

CLINICAL FEATURES AND TREATMENT MODALITIES OF LARYNGOPHARUNGEAL REFLUX: A RANDOMIZED CONTROLLED STUDY

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Abstract

Background: Despite a growing number of populations suffering from laryngopharyngeal reflux (LPR) disease, there has not been a proper and adequate treatment measure developed yet for this problem. Hence, it was felt important to elucidate the nature of its presentation and explore the results of various management modalities. The present study aimed to elucidate the various signs and symptoms of presentation in patients with LPR. The study further aimed to compare the results of different treatment modalities. **Materials and Methods:** A randomized controlled trial was conducted in the JN Institute of Medical Sciences, Imphal, Manipur during the period Sept. 2019 – Aug 2021 among 222 patients attending ENT OPD with LPR symptoms. Minors, Pregnant women and patients having malignancies were excluded. Data on socio-demography, anthropometry, personal habits were collected. Detailed clinical history and diagnosis of LPR was established by using for reflux symptoms by using Reflux Symptom Index (RSI) and Reflux Finding Score (RFS). After this, they were subjected to the three different forms of treatment viz., Group 1: Change of lifestyle only Group 2: Change of lifestyle combined with PPI and Group 3: The above combined with prokinetic agent. At the end of two weeks, they were re-examined to evaluate the results of the ongoing treatment. Thereafter, they were followed up monthly for three months. **Result:** The mean (SD) age of the participants was 39.27 (14.8) years. There was a female predominance (66%). The commonest presenting feature was lumpy sensation in throat (119; 53.6%). On endoscopy, posterior commissure hypertrophy was most commonly seen (79; 35.6%). The mean RSI got reduced in all the three groups. At the end of two weeks' treatment the subjective complaints were seen lesser in Group 1 compared to the other two groups (9.62±3.02; p=0.024). The mean RFS also got reduced in all the three groups. At the end of two weeks' treatment, the subjective complaints were seen lesser in Group 1 compared to the other two groups (9.62±3.02; p=0.024). **Conclusion:** Treatment of LPR with advice to change lifestyle is as effective as treatment with lifestyle change along with PPI or added prokinetics.

INTRODUCTION

Laryngopharyngeal reflux (LPR) is a common disease accounting for 8-10% of patients consulting ENT surgeons.^[1] It is also estimated that 50-60% of chronic laryngitis cases and difficult-to-treat sore throats may be related to it.^[2] In LPR, there is retrograde flow of gastric contents to the larynx and pharynx letting the gastric content come in contact with the upper aerodigestive tract causing characteristic symptoms.^[3] It is a distinct entity different from gastroesophageal reflux disease.^[4-6]

LPR is most often recognized as silent reflux and hence, diagnostic and therapeutic protocols are inadequate leading to delay in proper treatment.^[7] It has been frequently misdiagnosed as other otorhinological disease due to its multifaceted nature of presentation. Patients have been subjected to unnecessary medications and surgeries. Despite a growing number of populations suffering from this problem, there has not been a proper and adequate treatment measure developed yet. Hence, it was felt important to elucidate the nature of its presentation and explore the results of various management modalities. It is expected that, the finding of the study

might be useful in formulating a suitable treatment for it.

Aims & Objectives

The present study aimed to elucidate the various signs and symptoms of presentation in patients with LPR. The study further aimed to compare the results of different treatment modalities viz. change of lifestyle only, change of lifestyle combined with proton pump inhibitors (PPI) and change of lifestyle with PPI combined with prokinetic agent.

MATERIALS AND METHODS

A randomized controlled trial was conducted in the ENT Department of JN Institute of Medical Sciences, Imphal, Manipur during the period Sept. 2019 – Aug 2021 among patients attending ENT OPD with LPR symptoms. Only patients aged 18 years and above who have had ≥ 3 subjective complaints of LPR (voice change/ throat clearing/ excess mucus in throat/ difficulty swallowing/ coughing/ choking episodes/ sensation of lump in throat/ heartburn/ indigestion/ stomach acid coming up), and symptom duration lasting for at least two weeks were included. Pregnant women, patients having malignancies and those who refused to give consent were excluded.

A sample size of 74 was calculated for each of the three treatment groups considering a study power of 80% for a one-sided test to detect a minimum difference of 20% under the assumption that the true difference was within 5% precision and a standard deviation of 25% [8]. Consecutive sampling was done to achieve the sample. Restricted block randomization was done using a block size of 3/6/9. Baseline data was collected by using a proforma which had sections on socio-demography, anthropometry, personal habits like timing and hours of sleep, type of sleep, weekly exercises and type, regularity of meals and frequency, diet and mental status. Detailed clinical history and diagnosis of LPR

was established by screening for reflux symptoms using Reflux Symptom Index (RSI) and Reflux Finding Score (RFS) as proposed by Belafsky et al^[9,10] through endoscopy examination of the nose, nasopharynx, oropharynx, laryngopharynx and larynx. After this, they were subjected to the three different forms of treatment viz. Group 1: Change of lifestyle only; Group 2: Change of lifestyle combined with PPI and Group 3: The above combined with prokinetic agent. At the end of two weeks, they were re-examined to evaluate the results of the ongoing treatment. Thereafter, they were followed up monthly for three months.

Data collected were entered in SPSSv20. Descriptive statistics like mean, standard deviation and proportions were used for data presentation. Analysis of variance (ANOVA) and other compatible statistical test were used wherever appropriate. A p-value of <0.05 was considered as statistically significant.

Informed written consent was taken from all participating patients. No identifiers were used and confidentiality of data was maintained. Ethical approval for the study was obtained from Institutional Ethics Committee of the study institute.

RESULTS

A total of 222 LPR patients participated in the study. Forty-eight (21.6%) patients were lost to follow-up (03 in 2nd week follow-up, 06 during 1st month follow-up, 16 during 2nd month follow-up and 23 during 3rd month follow-up).

The mean (SD) age of the participants was 39.27 (14.8) years which ranged from 18 to 97 years. There was a female predominance (66%). Home-makers constituted the majority (33%) and more than half of the patients (56%) were from low socio-economic status families. [Table 1]

Table 1: Socio-demography of participants

Socio-demographic variables	Frequency	Percentage
Gender		
• Male	76	34.2
• Female	146	65.8
Residency		
• Urban	98	44.1
• Rural	124	55.9
Occupation		
• Govt. employee	32	14.4
• Skilled labor	29	13.1
• Business	36	16.2
• Home-maker	74	33.3
• Student	51	23.0
Monthly income (INR)		
• ≥ 7533	45	20.3
• 1130-7533	53	23.9
• <1130	124	55.9

The commonest presenting feature was lumpy sensation in throat (119; 53.6%). This was followed by difficulty in breathing/ choking sensation (25; 11.3%) and heartburn/ chest pain/ feeling of indigestion (23; 10.4%). Hoarseness, frequent cleaning of throat, excessive throat mucus/ post-nasal drip, annoying cough, coughing after

food intake or on lying down and difficulty in swallowing were also reported. Most of them (148; 66.7%) had the symptoms for 02-05 months. And a total of 35 (15.8%) had gastritis as a co-morbidity. Only a few of them (12; 5.4%) used to have some form of physical exercise daily. Most of the participants (159; 71.6) used to have proper sleep. Majority of them (128; 57.7%) had irregular dietary habit and only a few (46; 20.7%) preferred bland or normal foods while the remaining 178 (79.3%) preferred oily or spicy foods. Almost a quarter of the participants (53; 23.9%) had some forms of stress. Regarding anthropometry, only 91 (41%) had a normal body mass index, the remaining being overweight or obese. Also 46.4% had truncal obesity. [Table 2]

Table 2: Distribution of patients by life-style characteristics and anthropometry

Variables	Frequency	Percentage
Regular exercise	12	5.4
Proper sleep	159	71.6
Regular diet	94	42.3
Food preference		
• Bland/normal	46	20.7
• Oily/spicy/both	178	70.3
Stressful life	53	23.9
BMI		
• 18.5-22.9	91	41.0
• 23.0-24.9	58	26.1
• 25.0-29.9	65	29.3
• ≥ 30	8	3.6
Waist-hip ratio		
• Within normal range	119	53.6
• Above normal	103	46.4

On endoscopy, posterior commissure hypertrophy was most commonly seen (79; 35.6%). The second commonest finding was erythema or hyperaemia (72: 32.4%). Diffuse laryngeal oedema, thick endolaryngeal mucus, granulation tissue, ventricular obliteration, vocal fold oedema, subglottic oedema etc. were also seen. [Figure 1]

Table 3: Mean (SD) of Reflux Symptom Index (RSI)

	Group 1	Group 2	Group 3
Pre-treatment	18.04 (3.12)	19.05 (3.12)	17.93 (2.62)
2nd week	9.62 (4.50)	11.47 (3.12)	10.45 (4.34)
1st month	2.60 (3.02)	3.54 (3.72)	3.34 (3.58)
2nd month	1.10 (2.07)	1.03 (1.95)	1.60 (2.98)
3rd month	0.69 (1.92)	0.33 (1.31)	0.70 (2.35)

The mean Reflux Symptom Index (SD) got reduced in all the three groups. This means that, there was a general fall in the number of subjective complaints in all the groups. ANOVA of the Reflux Symptom Score (RSI) showed that, at the end of two weeks' treatment the subjective complaints were seen lesser in Group 1 compared to the other two groups. This was found to be statistically significant (9.62 ± 3.02 ; $p=0.024$). At the end of 1st month, 2nd month and 3rd month, although there were reductions in all the three Groups, it was not found to be statistically significant. [Table 3]

Table 4: Mean (SD) of Reflux Finding Score (RFS)

	Group 1	Group 2	Group 3
Pre-treatment	12.85 (3.32)	14.13 (2.62)	15.13 (3.33)
2nd week	9.15 (2.99)	9.67 (3.00)	9.69 (3.08)
1st month	4.87 (2.59)	5.47 (2.50)	5.96 (3.19)
2nd month	3.00 (2.56)	2.70 (1.63)	4.42 (2.98)
3rd month	2.21 (2.27)	1.57 (1.49)	2.67 (2.55)

[Table 4] shows that there was a general fall in the endoscopic scores in all the three groups during the subsequent visits. But ANOVA showed that there were no statistically significant differences among the three groups. But the same test showed that, Group 2 had the maximum fall in RFS in the 2nd and 3rd month follow-ups. This was found to be statistically significant $\{(2.70 \pm 1.63$; $p=0.001$) & $(1.57 \pm 1.49$; $p=0.021)$ respectively}. [Table 4]

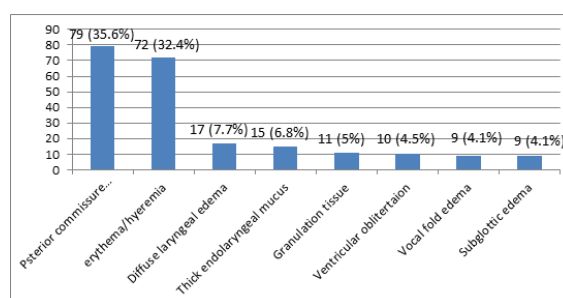


Figure 1: Distribution by endoscopic findings

DISCUSSION

In our study, the mean age (SD) of the LPR patients was found to be 39 (14.8) years. Peter C Belafsky et al found higher mean age (50±12 years) whereas study by Heba Ahmed Osman found lower age group (31.63±5.16 years) being involved.^[10,11] Geographical difference in study area might be responsible for this. Female preponderance which was seen in the present study is comparable to the findings made by Belafsky et al.^[10] In contrast, Heba Ahmed Osman found male preponderance.^[11] Almost a quarter (24%) of the participants in the present study had some form of stress. The association between LPR and stress was found to be significant by Young Hoon Joo et al.^[12] Obesity has been showed to be associated with reflux symptoms.^[13,14] The current study found more than half of the patients (59%) to be overweight. High dietary intake is also implicated with increased risk of gastroesophageal reflux disorders.^[15] Almost two-thirds of the LPR patients (70%) in the current study preferring oily, spicy foods supports this. Again, in the present study, 95% of patients were not doing any form of exercise. Correlation has already been established between exercise and reflux disorders.^[16] Sleep period alters basic physiologic mechanisms that physiologically protect against reflux^[17]. Present study found 28% of patients not having proper sleep. More than half (53.6%) of the patients in the present study presented with lumpy sensation in throat. This finding is comparable with findings made by other scholars from their studies done in the past.^[11,18] Posterior commissure hypertrophy was the most common finding on laryngoscopic examination by endoscopy (35.6%) followed by erythema (32.4%) in the present study. Heba Ahmed found erythema to be the commonest finding.^[11] Lifestyle guidance alone, lifestyle guidance with proton pump inhibitor and lifestyle guidance with PPI combined with prokinetics reduced subjective complaints of LPR and improved endoscopic findings. Hence, it can be concluded that lifestyle change alone is an effective way for improving LPR symptoms. This finding is similar with what Mete Peterson et al found.^[19]

CONCLUSION

The results of our study indicate that, there is only a statistically non-significant effect of PPI and prokinetics that is better than lifestyle guidance alone in LPR regarding allaying of subjective complaints. In other words, treatment of LPR with advice to change lifestyle is as effective as treatment with lifestyle change along with PPI or added prokinetics. More evidence-based research may be required to

elucidate the pharmacological benefits of PPI and prokinetics. In addition, exercise, diet and types of food preference may have a significant impact on the disorder.

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