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PREVALENCE OF GASTRO-ESOPHAGEAL REFLUX DISEASE IN PATIENTS WITH CHANGE IN VOICE

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Abstract

Background: Gastroesophageal reflux disease is a common medical condition with highly variable clinical presentations. It due to the reflux of the stomach contents into the esophagus. **Aim & Objective:** To determine the prevalence of gastroesophageal reflux disease (GERD) in patients with voice disorders.

Methods: A cross-sectional study carried out among 50 GERD patients attending the otorhinolaryngology OPD in Trichy SRM Medical College Hospital and Research Centre, Trichy.

Results: Among the 50 patients were studied in age group of 20–80 (aged 42.36 ± 10.88 years). Majority of the patients (48%) fall under the age group of 41– 60 years. In this study, 27 of the participants were female and 23 were male. The onset of complaint of voice changes were gradual and 36% of the patients had moderate grade of voice change as per the speech pathologist assessment. It observed that 70% patients had gastroesophageal reflux disease with the history of voice change for more than 3 months.

Conclusion: It concluded that the prevalence of gastro-esophageal reflux disease (GERD) in our patients with voice disorder were 70%. There was a significant association between the LPRD and the higher grade of voice change. There was a statistical co-relation between GERD, LPRD, voice disorder, smoking and alcohol consumption in our study. The prevalence and factors contributing to voice changes with GERD that pertains to this geographical, level of voice user, smoking, alcohol consumption and duration of voice change were explained.

Keywords: Epidemiology, gastroesophageal reflux, prevalence, voice disorder.

INTRODUCTION

The term reflux in latin means backflow (re-back and fluere-flow).[1] Gastroesophageal reflux disease (GERD) due to the reflux of the stomach contents into the esophagus.[2] Gastroesophageal reflux disease (GERD) consists of features like regurgitation and heartburn, due to the breakdown of oesophageal mucosa due to gastroesophageal reflux of acid (GER).[3] laryngopharyngeal reflux disease is defined as the reflux of gastric contents into larynx and the pharynx.[1] some of the GERD-related extra esophageal manifestations includes asthma, laryngitis, chronic cough, dental erosions, and non-cardiac chest pain.[2] studies shows that the incidence of GERD in patients with LPR (GERD

& LPR) was 47.9%, while LPR in patients with GERD was 71%. Thus, LPR may occur more commonly with GERD.[3] The presenting features of LPR are idiopathic hoarseness, chronic coughing, globus sensation, clearing of the throat and choking episodes. Among those, hoarseness accounts for 71%–79% of the symptoms reported. LPR is the major etiologic factor for hoarseness of more than 3 months duration.[4] The diagnosis of LPRD is mainly by questioner about the specific symptoms (kaufmann reflux symptom index), using video laryngoscopy (reflux finding score) and the diagnosis of GERD is by GERD questioner and upper GI endoscopy. the reflux symptom index is a selfadministered questioner helps to document the accurate symptom of the patients with LPRD. It ranges from 0 -45, index of more than 13 is considered as positive for LPR, reflux finding score is an 8- item clinical severity rating scale based on laryngeal findings related to LPRD. [1] Relevant clinical information regarding patients with voice disorders obtained using the Voice Handicap Index (VHI). The VHI is a widely used for the measurement of the physical, functional and emotional aspects of voice disorders.[4] In 2004, Rosen et al developed a simplified 10-item version of the VHI (VHI-10) that represented the original 30-item VHI (VHI-30), to quantify patient's perception of their voice handicap.14 VHI-10 consists of 10 items that require the participant to rate each item using a scale ranging from 0 to 4 (0-never, 1-almost never, 2- sometimes, 3- almost always, 4- always) with a maximum score of 40.[5] in this study our aim is to assess the prevalence of GERD and LPRD in patients who presented with change in voice. the voice change is mainly assessed using VHI and subjective auditory perceptual assessment by a speech pathologist, the precence of GERD and LPRD features are assessed using GERD questioner Kauman reflux symptom index and reflux finding score with the help of video laryngoscopy and flexible naso-pharyngo-laryngoscopy.

MATERIALS & METHODS

A cross-sectional study carried out among 50 GERD patients attending the otorhinolaryngology OPD in Trichy SRM Medical College Hospital and Research Centre, Trichy. This study was carried out for three month duration from October 2022 to December 2022. Patient with complaints of voice change were chosen. A detailed evaluation of patient in outpatient were done which included age, gender, level of voice user, smoking, alcohol consumption and duration of voice change. The researcher employed a cross-sectional quantitative design. The symptoms for LPRD were assessed using Kaufmann reflux symptom index and reflux finding score. Patient's voices were evaluated by speech therapist. The overall acid exposure effect of pharynx and larynx were noted with the help of direct video laryngoscopy and flexible nasopharyngolaryngoscopy.

Inclusion criteria

Patients with history of voice change.

Exclusion criteria

Patients not willing to participate in the study, other organic and neurological lesions causing voice change, Patients already receiving treatment for acid peptic disease.

All the patients meeting the inclusion criteria were enrolled in the study. Their voice assessed using voice handicap index and subjective auditory perceptual assessment by our speech pathologist. All of the patient's gastro esophageal reflux and laryngopharyngeal reflux symptoms were assessed using GERD questioner and kaufman reflux symptom index then correlated with the findings in video laryngoscopy, flexible naso-pharyngo-laryngoscopy and upper GI endoscopy reports. It provides a framework for the surveillance of GERD risk factors, was used. This is a sequential process, starting with gathering questionnaire-based data on key risk factors, then moving on to taking simple physical measurements.

Statistical analysis

Statistical analysis was performed using SPSS software program, version 21.0. The results were expressed as mean and standard deviation. The data were analyzed by analysis of variance (ANOVA). A probability level (p-value) of less than 0.05 was considered statistically significant.

RESULTS

The result of the study samples were included 50 GERD patients. Among the 50 patients were studied in age group of 20–80 (aged 42.36 ± 10.88 years). Majority of the patients (48%) fall under the age group of 41 – 60 years. The moderate percentages (46%) were between the age group of 21-40 years. In this study, 27 of the participants were female and 23 were female. The socio demographic character among the study population is shown in Table 1. In patients with voice change, more than 70% were level II & III voice users and only 1% was level I voice users. The moderate (26%) voice users were in level IV. There were no patients who belonged to level I voice users.

Sl. No.	Variables	Frequency (N=50)	Percent
1.	**Age**		
	21-40 years	23	46.0
	41-60 years	24	48.0
	61-80 years	3	6.0
2.	**Sex**		
	Male	23	46.0
	Female	27	54.0
3.	**Level of voice user**		
	1	1	2.0
	2	19	38.0
	3	17	34.0
	4	13	26.0
4.	**Smoking**		
	Yes	15	30.0
	No	35	70.0
5.	**Alcohol consumption**		
	Yes	19	38.0
	No	31	62.0
6.	**Duration of voice change**		
	<3 months	15	30.0
	>3 months	35	70.0

Table 1: Socio-demographic characteristics of the study population.

It was observed that only 15 (30%) GRED patients were who had smoking, whereas 35 (70%) GRED patients were who did not have addicted to smoking. In Alcohol consumption, it found that 19 (38%) GRED patients were who had Alcohol use, whereas 31 (62%) GRED patients were who did not have addicted to Alcohol use. The median duration of history of change in voice in 35 patients (70%) with GERD was above 3 months, whereas the median was below 3 months. Hence, there was longer duration of change in voice in patients with GERD. It was observed that the voice changes were gradual (42%) and 36% of the patients had moderate grade of voice change as per the speech pathologist assessment is shown Table 2. The association between LPRD/GERD and overall grade of voice change were shown in Table 3. On the analysis of complaint of change of voice in the present study, Out of 50 GERD patients studied, 50% likelihood of GERD had voice disorder in 35 patients whereas 79% of Likelihood of GERD had voice disorder in 15 patients. It revealed that the presence of GERD had in 44% of Upper gastrointestinal endoscopies and 56% had no GERD with Upper gastrointestinal endoscopies.

Variable	Frequency	Percent
Overall grade of voice change	**(N=50)**	
Normal	11	22.0
Slight	21	42.0
Moderate	18	36.0

Table 2: Voice change assessed by speech pathologist

Variables	Frequency (N=50)	Percent
GERD Questionnaire based		
50% likelihood of GERD	35	70.0
79% of Likelihood of GERD	15	30.0
GERD (Upper GI Endoscopy)		
Present	22	44.0
Absent	28	56.0
LPRD (kaufman reflux symptom index)		
Positive	23	46.0
Negative	27	54.0
LPRD (reflux finding score)		
Positive	18	36.0
Negative	32	64.0
Table 3: Prevalence of GERD & LPRD		

It was observed that in most of the patients with GERD had the prevalence of 78% with 22% having Normal, 42% having slightly, and 36% having moderate of voice change. On basis of Koufman Reflux Symptom Index, only 23 (46%) out of 50 patients, had RSI of more than or equal to 27 which is significant for laryngopharyngeal reflux. There was a significant association between the LPRD and the higher grade of voice change.

Variables			Overall grade of voice change			p value
			Normal	Slight	Moderate	
LPRD (Kaufman reflux symptom index)	Positive	Frequency	1	10	12	0.01[S]
		Percentage	4.30%	43.50%	52.20%	
	Negative	Frequency	10	11	6	
		Percentage	37.00%	40.70%	22.20%	
Total		Frequency	11	21	18	
		Percentage	22.00%	42.00%	36.00%	
LPRD (reflux finding score)	Positive	Frequency	0	3	15	<0.001[S]
		Percentage	0.00%	16.70%	83.30%	
	Negative	Frequency	11	18	3	
		Percentage	34.40%	56.30%	9.40%	
Total		Frequency	11	21	18	
		Percentage	22.00%	42.00%	36.00%	
GERD (Questionnaire based)	50% likelihood of GERD	Frequency	10	18	7	0.001[S]
		Percentage	28.60%	51.40%	20.00%	
	79% of Likelihood of GERD	Frequency	1	3	11	
		Percentage	6.70%	20.00%	73.30%	
Total		Frequency	11	21	18	
		Percentage	22.00%	42.00%	36.00%	
Table 4: Comparison of severity of LPRD with severity of GERD patients						

S- Significant; p<0.05 level of significant.

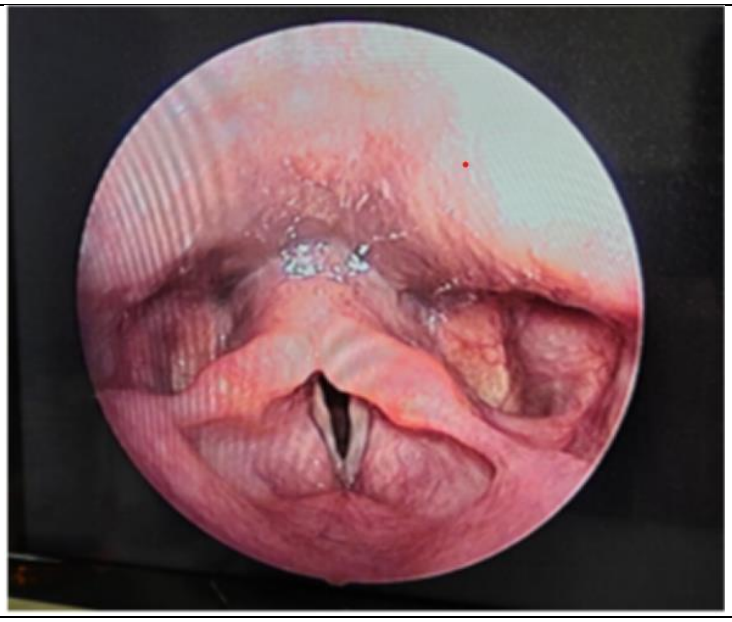

Figure 1. Direct video laryngoscopic picture shows bilateral arytenoid congestion

DISCUSSION

Gastroesophageal reflux can cause serious voice problems and laryngopharyngeal disorders influencing the patient's quality of life. Laryngopharyngeal reflux is present in up to 50% of patients with voice disorders. Gastroesophageal reflux disease is associated with a wide spectrum of otolaryngologic disorders and extraesophageal complications of the upper aerodigestive tract. It is characterized by symptoms and signs of mucosal injury of the oesophagus or upper aerodigestive tract secondary to this reflux. Laryngopharyngeal reflux disease (LPRD) is a syndrome associated with a group of symptoms including throat pain, hoarse voice, chronic cough, and other complaints and believed to be caused by the retrograde flow of stomach contents into the laryngopharynx, this being a supra-esophageal manifestation of gastroesophageal reflux disease (GERD). Among the 50 patients were studied in age group of 20–80 (aged 42.36 ± 10.88 years). Majority of the patients (48%) fall under the age group of 41 – 60 years. James Koufman et al (2000) and Naeem Makhadoom et al (2007) have reported that the mean age of their patients with gastroesophageal reflux disease approximately 54 years and 42.5 years, respectively. This probably could be one of the reasons that our study revealed lower prevalence of GERD. The moderate percentages (46%) were between the age group of 21-40 years. In this study, 27 of the participants were female and 23 were female. James Koufman et al (2000) have reported that the among 11 patients who had gastroesophageal reflux disease based on Demester Johnson score seven (63.6%) were male and four (36.3%) were females[6]. However, other studies have found to prevalence of gastro-esophageal disease to be more in females. It was observed that in patients who had gastroesophageal reflux disease, only one (1%) patient belonged to level I voice user and rest 70% patients belonged to level II & III voice users (35% each). Hence, it can be interpreted from our study, that voice disorders in level I voice users are probably due to voice overuse and not due to gastroesophageal reflux disease, whereas change in voice in level II and III voice users could be attributed to gastroesophageal reflux disease[7,8]. The similar studies were reported by James Koufman et al (2000). We also evaluated all our 50 patients on the basis of smoking and alcohol consumption. It was observed that only 15 (30%) GRED patients were who had smoking, whereas 35 (70%) GRED patients were who did not have addicted to smoking. In Alcohol consumption, it found that 19 (38%) GRED patients were who had Alcohol use, whereas 31 (62%) GRED patients were who did not have addicted to Alcohol use. There is no statistically correlation were found between alcohol, voice changes and gastroesophageal reflux disease. The National Institute on Alcohol Abuse and Alcoholism (NIAAA) focuses on the epidemiology of alcohol abuse, and defines risk categories based on the quantity of alcohol (number

of standard drinks) consumed. Definitions of a "standard drink" vary among sources and countries, ranging from 8 to 12 g of alcohol. The NIAAA defines a standard "drink" as one that contains 12 g of alcohol, and is equivalent to 360 mL (12 oz) of beer, 150 mL (5 oz) of wine, or 45 mL (1.5 oz) of 80 proof distilled spirits. The similar study was reported by Dufour, (1999). The median duration of history of change in voice in 35 patients (70%) with GERD was above 3 months, whereas the median was below 3 months.[9] Our data agrees with previous report where we found that 75% had symptoms for more than a year Ahmad et al., (2004). It was observed that in most of the LPRD patients RFS with 22% having Normal, 42% having slightly, and 36% having moderate of voice change[10]. The similar studies were reported by Peter et al (2002) and Nora Siupsinskiene et al., (2007). When patients, whose LPRD percentage was significant were compared with patients with abnormal RFS, it was observed that here also, there was statically significant co-relation between the two ($p<0.001$). [11,12]

CONCLUSION

It concluded that the prevalence of gastro-esophageal reflux disease (GERD) in our patients with voice disorder were 70%. There was a significant association between the LPRD and the higher grade of voice change. GERD in voice disorder patients were predominant in females in our study. There was a statistical co-relation between GERD, LPRD, voice disorder, smoking and alcohol consumption in our study. There appears to be some co-relation between Reflux Finding Score, Reflux Symptom Index, Laryngopharyngeal reflux and GERD ($p<0.01$) were statically significant. The prevalence and factors contributing to voice changes with GERD that pertains to this geographical, level of voice user, smoking, alcohol consumption and duration of voice change were discussed.

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