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# POSTERIOR COMMISSURE HYPERTROPHY AS DIAGNOSTIC AND PROGNOSTIC INDICATOR FOR LARYNGOPHARYNGEAL REFLUX—HOSPITAL BASED STUDY

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**Haris Bashir** Resident, Department of ENT AND HNS, GMC Srinagar
**Kulvinder Singh Mehta** Associate Professor department of ENT AND HNS, GMC Srinagar
**Jasif Nisar*** Consultant, Department of ENT AND HNS, GMC Srinagar *Corresponging Author

## ABSTRACT

**Purpose:** To establish posterior commissure hypertrophy as tool to diagnose laryngopharyngeal reflux (LPR) and to determine whether it can be used as a reliable marker for response to treatment. **Materials and Methods:** A prospective study of 155 patients with voice disorder was conducted. Patients were evaluated using reflux finding score (RFS) by 70° Hopkins' rigid laryngoscope. Those patients in whom RFS score was 7 or more were diagnosed to have LPR. These patients were then started on antireflux therapy along with lifestyle modification and were evaluated regularly over a period of 6 months. **Results:** The prevalence of LPR in patients with voice disorders was found to be 25%. Posterior commissure hypertrophy was present in 95 out of 155 patients (61%). Among laryngopharyngeal reflux disease (LPRD), 52 out of 60 patients (86.7%) had posterior commissure hypertrophy, out of which only 6 (11.5%) patients showed complete resolution of posterior commissure hypertrophy after 6 months of treatment. A total of 20 patients (38.5%) did not show any change in grading of posterior commissure hypertrophy. And 26 patients (50%) showed downgrading of posterior commissure hypertrophy. Sensitivity of posterior commissure hypertrophy for diagnosis of LPR was found to be 90%, whereas specificity was 48.31%. **Conclusion:** Posterior commissure hypertrophy can be used as a screening tool for diagnosis of LPR but cannot be used reliably as a clinical marker for response to therapy.

## KEYWORDS

Laryngopharyngeal Reflux, Posterior Commissure Hypertrophy, Reflux Finding Score.

## INTRODUCTION

Laryngopharyngeal reflux (LPR) is the laryngeal manifestation of gastroesophageal reflux. There has been a steep rise in the prevalence of LPR, but still it is one of the most difficult disorders to diagnose because of its vague symptomatology and nonspecific signs. In an effort to identify laryngoscopic signs more specific for LPR, Belafsky et al[1] developed a validated eight-item clinical severity scale based on laryngeal abnormalities present in the subglottic, posterior commissure and vocal-fold areas, as well as the presence of ventricular obliteration, granuloma or diffuse laryngeal edema. A 'reflux finding score' (RFS) score of greater than 7 was found to suggest GERD associated laryngitis. Further studies by Belafsky et al[2] have demonstrated that treatment of LPR for more than 6 months may be indicated to achieve a complete resolution of physical findings and prevent recurrence. The purpose of this study was to establish posterior commissure hypertrophy as a tool to diagnose LPR and to determine whether posterior commissure hypertrophy can be used as a reliable marker for response to treatment.

## AIMS AND OBJECTIVES

- To establish sensitivity and specificity of posterior commissure hypertrophy as an index for LPR.

## MATERIALS AND METHODS

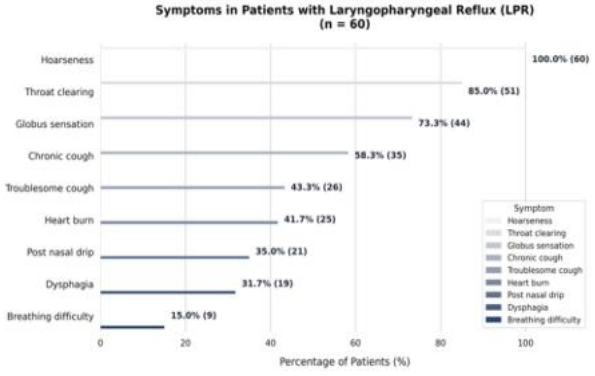
In this study, 155 patients of voice disorders who presented to ENT outpatient department at GMC Srinagar from May 2021 to September 2022 were included. Children and adolescents below 18 years of age, cases of paralytic dysphonia, cases of suspected laryngeal malignancies and cases of trauma were excluded. Thorough detailed history including age, gender, occupation, tea/coffee intake (more than 2 cups/day), history of addiction, food habits (like spicy or bland food) and sleep (sleep less than 6 hours) was taken. General and physical examination was done for all patients. All patients were evaluated with 70° Hopkins rigid laryngoscope. Findings were noted and scored according to RFS. All patients were classified into two groups using RFS; those patients in whom RFS were less than 7 were labelled as **'others'**, while those patients with RFS 7 or more than 7 were labeled as **'LPR'**. Diagnosis of LPR was done on the basis of RFS as validated by Belafsky et al.[1] Patients in LPR group were then started with antireflux therapy in the form of proton pump inhibitor, i.e. omeprazole in the dose of 20 mg BID on empty stomach for a period of 6 months. This treatment was combined with strict dietary modification, stress management and regularization of lifestyle.

The patients of LPR group were then followed up at an interval of 1, 2, 3 and 6 months. Follow-up visit consisted of assessing voice handicap index and RFS by 70° rigid laryngoscope.

## RESULTS

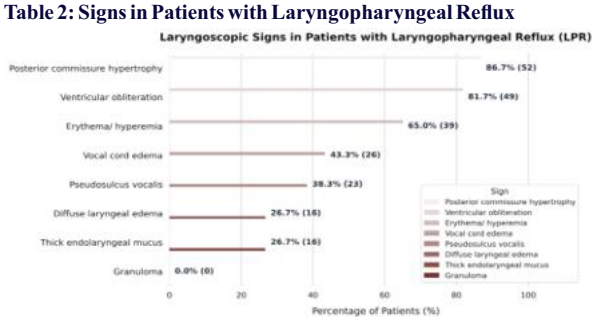
Out of the 155 patients enrolled with voice disorders, there were 60 patients whose RFS was 7 or more than 7 and 95 patients whose RFS was less than 7. Demographic studies showed maximum patients were in age group of 25 to 44 years (70%), followed by 45 to 64 years (27%). The mean age was 41.48 years. A total of 60% patients were female and 40% were male. In this study, patients with the complaint of hoarse voice were enrolled. Throat clearing (85%) and globus sensation (73.3%) were the other common symptoms in LPR patients. Breathing difficulty was less commonly found in LPR patients (15%) (Table 1).

**Table 1: Symptoms in Patients with Laryngopharyngeal reflux (LPR)**




The 70° rigid laryngoscopy of all 155 patients showed that posterior commissure hypertrophy was present in 93 out of 155 patients (60%) and in those with LPR up to 86.7% of patients (52 out of 60) had posterior commissure hypertrophy (Table 2).

**Table 2: Signs in Patients with Laryngopharyngeal Reflux**



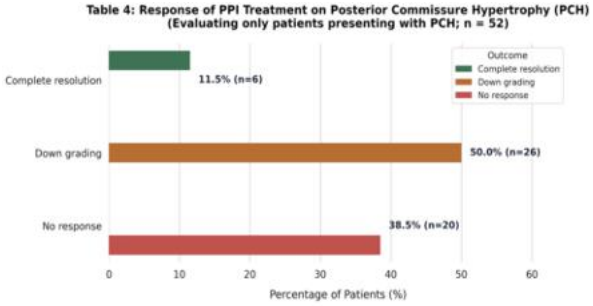
Comparison of various variables of RFS at the time of presentation and after 6 months of treatment was done. Mean value of grade of pseudosulcus vocalis at presentation was 0.767, which improved to 0.467 after treatment ($p = 0.004$). Similarly other parameters like ventricular obliteration (1.633 improved to 0.767), erythema/hyperemia (1.300 improved to 0.60), vocal fold edema (1.333 improved to 0.300), and posterior commissure hypertrophy (2.733 improved to 1.176) thick endolaryngeal mucus (0.533 improved to 0.233) showed significant improvement ($p < 0.001$). Mean value of diffuse laryngeal edema at presentation was 0.633, which improved to 0.317 after treatment. In our study, no patient presented with granuloma (Table 3) .

**Table 3: Comparison of Various Parameters of Reflux Finding Score (RFS) Before and After Treatment**

Table 3: Comparison of Reflux Finding Score (RFS) Pre vs. Post Treatment (n=60)
*Statistically Significant Difference (P-value < 0.05): Paired t-test

| Laryngoscopic Sign (RFS Parameter) | Baseline Presentation (Mean ± SD) | 6-Month Follow-up (Mean ± SD) | Mean Reduction | P-value |
|---|---|---|---|---|
| Posterior commissure hypertr | 2.733 ± 1.163 | 0.800 ± 1.176 | -1.933 | <0.001* |
| Ventricular obliteration | 1.633 ± 0.781 | 0.767 ± 0.981 | -0.866 | <0.001* |
| Vocal cord edema | 1.333 ± 1.412 | 0.300 ± 0.721 | -1.033 | <0.001* |
| Erythema / hyperemia | 1.300 ± 0.962 | 0.600 ± 0.924 | -0.700 | <0.001* |
| Pseudosulcus vocalis | 0.767 ± 0.981 | 0.467 ± 0.853 | -0.300 | 0.004* |
| Diffuse laryngeal edema | 0.633 ± 1.104 | 0.317 ± 0.771 | -0.316 | 0.0006* |
| Thick endolaryngeal mucus | 0.533 ± 0.892 | 0.233 ± 0.648 | -0.300 | 0.002* |
| Granuloma | – | – | – | – |

**Table 4: Shows Response of Drug (PPI) on Posterior Commissure Hypertrophy**




Among LPR patients, 52 out of 60 patients (86.7%) had posterior commissure hypertrophy, out of which only 6 patients (11.5%) showed complete resolution of posterior commissure hypertrophy after 6 months of treatment. A total of 20 patients (38.5%) did not show any change in grading of posterior commissure hypertrophy and 26 patients (50%) showed down grading of posterior commissure hypertrophy (Table 4).

### Statistical Methods

The recorded data was compiled and entered in a spreadsheet (Microsoft Excel) and then exported to data editor of SPSS Version 20.0 (SPSS Inc., Chicago, Illinois, USA). Continuous variables were expressed as Mean±SD and categorical variables were summarized as frequencies and percentages. Graphically the data was presented by bar diagrams. Paired t-test was employed for comparing various parameters before and after treatment of reflux finding score and reflux symptom index. A P-value of less than 0.05 was considered statistically significant.

## DISCUSSION

The RFS has been used as a reliable and reproducible method for the objective measurement of LPRD. This method takes into account the entire glottis and supraglottis to create an overall reflux score.

Hypertrophy of the posterior commissure is a frequent finding in LPRD. It is graded as mild (1 point) when there is a moustache-like appearance of the posterior commissure mucosa and moderate (2 points) when the posterior commissure mucosa is swollen enough to create a straight line across the back of the larynx. Posterior commissure hypertrophy is graded as severe (3 points) when there is bulging of the posterior larynx into the airway and obstructing (4 points) when a significant portion of the airway is obliterated.[1]

In our study, posterior commissure hypertrophy was present in 86.7% of patients of LPR. Mean RFS score for posterior commissure hypertrophy changed from 2.733 to .800 after 6 months of treatment. This drop though statistically significant cannot be used reliably as a clinical marker for response to therapy as only 11.5% of patients showed complete disappearance of posterior commissure hypertrophy and 38.5% of patients did not show any changes in grading of posterior commissure hypertrophy after 6 months of treatment. Therefore, it can be used as a screening tool for diagnosis of LPR with high sensitivity (90%) but low specificity (48.31%).

This correlates with a study by Hill et al.[3] where it was reported that posterior commissure hypertrophy, as an isolated finding, is unreliable in determining the presence of active LPRD. The reason for the persistence of pachydermia in adequately treated LPR patients is unclear. Kambic and Radsel[4] have shown that there is histologic transformation that results from the exposure of the interarytenoid area to gastric secretions. On exposure, this area can undergo epithelial hyperplasia of prickle and basal cell layers as well as some degree of keratinization.[4] This histopathological transformation could represent an irreversible process, which would explain the apparent persistence of pachydermia despite appropriate medical therapy.

## CONCLUSION

Laryngopharyngeal reflux is a relatively common problem in patients with voice disorders and may be present in up to 25% patients with voice disorders. The most common symptoms of LPR were throat clearing and globus sensation, while the most common signs were posterior commissure hypertrophy. Presence of posterior commissure hypertrophy can be used as a screening tool to diagnose LPR, but its disappearance or absence cannot be used reliably as a clinical marker for response to therapy. It has to corroborate with other findings.

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