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A retrospective study of demographic profile and various risk factors of Laryngopharyngeal reflux in patients with gastroesophageal disease

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Abstract
Background: Gastroesophageal reflux disease - a condition where esophagus becomes irritated or inflamed due to acid reflux from the stomach. Another kind of acid reflux-causes respiratory and laryngeal signs and symptoms, is Laryngopharyngeal Reflux or "Extra Esophageal Reflux Disease". Laryngopharyngeal Reflux - backflow of stomach contents into throat that is into hypo pharynx.Primary defect in GERD -lower esophageal sphincter dysfunction whereas primary defect in LPR is upper esophageal sphincter dysfunction.
Unlike GERD, LPR is unlikely to produce heartburn, and is called silent reflux. Injury to the human larynx does not require large volumes or continuous reflux of acidic gastric contents If antecedent injury- to vocal cord owing to viral infection, smoking, alcohol or voice abuse only intermittent exposure causes LPR symptoms. The pharynx and larynx are devoid of the acid clearance mechanism as found in the esophagus and are more liable to injury. LPR is usually easily diagnosed using Reflux Symptom Index and Reflux Finding Score. Here we undertake this study to find incidence of LPR in diagnosed cases of GERD, demographic profile of LPR patients and risk factors of LPR.
Objectives of the study: To study incidence of LPR in diagnosed cases of GERD To study association of various risk factors in patients with LPR To study demographic profile in LPR patients
Materials and Methods: All endoscopically diagnosed adult patients with GERD will be taken between july 2019 to Nov 2021. All patients will be contacted through telephonic communication,patients who give consent will be asked questions regarding the risk factors like alcohol intake, smoking, BMI, irregular food habits,history of consuming spicy foods,early sleep after food intake and RSI Endoscopic images will be assessed for RFS and hiatus hernia RSI- >13 and RFS- >7 -considered as LPR
Results: In this study 62 patients were taken. Majority of study patients were in the age group of 29-39 years (39.1%). There was female preponderance in our study. LPR was present in 37 patients. Most of the patients were in normal BMI range. 64.8% had irregular intervals between meals. In our study 86.5% had a habit of early sleeping after intake of food. Most common comorbidity found in LPR patients was hypertension (27.4%)
Conclusion: Incidence of LPR in GERD patients found to be 59.67%
LPR was found to be predominant in females Most of the patients had irregular food intake, spicy food intake,early sleeping after food as risk factors for LPR. Even though 24 hour pH monitoring is the gold standard investigation for diagnosis of LPR, Reflux Symptom Index & Reflux Finding Score are easy tools in identifying patients with LPR as it is non-invasive and easy to perform.

Keywords: LPR, GERD, risk factors

Introduction

Gastroesophageal reflux disease - a condition where esophagus becomes irritated or inflamed due to acid reflux from stomach [1]. Another kind of acid reflux-causes respiratory and laryngeal signs and symptoms, is Laryngopharyngeal Reflux or "Extra Esophageal Reflux Disease". Laryngopharyngeal Reflux - backflow of stomach contents into throat that is into hypo pharynx. [2] LPR term coined by James Kauffman. Primary defect in GERD -lower esophageal sphincter dysfunction whereas primary defect in LPR is upper esophageal sphincter dysfunction. [3] Unlike GERD, LPR is unlikely to produce heartburn, and is called silent reflux. [4]
The specific agent responsible for producing ENT symptoms and signs are currently unknown and is a subject of debate. Injury to the human larynx does not require large volumes or continuous reflux of acidic gastric contents. If antecedent injury- to the vocal cord owing to viral infection, smoking, alcohol or voice abuse only intermittent exposure causes LPR symptoms.

More commonly seen in patients whose acid reflux is not well controlled.The pharynx and larynx are devoid of the acid clearance mechanism as found in the esophagus and are more liable to injury. [5]
It has been estimated that 10% of patients with laryngeal complaints have a GERD [4].The principal difference is that Otorhinolaryngology patients fall predominantly into atypical GERD groups due to absence of esophagitis. Laryngopharyngeal usually easily diagnosed using Reflux Symptom Index and Reflux Finding Score. Here we undertook this study to find incidence of LPR in diagnosed cases of GERD, demographic profile of LPR patients and risk factors of LPR.

Objectives of the study
To study incidence of LPR in diagnosed cases of GERD
To study association of various risk factors in patients with LPR
To study demographic profile in LPR patients

Materials and Methods
All endoscopically diagnosed adult patients with GERD were taken between july 2019 to Nov 2021
All patients were contacted through telephonic communication,patients who gave consent were asked questions regarding the risk factors like alcohol intake,smoking, BMI, irregular food habits,history of consuming spicy foods,early sleep after food intake and RSI Endoscopic images were assessed for RFS and hiatus hernia RSI- >13 and RFS- >7 -considered as LPR

Study Type
Retrospective cross sectional study

Study Sample
All endoscopically diagnosed adult patients with GERD between July 2019 to Nov 2021

Sample Size
62

Statistical Software
The statistical software SAS 9.2, SPSS15.0 were used for data analysis and Microsoft Word and Excel have been used to generate graphs,tables.

Inclusion Criteria
Adult patients with endoscopically diagnosed GERD with features of LPR willing for participation in study

Exclusion Criteria
All cases of other esophageal disease.
All cases of other laryngeal diseases are excluded.

Results

Table 1: Incidence of LPR in GERD population

Patients with LPR	**37**
Patients without LPR	26

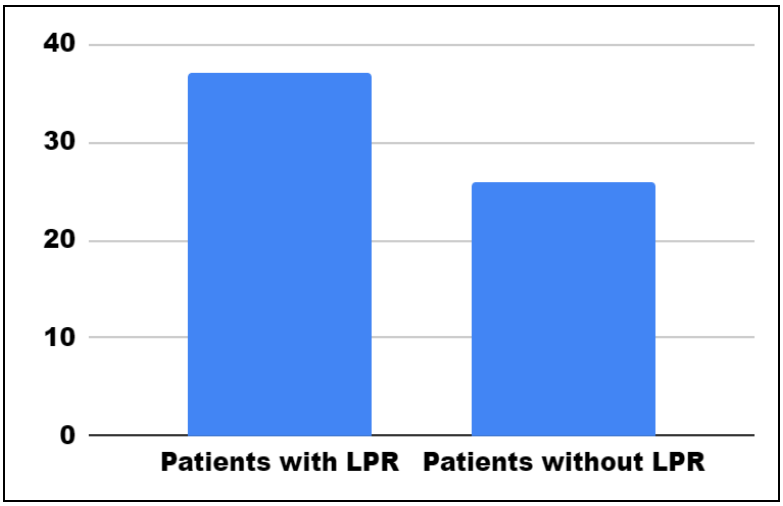

Fig 1: Incidence of LPR in GERD population Out of 62 patients with GERD, LPR was found in 37 patients

Table 2: Age distribution in LPR patients

18-28	**5**
29-39	15
40-50	9
51-60	8

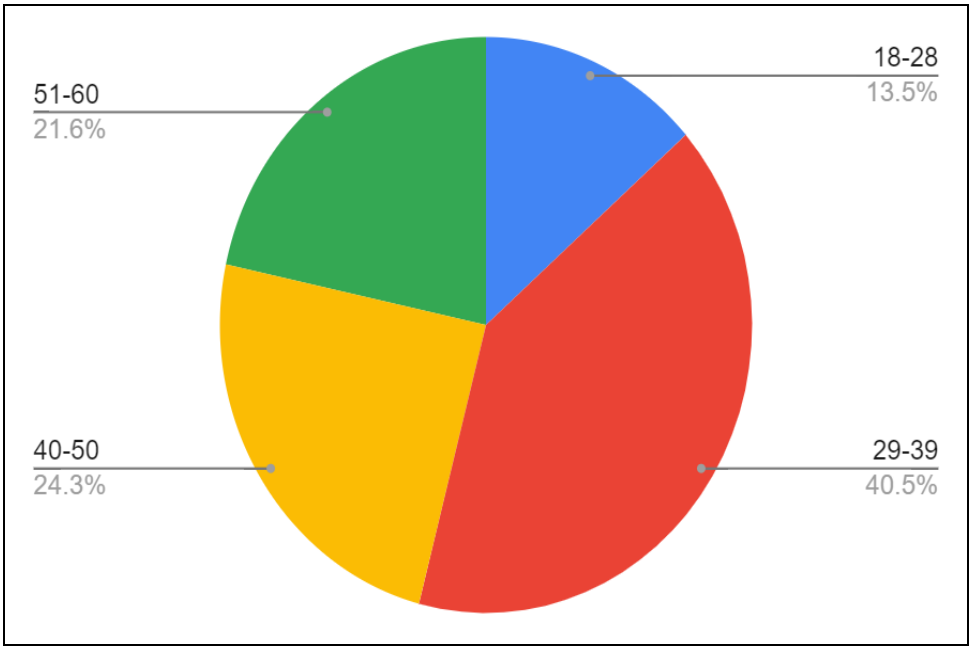

Fig 2: Age distribution in LPR patients In LPR patients 29-39 was the common age group comprising 40.5%

Table 3: Gender distribution in LPR patients

Male	**15**
Female	22

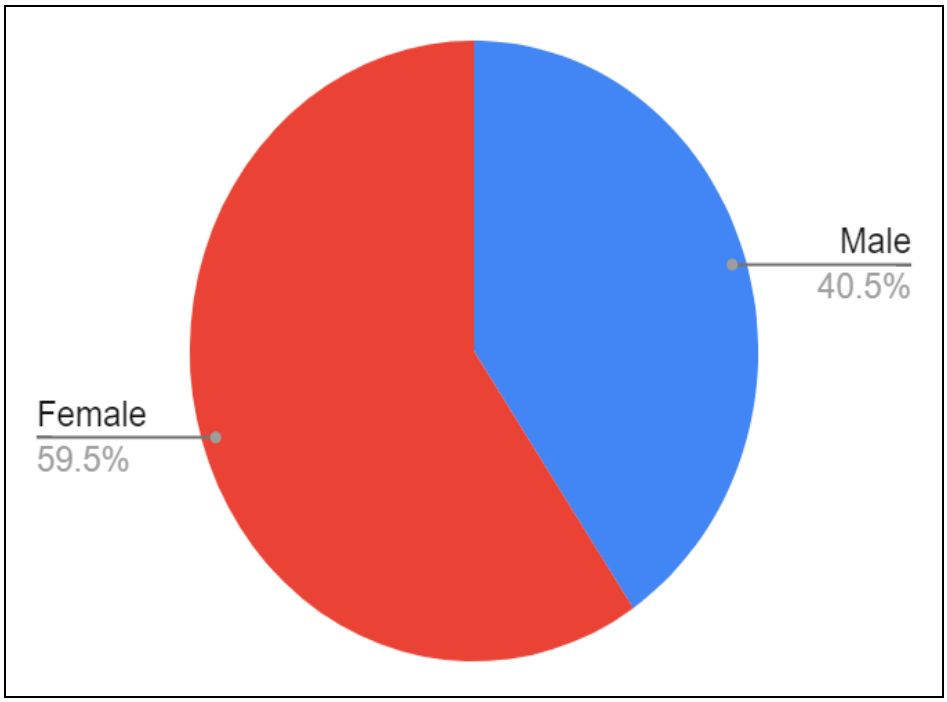

Fig 3: Gender distribution LPR patients In LPR patients female preponderance present accounting 59.5%

Table 4: History of smoking in LPR patients

Yes	**13**
No	24

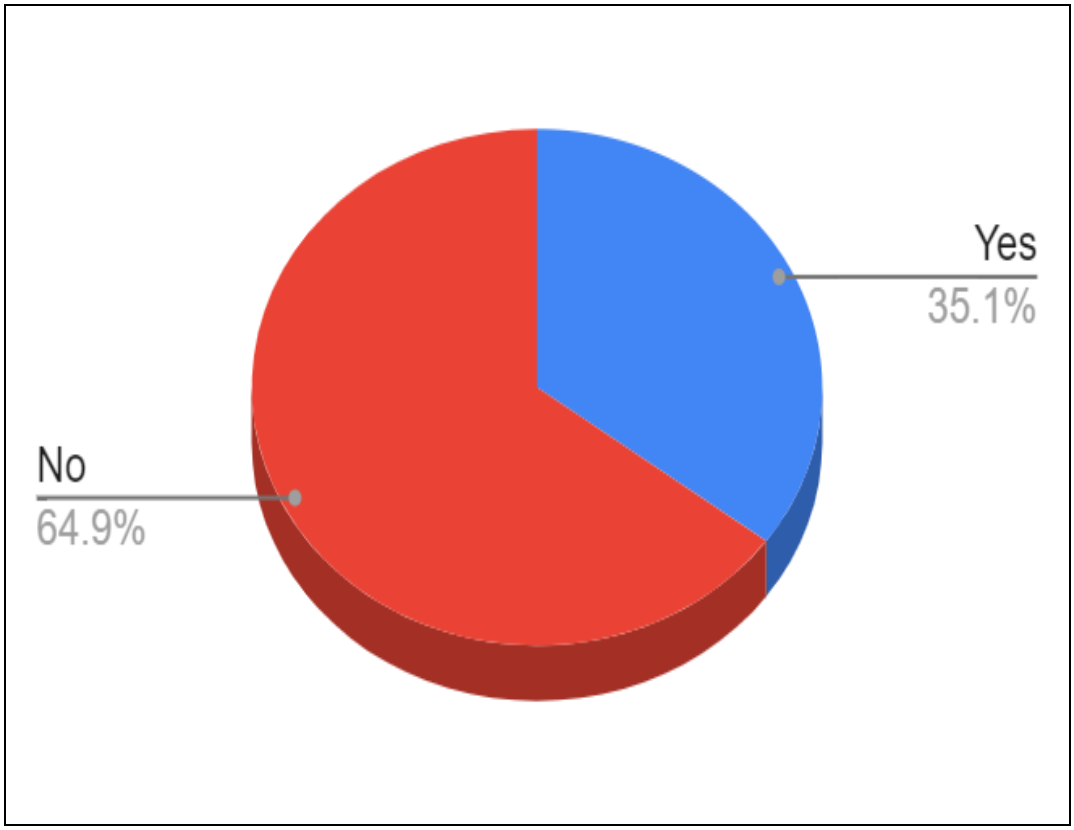

Fig 4: History of smoking in LPR patients Smoking history was present in 13 patients

Table 5: History of irregular food intake in LPR patients

Present	**24**
Absent	13

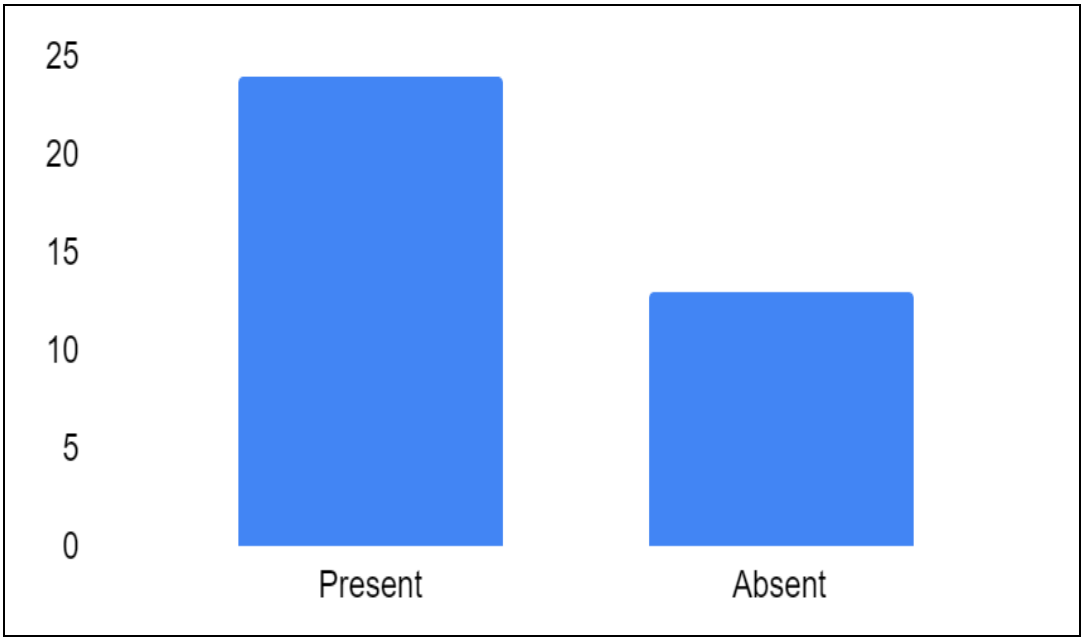

Fig 5: History of irregular food intake in LPR Patients Irregular food intake was present in 24 LPR patients

Table 6: BMI in LPR patients

<18.5	**2**
18.5-25	25
25-30	8
>30	2

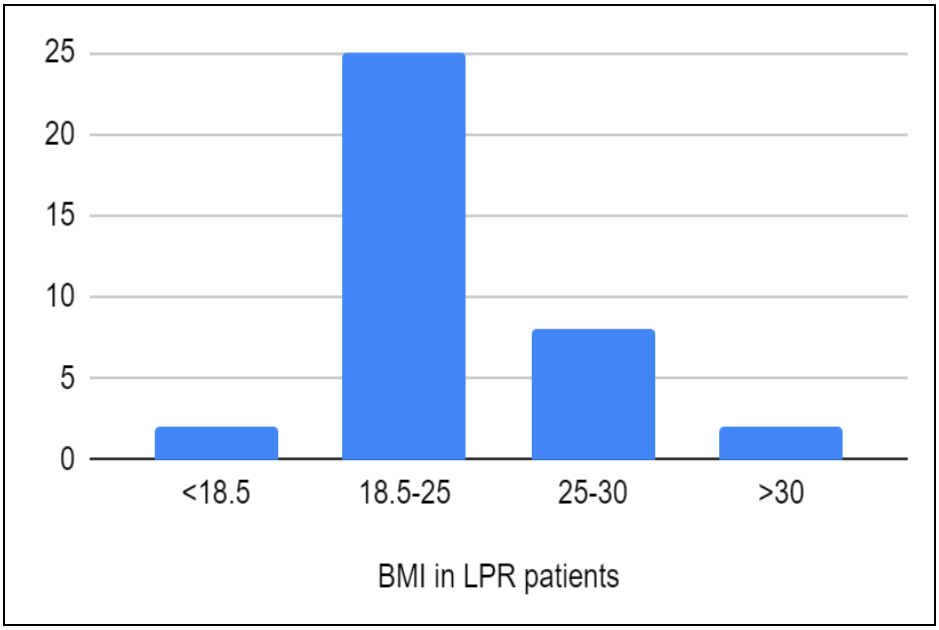

Fig 6: BMI in LPR patients Most of the LPR patients were in normal BMI range.

Table 7: History of early sleeping after food intake in LPR patients

Yes	**32**
No	5

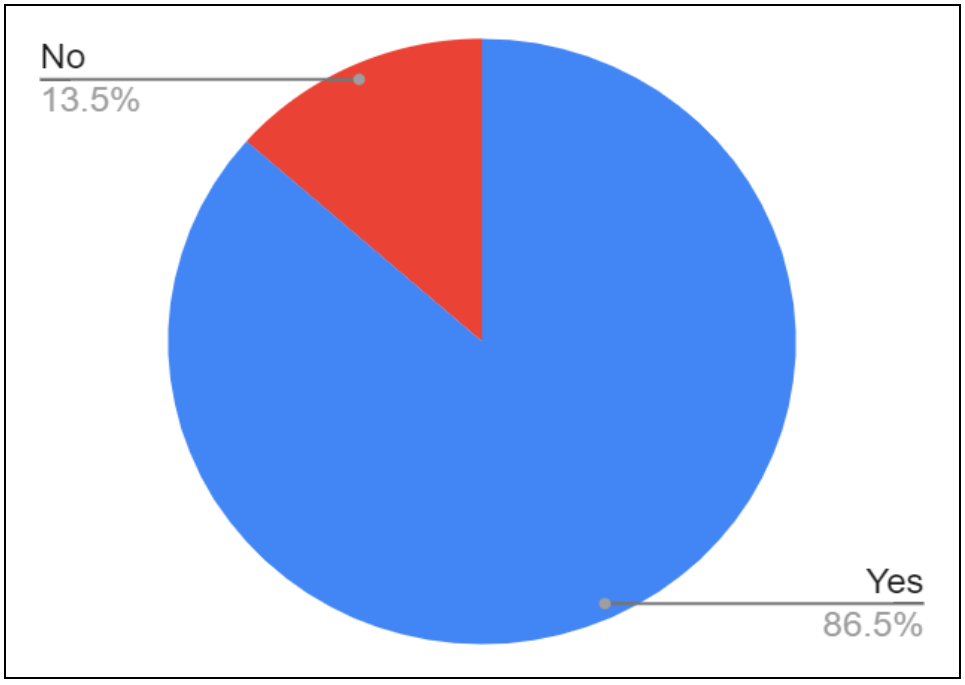

Fig 7: History of early sleeping after food intake in LPR patients early sleeping after food intake was present in 32 LPR patients

Discussion

In our present study an attempt was made to study demographic profile and various risk factors of LPR. In our study out of 62 GERD patients 37 had LPR. Incidence of LPR is 59.67%, indicating correlation between LPR and GERD. Tauber *et al* [6], in their study of 30 patients with GERD, found incidence of LPR of 69 %. Mahmoud Mosli *et al* [7], in their study of 80 patients with GERD, incidence of LPR was 71%. Byrne P.J *et al* [8], in their study of 267 patients with GERD, incidence of LPR was 42% In our study both GERD and LPR commonly manifested in the age group of 29-39 years and mean age was 39.1 indicating both diseases are more prevalent in the younger population. Patigaroo *et al* [3], in their study of 50 patients found that most of patients were in the age group of 30-40. Ramadass *et al* [9], in their study of 50 patients found that majority of them in age group of 30-40. In our study 59.5 % were females and 40.5% were males in LPR patients, indicating female

preponderance. S.Z. Toros *et al* [10]. In their study of 45 patients 73% were females and 26% were males. Koufmann *et al* [4], in their study found 53% to be females and 47% to be males. T. Kamani *et al* [11], in their study of 378 patients 54.2% were females and 45.8% were males. Alcohol and smoking are associated factors which cause GERD due to lowering the tone of Lower esophageal sphincter. In our study 35.1% smoked and 40.5% consumed alcohol. Hamdan *et al* [12], in their study of 22 patients found 45% to smoke. Yoon Se Lee *et al* [13], in their study of 1142 patients 34.7% were found to smoke. Joel E Ritcher*et al* [14], in their study of 925 patients 45.6% consumed alcohol. Thad Wilkins *et al* [15], in their study of 276 patients found 65.8% consumed alcohol In 37 patients with LPR, 48% had habit of consuming spicy food and 64.8% had irregular interval between meals. Jahnavi *et al* [16], in their study of 380 patents found 46% had habit of consuming spicy food. In our study there was significant patients consuming spicy food probably due to high consumption of spices in the Indian subcontinent. Even Though irregular interval between meals is an associated risk factor. Not many studies have been done in this aspect. In our study we found strong association between irregular intervals of food intake and the development of LPR. In our study the majority of patients had their BMI in the range of 18.5 to 25. In patients with LPR BMI was in the normal range. Mean BMI was 22.6. K.S.Trad *et al* [17], in their study of 28 patients found the mean BMI to be 25.7. Yunj Chi Lai *et al* [18], in their study of 167 patients found the mean BMI to be 23.4. John M.Wo *et al* [19], in their study of 39 patients found the mean BMI to be 25.8. In our study 86.5% had a habit of early sleeping after intake of food. In a study by Sanjeev Kumar *et al* [20], of 2000 patients found 80% had habit of early sleeping after intake of food. In our study 40 patients had RSI greater than 13. The common symptom was foreign body sensation in the throat followed by frequent clearing of throat. Patigaroo *et al* [3], in their study of 50 patients found foreign body sensation and frequent clearing of throat and troublesome cough were the most common symptoms. K.S Trad *et al* [17].,in their study of 28 patients found frequent clearing of throat, globus and heartburn as the most common symptoms. In our study 43 patients had RFS greater than 7. Mean RFS was 8.8. Z.M Yazici *et al* [21], in their study of 35 patients found the mean RFS to be 8.68. Rukiye Vardar *et al* [22], in their study of 248 patients found the mean RFS to be 10. The common finding in our study was erythema, thick endolaryngeal mucus and posterior commissure hypertrophy. S.Z. Toros *et al* [10], in their a study of 45 patients found the most common finding to be erythema. Hamdan *et al* [12], in their study of 22 patients found the most common findings to be erythema, thick endolaryngeal mucus and posterior commissure hypertrophy.

Summary

Incidence of LPR in GERD patients found to be 59.67% LPR was found to be predominant in females Most of the patients had irregular food intake, spicy food intake,early sleeping after food as risk factors for LPR Most of the patients with LPR had their BMI in the normal range of 18.5 to 25 The common symptom in our patient was foreign body sensation in throat and frequent clearing of throat and most common finding was erythema, thick endolaryngeal mucous and posterior commissure hypertrophy. In our study we found correlation between GERD and LPR. Even though 24 hour pH monitoring is the gold standard investigation for diagnosis of LPR, Reflux Symptom Index & Reflux Finding Score are easy tools in identifying patients with LPR as it is non-invasive and easy to perform

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