ORIGINAL RESEARCH

To compare the changes in reflux finding score (R.F.S.) and reflux symptom index (R.S.I.) in patients of laryngopharyngeal reflux (L.P.R.), before & after treatment

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ABSTRACT:
Introduction: LARYNGOPHARYNGEAL REFLUX (LPR) is the result of retrograde flow of gastric contents to the laryngopharynx, where it comes in contact with tissues of the upper aero digestive tract.LPR is caused by the direct effect of gastric refluxate, damaging the laryngeal epithelium, or through the vagal nerve-mediated induction of laryngeal reflexes (chronic cough, bronchospasm) from the irritation of the esophagus by refluxed gastric contents.The study aimed to determine the utility of reflux finding score (RFS) and reflux symptom index (RSI) in the diagnosis of laryngopharyngeal reflux disease (LPRD). **Method:** The study aimed to determine the utility of reflux finding score (RFS) and reflux symptom index (RSI) in the diagnosis of laryngopharyngeal reflux disease (LPRD). **Result:** Most of the patients were found in the age group of 21-40 year and 41-60 year.Out of 1207 cases, 546(45.2%) were male and 661(54.8%) were female. Out of 1233 control, 637(51.7%) were male and 596(48.3%) were female. Median RSI score was 23.0 & 10.0 among cases & control.Mean RSI score was 23.840±6.74, 16.934±4.59, 11.967±3.89 & 8.104±4.20 at 0 days, 15 days, 45 days & 90 days during follow up. **Conclusion:** RFS and RSI have demonstrated their role in establishing the diagnosis of LPRD.we had concluded that RSI and RFS scoring systems were useful in early diagnosis of LPR and to see improvement in patients with treatment over weeks.

Keywords: LARYNGOPHARYNGEAL REFLUX (LPR) , REFLUX FINDING SCORE (R.F.S.) , REFLUX SYMPTOM INDEX (R.S.I.)

INTRODUCTION

LARYNGOPHARYNGEAL REFLUX (LPR) is the result of retrograde flow of gastric contents to the laryngopharynx, where it comes in contact with tissues of the upper aero digestive tract[1]. Laryngopharyngeal reflux disease (LPR) is characterized by individuals who present to an otolaryngologist with signs of laryngeal inflammation or irritation associated with symptoms of hoarseness, reduced loudness, chronic cough, frequent throat clearing and sensation of a lump in the back of the throat, difficulty swallowing and sore throat.[2] In some cases, gastric content may even reach the nasal cavities and/or ears via the Eustachian tubes, which can exacerbate rhinitis, sinusitis, or otitis media.3 The term LPR was proposed by the American Academy of Otolaryngology Head and Neck Surgery in a 2002 Position Statement on this disorder. The association between reflux and onset of laryngeal mucosal changes arose from the observation that epithelium of the larynx and pharynx does not have the same protective mechanisms as the oesophagus, resulting in greater sensitivity to contact with the acidic gastric contents. 2 Laryngopharyngeal reflux (LPR) refers to the backflow of stomach contents into the throat, that is, into the laryngopharynx. There are numerous synonyms for LPR in the medical literature; the most accepted of these terms is extraesophageal reflux.4 Cough is one of the most mon reasons that patients seek medical attention in the United States, accounting for more than 30 million physician visits each year. A chronic cough is defined as a cough that

persists for more than 8 weeks; it has a world-wide prevalence of 9.5% in the adult population. The three most common causes of persistent cough in the adult population are cough-variant asthma, gastroesophageal reflux disease (GERD), and upper airway cough syndrome.5 The objective of this study is To compare the changes in reflux finding score (RFS) and reflux symptom index (RSI) in patients of laryngopharyngeal reflux (LPR) before and after treatment.

METHOD

The study aimed to determine the utility of reflux finding score (RFS) and reflux symptom index (RSI) in the diagnosis of laryngopharyngeal reflux disease (LPRD). This is a observational prospective study.The study was done on patients who presented with sign and symptoms of LPR at out patients department of otorhinolaryngology of People's Hospital. Study was carried out in 2440 pts (1207 case & 1233 control) were included in the study.

A) Inclusion Criteria:- Patients were enrolled based on RSI and RFS. Patients with sign and symptoms of LPR of both the sexes and any age group presenting to the ENT out patient department at People's College of Medical Sciences & Research centre Bhopal (M.P.), were included in this study. Patients willing to participate in study were included in the study. B) Exclusion Criteria:- Cases of paralytic dysphonia. Those not giving the consent for the study were excluded from this study. Patients presenting with similar symptoms and signs but having infection, h/o trauma malignancy and chronic diseases were excluded. Those patients were excluded who were received anti reflux treatment.

Detailed history was taken, complete clinical examination, indirect laryngoscopy and 700 endoscopy was done. All findings were noted in pre designed and pre tested proforma. RFS & RSI score were documented before treatment and then patient were followed at day 15, day 45, day 90 and RFS & RSI score re-documented.

All patients were classified into two groups using RFS; those patients in whom RFS 7 or less than 7 and RSI 13 or less than 13 were labelled as 'control', while those patients with RFS more than 7 and RSI more than 13 were labelled as 'LPR'.

Data was entered in Microsoft excel sheet and analyzed using Numerical variables and described as mean and standard deviation or median and inter-quartile range. Categorical variables were described in count and proportion. All variable were analyzed using Chi square test of significance; P-value < 0.05 was taken as statiscally significant.

RESULT

Age: Most of the patients were found in the age group of 21-40 year and 41-60 year. Out of 1207 cases of LPR, most of 684(56.7%) were 21-40 year old and 305(25.3%) were 41-60 year old. Among control, most of patients were 020 and 21-40 year old. Out of 1233 controls, 384(31.1%) 0-20 year old and 548(44.4%) 21-40 year old. Mean age of cases & control was 37.36±14.85 Year & 30.78±17.22 Year respectively. There was statistically significant difference found in distribution of cases (LPR Patients) & Control according to Age. (P=0.001)

Gender: Out of 1207 cases, 546(45.2%) were male and 661(54.8%) were female. Out of 1233 control, 637(51.7%) were male and 596(48.3%) were female. There was statistically significant difference found in distribution of cases (LPR Patients) & Control according to gender. (P=0.001).

Evaluation of Mean RSI & RFS Score among cases & control at baseline (0 Days): Mean RSI was 23.840±6.74 & 10.451±1.54 among cases & control respectively. Median RSI score was 23.0 & 10.0 among cases & control. Its range was 14-37 and 8-13 among cases and control. Mean RFS was 13.948±3.66 & 5.36±0.84 among cases & control respectively. Median RFS score was 14.0 & 5.0 among cases & control.There was statistically highly significant difference found in mean RSI & RFS Score among cases and controls. (P=0.001).

Group	N	RSI				RFS			
		Mean	SD	Median	Range	Mean	SD	Median	Range
Case		23.840	6.74	23.0	14-37	13.948	3.66	14.0	8-22
Control		10.451	1.54	10.0	8-13	5.36	0.84	5.0	4-7
Mann Whitney 'U' Test		42.870				43.110			
Significance 'P' Value		0.001(HS)				0.001(HS)			

Table 1: Mean RSI & RFS Score among cases & control at baseline (0 Days)

Evaluation of Mean RSI among cases at different time interval: Mean RSI score was gradually and significantly decreasing after treatment among cases from 0 days to 90 days. Mean RSI score was 23.840±6.74, 16.934±4.59, 11.967±3.89 & 8.104±4.20 at 0 days, 15 days, 45 days & 90 days during follow up. There was statistically highly significant reduction was found in mean RSI score after treatment from 0 days to 90 days dring follow up. (P=0.001).

Group	RSI			
	0 Days	15 Days	45 Days	90 Days
MEAN	23.840	16.934	11.967	8.104
SD	6.74	4.5978	3.8989	4.2026
MEDIAN	23.0	17.000	11.000	8.000
MINIMUM	14	10.0	6.0	1.0
MAXIMUM	37	29.0	25.0	23.0
Friedman Test Chi Square Value	3598.692			
Significance 'P' Value	0.001(HS)			

Table 2: Mean RSI among cases at different time interval

Evaluation of Mean RSI among cases at different time interval: Mean RSI score was gradually and significantly decreasing after treatment among cases from 0 days to 90 days. Mean RSI score was 23.840±6.74, 16.934±4.59, 11.967±3.89 & 8.104±4.20 at 0 days, 15 days, 45 days & 90 days during follow up. There was statistically highly significant reduction was found in mean RSI score after treatment from 0 days to 90 days dring follow up. (P=0.001).

Evaluation of Mean RFS among cases at different time interval: Mean RFS score was gradually and significantly decreasing after treatment among cases from 0 days to 90 days. Mean RFS score was 13.948±3.66, 10.647±3.096, 7.696±2.79 & 5.0076±2.58 at 0 days, 15 days, 45 days & 90 days during follow up. There was statistically highly significant reduction was found in mean RFS score after treatment from 0 days to 90 days dring follow up. (P=0.001).

Comparative evaluation of Mean RSI & RFS among cases at 0 days & 90 days: Mean RSI was signiifcantly reduced from 23.840±6.74 to 8.104±4.20 from 0 days to 90 days while mean RFS was reduced from 13.948±3.66 to 5.007±2.58 from from 0 days to 90 days. There was statistically highly significant reduction was found in RSI & RFS from baseline to 90 days follow up. (P=0.001).

Group	0 Days	90 Days	Wilcoxon Signed Rank test Z Value	Significance 'P' Value
RSI	23.840±6.74	8.104±4.20	30.090	0.001(HS)
RSF	13.948±3.66	5.007±2.58	30.133	0.001(HS)

Table 3: Evaluation of Mean RSI & RFS among cases at 0 days & 90 days

Improvement: Out of 1207 cases, 75-100 % Improvement was seen in 720 (59.65%) cases. 299(24.77%) had 5075% and 161(13.33%) had 25-50%) improvement. 27(2.23%) cases had 0-25%) improvement.

DISCUSSION

Our study group comprised of 2440 patients who presented to our OPD with one or more symptoms suggestive of laryngopharyngeal reflux. The total 2440 patients were distributed in two group case (LPR patient) 1207 and control 1233. Our findings were compared with similar studies done by various workers worldwide. Our study had 1183 Males (546 Cases with 637 Controls) and 1257 Females (661 Cases and 596 Controls), which should that females were slightly more affected. Our study was in concordance with A study by Afshan Fathima et al, in Bangalore had a total of 100 patients clinically presenting with features suggestive of LPR were included in the present study. Of the 100 patients, 52 were females and 48 males.[6]

In our study we selected the patients of age ranging from 0 to 100 years out which most of the patients were found in the age group of 21-40 year, total 684(56.7%) patients were affected in this age group. A study by Afshan Fathima et al, in Bangalore had a total of 100 patients clinically presenting with features suggestive of LPR were included in the present study. Of the 100 patients, 49 patients with age group between 21-40 are most affected.[7]

In our study reveals comparative evaluation of mean RSI/ RFS among cases at different time interval. Mean RSI score was gradually and significantly decreasing after treatment among cases from 0 days to

90 days. Mean RSI score was 23.840±6.74, 16.934±4.59, 11.967±3.89 & 8.104±4.20 and Mean RFS score was13.948±3.66, 10.647±3.096, 7.696±2.79 & 5.0076±2.58 at 0 days, 15 days, 45 days & 90 days during follow up. There was statistical evidence that there was high significant reduction in mean RSI score after treatment from 0 days to 90 days during follow up. In the study of Anagha Atul Joshi et al on prospective study of 100 patients in 2017 RSI and RFS improve significantly after treatment which is in concordance with our study. For all patients in LPR group, The mean value of RSI at entry was 11.84. This score improved to 9.08 at 1 months, 5.60 at 2 months, 3.76 at 3 months and 2.04 at 6 months of treatment. Thus it can be seen that the RSI score has improved significantly over a period of 6 months. However, the improvement was not significant over the first 1 month of treatment and to get significant improvement in RSI score the treatment should be continued for at least 2 months. The maximam improvement in RSI score is achieved at the end of 6 months.[8]

CONCLUSION

RSI & RFS scores of 7 & above can be considered as clinical in-dicators for assessment of severity of LPR which correlates well with RFS score when the RSI score is more than 13. We recom-mend that by using RSI alone in day to day practice in a develop-ing country like India, the improvement of LPR patients follow-ing treatment with twice daily dosage of Proton pump inhibitors can be monitored well which in turn can reduce the cost and time consumed in regular treatment, restrict the injudicious use of PPIs and reserve further investigations for the non-responders. We had concluded that RSI and RFS scoring systems were useful in early diagnosis of LPR and to see improvement in patients with treatment over weeks.

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