RESEARCH
www.commprac.com
ISSN 1462 2815

EVALUATION OF LARYNGEAL CHANGES IN DYSPHONIC PATIENTS WITH LARYNGOPHARYNGEAL REFLUX BEFORE AND AFTER PROTON PUMP INHIBITORS

Dr. Shravanthi Mantra Prithvi Raj [1], Dr. Nandhini Radhakrishnan [2]*, Dr. Alekhya Vemula [3] and Dr. Binu Shervin [4]

[1,2,3,4] Department of ENT, Saveetha Medical College and Hospital,
Saveetha Institute of Medical and Technical Sciences (SIMATS), Chennai, India.
*Corresponding Author Email: nandhiniradhakrishnan59@gmail.com

DOI: 10.5281/zenodo.12651549

Abstract

Introduction: This study aims to assess the efficacy of a proton pump inhibitor (PPI), specifically pantoprazole 40mg, in treating laryngeal changes in patients with laryngopharyngeal reflux (LPR) presenting with dysphonia. The laryngeal changes evaluated include 1) Dysphonia, 2) Posterior pharyngeal wall edema, 3) Arytenoid congestion, 4) Arytenoid edema, 5) Interarytenoid banding, and 6) True vocal cord edema. **Aim:** To compare and evaluate the laryngeal changes in dysphonic patients with LPR before and after PPI treatment. **Method:** This prospective study was conducted at a tertiary health centre over a period of two months, including 40 consecutive patients diagnosed with LPR and dysphonia. **Results:** Analysis showed significant improvement in laryngeal symptoms after PPI treatment. **Conclusion:** Pantoprazole effectively reduces the frequency and severity of laryngeal changes in patients with LPR and dysphonia.

Keywords: Laryngopharyngeal Reflux, Proton Pump Inhibitors, Dysphonia, Pantoprazole.

INTRODUCTION

Laryngopharyngeal reflux (LPR) occurs when stomach contents, including acid and pepsin, reflux into the larynx and pharynx, causing inflammation and damage. (1) The anatomical proximity of the esophagus to the larynx makes this condition closely related to gastroesophageal reflux disease (GERD). (2) LPR symptoms include dysphonia, posterior pharyngeal wall edema, arytenoid congestion and edema, interarytenoid banding, and true vocal cord edema. (3)

Diagnosing LPR is challenging due to the overlap of its symptoms with other conditions such as smoking, voice abuse, allergies, and viral infections. (4,5) Less than 30% of patients with extra-esophageal manifestations of reflux show endoscopic evidence of esophagitis. (6) Laryngeal signs like erythema, edema, posterior commissure bar, and cobblestoning are helpful but highly subjective, leading to variability in diagnosis. (7)

Proton pump inhibitors (PPIs), such as pantoprazole, are considered effective for diagnosing and managing LPR. This study evaluates the impact of PPI therapy on laryngeal changes in patients with LPR and dysphonia. (8)

METHODOLOGY

This prospective study was conducted at a tertiary health care centre over two months, involving 40 consecutive patients diagnosed with LPR and dysphonia.

Inclusion Criteria:

Patients aged 18-60 years.

Diagnosed with LPR based on clinical symptoms and videolaryngoscopic findings.

Presenting with dysphonia as a primary symptom.

Exclusion Criteria:

Patients with a history of smoking, voice abuse, or allergies.

Viral infections affecting the larynx.

Previous PPI treatment within the last six months.

Procedure:

Patients underwent comprehensive history taking, general and local examinations, and videolaryngoscopic (VL) examinations to document laryngeal changes such as:

Posterior pharyngeal wall congestion

Granularity

Arytenoid congestion and edema

Interarytenoid banding

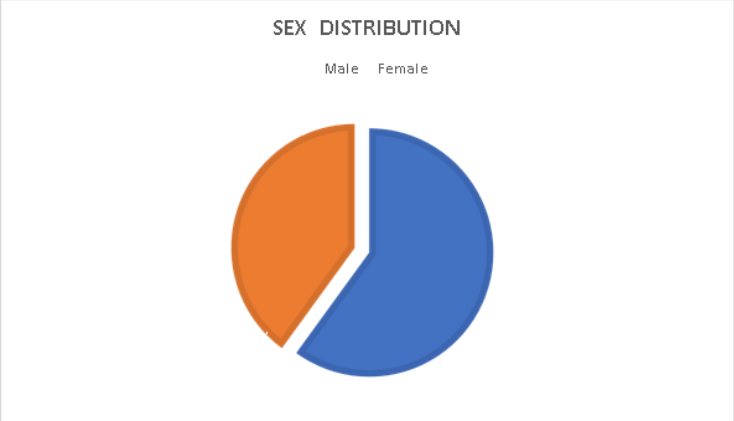
True vocal cord edema

Presence of endolaryngeal mucus

Patients were then treated with pantoprazole 40mg once daily for two weeks. Follow-up VL examinations were conducted to reassess laryngeal changes.

Data were analyzed using SPSS software.

RESULTS



Laryngeal Findings Before PPI Treatment-

The initial examination revealed the following laryngeal changes:

Dysphonia in 100% of patients.

Posterior pharyngeal wall congestion in 35% of patients.

Posterior pharyngeal wall granularity in 32% of patients.

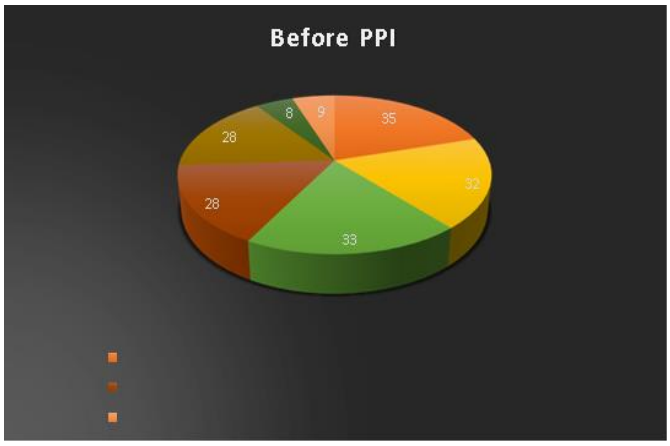
Arytenoid congestion in 33% of patients.

Arytenoid edema in 28% of patients.

Interarytenoid banding in 28% of patients.

True vocal cord edema in 9% of patients.

Presence of endolaryngeal mucus in 8% of patients.



Laryngeal Findings After PPI Treatment-

After two weeks of pantoprazole treatment, significant improvements were noted:

Posterior pharyngeal wall congestion decreased by 28%.

Posterior pharyngeal wall granularity decreased by 21%.

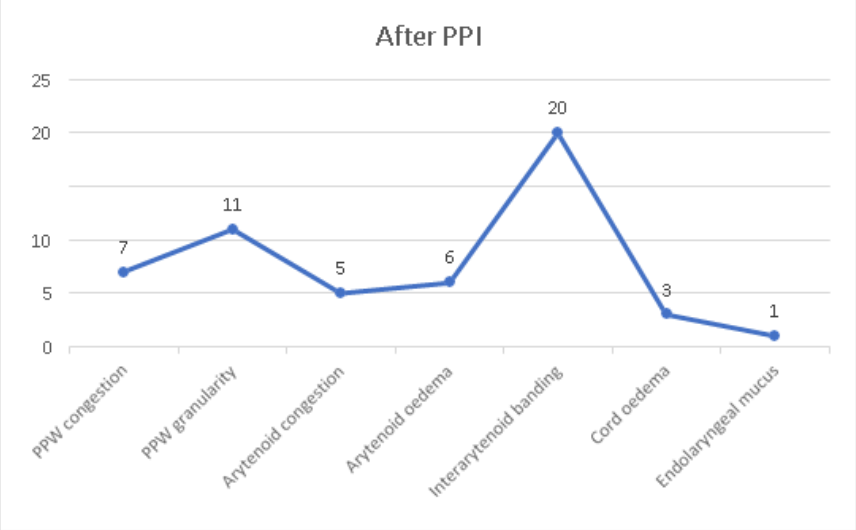
Arytenoid congestion decreased by 22%.

Arytenoid edema decreased by 20%.

Interarytenoid banding decreased by 8%.

True vocal cord edema decreased by 5%.

Endolaryngeal mucus almost completely resolved.



DATA ANALYSIS

Among the 40 patients, 60% were male and 40% were female. The majority were aged 30-50 years. Initial laryngeal findings showed varying degrees of abnormalities, with posterior pharyngeal wall congestion (35%) and granularity (32%) being the most prevalent. Arytenoid congestion (33%) and edema (28%), interarytenoid banding

(28%), true vocal cord edema (9%), and endolaryngeal mucus (8%) were also noted. After PPI treatment, all laryngeal changes showed marked improvement, underscoring the effectiveness of pantoprazole in managing LPR.

DISCUSSION

Mode of Action and Efficacy of Proton Pump Inhibitors

PPIs, including pantoprazole, are substituted benzimidazoles. After oral administration, they are absorbed in the small intestine as prodrugs and accumulate in the acidic environment of the parietal cells' canaliculi. Here, they are converted to an active sulfonamide form that binds irreversibly to the H+/K+-ATPase enzyme, inhibiting the final step in acid secretion. This results in a significant reduction in gastric acidity. (8) Five PPIs are widely available: esomeprazole, lansoprazole, omeprazole, pantoprazole, and rabeprazole. While subtle structural differences exist among these PPIs, all effectively suppress gastric acid secretion. Once-daily morning dosing is generally more effective than evening dosing due to better bioavailability. (9)

PPIs are the preferred treatment for GERD and LPR, effectively healing erosive GERD and providing long-term symptom relief. Clinical data suggest that a daily dose of 30-40 mg is optimal for treating reflux-related symptoms and mucosal damage. (10)

PPIs are safe, well-tolerated drugs with adverse effects comparable to placebo. Extensive clinical experience with PPIs has shown them to have a low risk of clinically relevant drug-drug interactions. (11)

CONCLUSION

Controlled treatment trials convincingly show that PPI therapy, particularly with pantoprazole, is highly effective in producing symptom relief for patients suspected of having laryngopharyngeal reflux disease. A 2-3 month course of PPI therapy is recommended as the most cost-effective and practical approach for the initial diagnosis and management of LPR.

Reference

1) Jain S, Gupta S, Ramalingam WVBS. To Compare and Evaluate Laryngeal Changes in Patients with Dysphonia in Laryngopharyngeal Reflux (LPR) before and after Treatment with Proton Pump Inhibitors (PPI) and Prokinetic Drugs. Indian J Otolaryngol Head Neck Surg. 2022 Dec;74(Suppl 3):4933-4947. doi: 10.1007/s12070-020-02323-9. Epub 2021 Mar 1. PMID: 36742570; PMCID: PMC9895181.

2) Junaid M, Qadeer Ahmed S, Kazi M, Khan HU, Sohail Halim M. Laryngopharyngeal Reflux Disease: Outcome of Patients After Treatment in Otolaryngology Clinics. Cureus. 2020 Dec 21;12(12):e12195. doi: 10.7759/cureus.12195. PMID: 33489604; PMCID: PMC7816050.

3) Wei C. A meta-analysis for the role of proton pump inhibitor therapy in patients with laryngopharyngeal reflux. Eur Arch Otorhinolaryngol. 2016 Nov;273(11):3795-3801. doi: 10.1007/s00405-016-4142-y. Epub 2016 Jun 16. PMID: 27312992.

4) Carroll TL. Reflux and the Voice: Getting Smarter About Laryngopharyngeal Reflux. Otolaryngol Clin North Am. 2019 Aug;52(4):723-733. doi: 10.1016/j.otc.2019.03.015. Epub 2019 May 11. PMID: 31088696.

5) Agrawal N, Yadlapati R, Shabeeb N, Price CP, Lidder A, Shintani-Smith S, Bové M, Pandolfino J, Tan B. Relationship between extralaryngeal endoscopic findings, proton pump inhibitor (PPI) response, and pH measures in suspected laryngopharyngeal reflux. Dis Esophagus. 2019 Apr 1;32(4):doy072. doi: 10.1093/dote/doy072. PMID: 30101358.

6) Lechien JR, Finck C, Huet K, Khalife M, Fourneau AF, Delvaux V, Piccaluga M, Harmegnies B, Saussez S. Impact of Laryngopharyngeal Reflux on Subjective, Aerodynamic, and Acoustic Voice Assessments of Responder and Nonresponder Patients. J Voice. 2019 Nov;33(6):929-939. doi: 10.1016/j.jvoice.2018.05.014. Epub 2018 Jul 27. PMID: 30057272.

7) Ford CN. Evaluation and management of laryngopharyngeal reflux. JAMA. 2005 Sep 28;294(12):1534-40. doi: 10.1001/jama.294.12.1534. PMID: 16189367.

8) Bove MJ, Rosen C. Diagnosis and management of laryngopharyngeal reflux disease. Curr Opin Otolaryngol Head Neck Surg. 2006 Jun;14(3):116-23. doi: 10.1097/01.moo.0000193177.62074.fd. PMID: 16728885.

9) Krause AJ, Yadlapati R. Review article: Diagnosis and management of laryngopharyngeal reflux. Aliment Pharmacol Ther. 2024 Mar;59(5):616-631. doi: 10.1111/apt.17858. Epub 2024 Jan 8. PMID: 38192086; PMCID: PMC10997336.

10) Liu K, Krause A, Yadlapati R. Quality of Life and Laryngopharyngeal Reflux. Dig Dis Sci. 2023 Sep;68(9):3527-3533. doi: 10.1007/s10620-023-08027-8. Epub 2023 Jul 6. PMID: 37410247; PMCID: PMC10726674.

11) Bhargava A, Faiz SM, Srivastava MR, Shakeel M, Singh NJ. Role of Proton Pump Inhibitors in Laryngopharyngeal Reflux: Clinical Evaluation in a North Indian Population. Indian J Otolaryngol Head Neck Surg. 2019 Sep;71(3):371-377. doi: 10.1007/s12070-018-1493-2. Epub 2018 Sep 17. PMID: 31559206; PMCID: PMC6737127.