusions: The RSI can easily be included in otolaryngology routines as objective parameters, with low cost and high practicality. Based on the clinical index, the specialist can evaluate the need for further tests.

Key word: ENT, Laryngopharyngeal reflux disease (LPRD), reflux symptom index (RSI),

INTRODUCTION

Laryngopharyngeal reflux disease (LPRD) is defined by retrograde passage of gastric contents into the larynx and pharynx. In susceptible patients, this exposure leads to mucosal injury, damage to ciliated respiratory

epithelium and mucus stasis. These results in troublesome array of signs and symptoms termed LPRD. In 1996, the term LPRD was proposed by Koufman for LPRD symptoms, signs or tissue damage resulting from aggression of gastrointestinal content in the

upper aero digestive tract [1]. Two or more possible etiological mechanism that can act simultaneously for laryngeal symptoms of reflux are local chemical irritation on the pharyngolaryngeal mucosa or stimulation and vagal reflex from oesophageal irritation [2].

Manifestations of LPRD may be as laryngeal symptoms like cough, sore throat, hoarseness, dysphonia and globus as well with signs of laryngeal irritation at laryngoscopic examination [3]. There is large number of data with increased prevalence of laryngopharyngeal symptoms up to 60 % of gastroesophageal reflux disease(GERD) patients [4,5]. Most of the LPRD symptoms are recognized by general practitioners, lung specialists and ear nose and throat surgeons [6]. In a study done by Koufman JA et al has shown half of the laryngeal complaints referred to Ear, Nose and Throat (ENT) surgeons are diagnosed as LPRD[7].

Many patients can have the laryngeal findings but does not have clinical symptoms leading to irreversible and severe complications. So, it is important for early diagnosis of LPRD and followed by appropriate treatment and advices even for asymptomatic patient. Most ENT surgeons depend on clinical history and laryngeal examination as the main diagnostic approach for LPRD in clinical practice [8].

Reflux Symptom Index (RSI) is a validated self-administered nine item questionnaires used to access the clinical severity of symptoms of LPRD at diagnosis and treatment developed by Belafsky et al in 2002. Each item is scaled from 0(no problem) to 5(severe problem), with a maximum score of 45 indicating the most severe symptoms. An RSI more than or equal to 13 is considered strongly indicative of LPRD [9]. After introduction of RSI, many studies have shown

the reliability and consistency of the method in various populations throughout the globe, establishing the method as a very useful diagnostic tool in everyday practice [10-12].

LPRD has been shown to be liable in pathogenesis of reflux laryngitis, subglottic stenosis, laryngeal carcinoma, contact ulcer, granuloma, vocal nodules and arytenoids fixations.[13,14]Due to lack of extrinsic and intrinsic epithelial defence mechanism like that of oesophagus, larynx is more susceptible to reflux injury [15,16].

LPRD is very difficult to diagnose and several controversies remain regarding confirmation of the disease. Several diagnostic modalities are available for LPRD diagnosis including twenty four hour double-probe ambulatory PH monitoring, gastroesophagogram and gastroesophageal endoscopy. But these tests have limited use in outpatient setting due to its invasive technique and difficult access especially in developing countries like ours. ENT surgeons evaluate LPRD clinically based on RSI and after its indication can decide whether or not to proceed with other tests available. Therefore, the aim of this study was to diagnose laryngopharyngeal reflux disease (LPRD) using Reflux Symptom Index (RSI) score among the hospital staffs and to know the risk factors associated with it.

MATERIALS AND METHODS

This study was conducted at Manmohan Memorial College and Teaching Hospital, Swoyambhu, Kathmandu, Nepal. Hospital staffs present during data collection who agree to participate were included. A total of 170 subjects during the period of 3 months were included in the study. Staffs of the hospital

Exclusion Criteria: Non-compliant person, Person not willing to give the consent for the

study and other than the hospital staff were excluded.

Study Design: This study was a hospital based observational descriptive cross-sectional study using simple random sampling technique among the hospital staffs conducted from December 2020 to February 2021. An ethical clearance letter was obtained from ethical committee of Manmohan Memorial Institute of Health Sciences. The self-structured questionnaire prepared for the study was used. The questionnaire contains demographic information, LPR related risk factors and comorbidities questions. It also includes a self-assessment questionnaire, Reflux Symptoms Index (RSI). Verbal consent from the participants for the study was taken with the brief description of the study. Data were collected and entered in Microsoft Excel and analysis of the data was done using SPSS version 16.

RESULTS

The total participants were 170 subjects, who were randomly selected among the hospital staffs. Table 1 shows that 56.5% (n=96) of the total participants were female and 43.5% (n=74) were male. Among them, 43.24% of female and 47.91% of the male had RSI ≥ 13 which signifies having LPR.

Table 1: Sex Distribution

Sex distribution	RSI		Total
	NO LPR	LPR	
MALE	42 (56.76%)	32 (43.24%)	74 (43.5%)
FEMALE	50 (52.08%)	46 (47.91%)	96 (56.5%)
Total	92	78	170

Table 2: Age Distribution

Age	RSI	Total
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distribution	NO LPR	LPR	
20-29	51	35	86
30-39	31	31	62
40-49	8	8	16
≥50	2	4	6
Total	92	78	170

Evident from table 2, most participants belonged to the age group of 20-29 years accounting for 50.58% (n=86) while ≥50 years were poorly represented in our study. Among 62 subjects representing the age group of 30-39 years, half of the percentage had LPR according to the RSI score.

Table 3: Smoking Habit

Smoking	No LPR	LPR	Total	P value
Yes	11	21	32 (18.8%)	0.018
No	81	57	138 (81.2%)	
Total	92	78	170	

Table 3 shows majority of the subjects were non-smoker (81.2%). Among 32 participants of the smoker 21 were in LPR group. The p-value calculated was 0.018 which shows association between smoking habit and LPR.

Table 4: Alcohol Intake

Drinking Habit	No LPR	LPR	Total	P -value
Yes	42	45	87 (51.17%)	0.127
No	50	33	83 (48.82%)	
Total	92	78	170	

As depicted in Table 4, 51.17% (n=85) gave history of alcohol intake. Among 83 participants who gave history of not taking alcohol 60.24% had no LPR and 39.75% had LPR. P-value calculated was 0.127 which signifies no association between LPR and alcohol intake.

Table 5: Frequency of reported symptoms included in reflux symptom index (RSI) by the participants of the study

Symptom	Number	Percentage
Hoarseness	110	64.7
Clearing Throat	121	71.1
Post nasal discharge	113	66.4
Dysphagia	14	8.2
Cough	93	54.7
Choking	36	21.1
Annoying Cough	118	69.4
Sticky Sensation	128	75.2
Heartburn	132	77.6

Table 5, shows the most common symptom was heartburn (77.6%) followed by sticky sensation in throat (75.2%). Only 8.2% had dysphagia.

As shown in Table 6, among 170 participants, 48.88% (n=78) presented an RSI≥13 and were considered as LPR and 54.12% (n=92) has RSI< 13 who were considered non-LPR. The mean RSI score in patient with LPR was 16.5±2.83 compared to non-LPR the mean RSI of which was 5.12±4.25. The calculated p-Value was <0.000 which is significant. All the RSI symptoms score has p-value <0.005 between LPR and non-LPR which shows significance.

Table 6: LPR and NON-LPR among participants

	LPR (RSI≥13)	Non-LPR (RSI< 13)
Number	78 (48.88%)	92 (54.12%)
Mean RSI	16.5	5.12
SD	2.83	4.25
p-value	0.000	

DISCUSSION

The term “LPRD” was coined by Dr. Jamie A. Koufman in 1991. It is constellation of symptoms resulting from backflow of stomach content up in the upper aero digestive tract.[17] In our study, we have used RSI score, the widely used over the years for diagnosis of LPRD in clinical and research settings. It is simple, non-invasive and

economic tool to diagnose LPRD patient. It remains till date the topic of controversy. It is difficult to estimate the prevalence of LPRD in general population since there is no easy and generally accepted diagnostic method for large scale epidemiological studies [18].

It is the global health concern and associated with a huge economic burden and decrease quality of life.[19] According to El-Serag prevalence of reflux has increased by 4% every year since 1976.[20] Another study has reported 500% increase in visits to otorhinolaryngologist due to LPRD between 1990-2001.[21] There are studies showing up to 10% of patients presenting to ENT and more than 50% of patient with hoarseness in LPRD [22,23].

The prevalence of LPRD in our studied population was 48.8%. In studies done in other countries among different population, prevalence was found to be 34.4%, 18.8% and 55.0% in United Kingdom, Greece and Fuzhon region in China respectively according to RSI value [24-26]. In the study done among hospital employee, reported prevalence was 16.2% based on symptoms for a year to define the case.[27] Another study conducted on health facility based study by taskforce of Indian Society of Gastroenterology (ISG) following the same case definition showed lower prevalence (7.6%) of LPRD [28,19].

In our study, no significant difference was observed between male and female in the prevalence of LPRD. In the study done among the Greek general population similar observation was made with no significant difference between both sexes [25]. In a study done among Nepali population showed no statistically sex prediction in LPRD [29].

50.58% of the participants belonged to the age group of 20-29 years in our study. As the

study was done among the hospital staffs so this figure can be correlated. Among 62 subjects representing the age group of 30-39 years, half of the percentage had LPR according to the RSI score. In the study done by Chalise et al. among the Nepalese population showed most patient in the middle age group [29]. Other studies also has LPRD prevalence more among the middle aged population in both the sexes [30].

Our study had statistically significant correlation between smoking habit and LPRD. However drinking habit and LPRD has no significance statistically. This may be due to the fact that most of the drinking habit was only as social drinkers. Study done by Lin CC et al reported correlation between RSI score and smoking as well as alcohol drinking.[10] Different studies done have shown smokers have an increased incidence of reflux symptoms compared with non- smokers [31]. In the study done by Vardar et al showed 52% of the smokers has LPRD, which correlates to our study [8]. In the study done among hospital employee has revealed an association of smoking and presence of reflux but no association with alcohol consumption and reflux symptoms [27]. Despite difference of observation in different studies in relation of smoking and alcohol habit in LPRD, we recommend lifestyle modification for management of LPRD including smoking cessation and limiting alcohol intake.

Among different symptoms in RSI score index, in our study the most common symptom was sticky sensation in throat and heartburn followed by annoying cough and clearing throat. In the study done among Greek general population heartburn and clearing of throat was most common reported symptoms [25]. In the study done by Kaufman, throat clearing was observed in 87% patient with LPRD compared to 3% of

patient with GERD [22]. Study done among Sikkim population has 37% heartburn followed by regurgitation in 20% [32].

The limitation to this study is lack of comparison between the applied method and the methods with higher specificity like flexible endoscopy and 24 hr double-probe pH monitoring. These tests have limited use in outpatient setting and not suitable for large scale epidemiological studies due to its invasive technique and difficult access especially in developing countries like ours. RSI is an important clinical parameter with low cost and good practicality to consider for the diagnosis which allows the physician to evaluate and indicate whether or not to proceed with other tests.

The study was conducted in small sample among hospital staffs, further research involving larger sample size should be carried out to add on to the present state of knowledge.

CONCLUSION

LPRD is one of the most common disorders with significant impact on quality of life but it still is under-diagnosed and under-treated in primary care and specialist sectors. Smoking and alcohol intake are the risk factors associated with the disease. The RSI can easily be included in ENT routine as objective parameters, with low cost, non-invasive, simple and good practicality which allows the physician to evaluate and indicate whether or not to proceed with other tests.

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Correspondence to:

Dr. Neeta Shakya Malla
Department of ENT
Janaki Medical College,
Janakpur, Nepal
Email: neetushakya@gmail.com