



## Clinical Evaluation of Cases of Laryngopharyngeal Reflux

### KEYWORDS

laryngopharyngeal reflux, proton pump inhibitors, reflux symptom index.

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### ABSTRACT

**OBJECTIVE:**To provide practical approach in evaluating laryngopharyngeal reflux[LPR].

**Materials and methodology:**60 patients were taken into study. Reflux Symptom Index (RSI)questionnaire and Reflux finding score(RFS)were used to establish the diagnosis of LPR.Proton pump inhibitors were given twice daily for 3 months and reassessed.

**Results:**26male and 34female with mean age of 42.7years was found.Most frequent symptoms found were persistent cough(86.66%)and globus sensation (85%).Based on videolaryngoscopy most common findings were arytenoids erythema(93.33%) followed by posterior commissure hypertrophy(90%).In our study we found statistically significant difference in RSI and RFS between pre and post treatment with proton pump inhibitors.

**Conclusion:**LPR should be suspected when the history and laryngoscopy findings are suggestive of the diagnosis and the management should be multidisciplinary. In our study we found treatment with proton pump inhibitors along with life style modification provides great relief to the patient.

### 1.Introduction

Laryngopharyngeal reflux (LPR) is defined as chronic symptoms or mucosal damage produced by the abnormal reflux of gastric contents into the upper airway<sup>[1]</sup>. It has been reported in up to 10%of patients presenting to an otolaryngologist's office<sup>[2]</sup> and more than50%of patients with hoarseness have been found to have reflux-related disease<sup>[3]</sup>.Patients with LPR differ from gastroesophageal reflux disease(GERD) in many ways.Heart burn is more common in GERD.Patients with LPR have daytime reflexes versus nocturnal reflex,and dysfunction is believed to originate in the upper esophageal sphincter versus the lower esophageal sphincter in GERD<sup>[4]</sup>.Patients with LPR present with non specific symptoms like globus sensation,vocal fatigue,hoarseness,chronic throat clearing,dysphagia,chronic cough<sup>[5]</sup>.Laryngoscopic findings are also non specific.The most common laryngoscopic finding is reflux laryngitis<sup>[6]</sup>.The most frequently observed LPR related findings are interarytenoid erythema, infraglottic edema,ventricular obliteration, posterior commissure hypertrophy, granuloma / granulation and thick endolaryngeal mucus<sup>[7]</sup>.

Belfasky et al.(2001)<sup>[1]</sup>developed simple reflux symptom index(RSI)and reflux finding score(RFS) to help in the diagnosis of LPR.There are 3 approaches to confirming the diagnosis of LPR:(1)response of symptoms to behavioural and empirical proton pump inhibitors treatment<sup>[8]</sup>(2) endoscopic observation of mucosal injury (3)demonstration of reflux events by impedance and pH-monitoring studies and barium swallow esophagogram.This study was done to evaluate the diagnosis and treatment outcome of patients with LPR.

### 2.Materials and methodology

60 patients with laryngeal symptoms such as change in voice,excessive throat clearing, globus sensation,swallowing difficulty,heart burn chronic cough or vague ill-defined pain in throat were taken into study.Study period was from September 2014 to September 2015.Patients with acute infection,rhino sinusitis,allergy,benign and malignant vocal cord lesions were excluded from the study. In our study Reflux Symptom Index(RSI) questionnaire and Reflux finding score(RFS) were used to establish the diagnosis of LPR.Patients having scores more than 13 for RSI and scores more than 7 for RFS were taken into the study. Detailed history,ENT examination and videolaryngoscopic examination was done.Proton pump inhibitors(PPI) were started twice daily for a minimum period of 3 months and patients were reassessed using RSI and RFS.The paired t-test was used to evaluate the difference between reflux symptoms and findings pre and post treatment.

### 3.Results

**Table1:change of RSI with PPI therapy**

Number of patients	RSI(pre-treatment)	RSI(post-treatment)
1	22	13
2	24	14
3	26	15
4	25	17
5	24	14
6	15	11
7	13	9
8	22	14
9	24	14
10	26	15
11	24	15
12	15	13
13	13	9
14	15	9
15	24	10

16	22	15
17	26	15
18	13	10
19	13	7
20	15	7
21	13	7
22	17	9
23	26	13
24	22	13
25	21	12
26	16	14
27	21	9
28	26	13
29	21	14
30	24	10
31	22	17
32	15	9
33	26	16
34	24	14
35	26	13
36	17	9
37	24	13
38	13	7
39	19	9
40	16	11
41	13	7
42	17	7
43	19	10
44	24	10
45	26	14
46	22	14
47	21	9
48	13	7
49	15	7
50	24	10
51	26	13
52	21	14
53	22	13
54	26	14
55	24	13
56	13	7
57	15	9
58	19	10
59	23	10
60	24	12
mean	20.28	11.47
SD	4.68	2.90
SEM	0.60	0.37

t=21.5784;df=59;p<0.01;CI=8.82

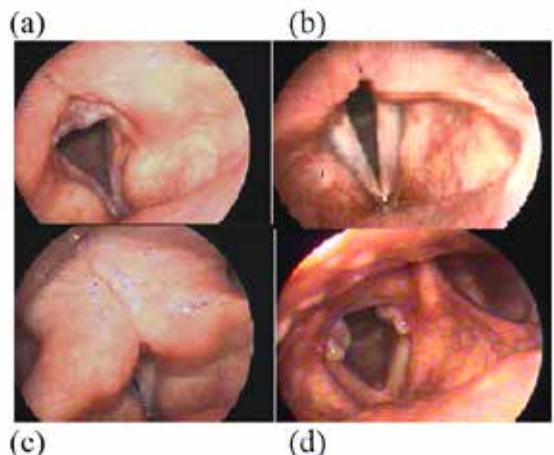
Table2:change of RFS with PPI therapy

Number of patients	RSI(pre-treatment)	RSI(post-treatment)
1	12	7
2	9	5
3	12	7
4	11	6
5	13	9
6	12	6
7	9	7
8	13	9
9	12	7
10	11	6
11	12	6
12	9	6
13	12	7
14	16	9
15	11	5
16	13	6
17	11	5

18	9	6
19	10	7
20	12	6
21	11	6
22	12	7
23	13	6
24	11	5
25	9	5
26	13	6
27	11	5
28	16	9
29	13	6
30	12	7
31	10	5
32	9	6
33	12	6
34	11	7
35	13	6
36	9	5
37	10	7
38	9	4
39	16	9
40	13	6
41	13	9
42	11	9
43	9	6
44	12	7
45	11	6
46	13	9
47	16	12
48	12	6
49	9	7
50	11	5
51	13	6
52	9	7
53	11	6
54	12	7
55	12	6
56	11	5
57	13	6
58	7	4
59	9	6
60	12	7
mean	11.47	6.52
SD	1.92	1.46
SEM	0.25	0.19

T=25.5521;df=59;p<0.01;CI=4.95

Figure3:Charecteristic findings of LPR



26 male (43.33%) and 34 female (56.66%) with mean age of 42.7 years was found. Most frequent symptoms found in patients were persistent cough 52(86.66%) and globus sensation 51(85%), followed by throat pain in 48(80%). Difficulty in swallowing was found in 27(45%) of the cases and throat clearing in 33 (55%); hoarseness of voice was seen in 18(30%) cases and heart burn was seen in 21(35%). Based on videolaryngoscopic findings high incidence of arytenoid and interarytenoid region edema/erythema in 56(93.33%) cases was noted (figure 3c about here), followed by posterior commissure hypertrophy (90%) (figure 3a about here), ventricular obliteration was seen in 48(80%) (figure 3b about here), pseudosulcus was seen in 10(16.66%) of the cases (figure 3a about here) and diffuse laryngeal edema was seen in 7(11.66%) of the cases. Vocal cord erythema or edema was seen in 38(63.33%), granuloma /granulations were seen in 11(18.33%) (Figure 3d about here) and thick endolaryngeal mucus was seen in 14(23.33%) of the cases. Mean RSI of all patients was 20.28 before PPI treatment and 11.47 post treatment ( $p < 0.01$ ) (table: 1 about here). Mean RFS pre treatment was 11.47 and post treatment was 6.52 ( $P < 0.01$ ) (table: 2 about here).

#### 4. Discussion

LPR should be suspected when clinical history and laryngoscopic findings are suggestive. Failure to appreciate LPR leads to inadequate treatment and prolonged suffering by the patients. In our study, there were 26(43.33%) male and 34(56.66%) female with mean age of 42.7 years. Similar observations were reported by Cem Bilgen (2003)<sup>[9]</sup> where 64% were females and 36% were males. The mean age group in Koufman et al. (2002)<sup>[10]</sup> study was 49 years.

To diagnose, assess severity and document improvement in patients treated with PPI, RSI and RFS developed by Belafsky (2001)<sup>[1]</sup> was used. Among the studied patients, most frequent symptoms found in patients were persistent cough 52(86.66%) and globus sensation 51(85%), followed by throat pain 48(80%). Difficulty in swallowing was found in 27(45%) of the cases and throat clearing in 33(55%); hoarseness of voice was seen in 18(30%) cases and heart burn was seen in 21(35%). In other studies, most common symptoms found were cough (Eubanks et al) (2001)<sup>[11]</sup>, globus (Mesallam and Stemple) (2007)<sup>[12]</sup>, hoarseness in 71% (Koufman) (1991)<sup>[2]</sup>, frequent throat clearing (Toros) (2009)<sup>[13]</sup>.

Most common laryngoscopic findings was arytenoid and interarytenoid region edema / erythema in 56 (93.33%) cases, followed by posterior commissure hypertrophy (90%). Ventricular obliteration was seen in 48(80%). Pseudosulcus was seen in 10(16.66%) of the cases and diffuse laryngeal edema was seen in 7(11.66%) of the cases. Vocal erythema or edema was seen in 38(63.33%), granuloma /granulations in 11(18.33%) and thick endolaryngeal mucus was seen in 14(23.33%) of the cases. In other studies, most common findings were posterior commissure hypertrophy by Belafsky (2001)<sup>[1]</sup>, partial ventricular obliteration by Tezer (2006)<sup>[14]</sup>.

In our study, pseudosulcus was found in 16.66% cases while Belafsky (2002)<sup>[15]</sup> found it in 70% study subjects concluding that sensitivity and specificity of pseudosulcus in the diagnosis of LPR are 70% and 77% respectively.

In our study, we found significant improvement in RSI and RFS after 3 months treatment of PPI therapy. Similar findings were observed by Belafsky (2001)<sup>[1]</sup>, and Reichel et al (2008)<sup>[16]</sup>.

We used omeprazole 20mg, rabeprazole 20mg twice daily and observed an overall good response rate. Our study is in accordance with Shaw and Searl (1997)<sup>[17]</sup> in a study of 68 patients with laryngitis who were treated with omeprazole 40 mg for 3 months showed symptomatic improvement in 60% with the exception of granuloma. Similar findings were seen by Toros (2009)<sup>[13]</sup>.

#### 5. CONCLUSION

LPR should be suspected when the history and laryngoscopy findings are suggestive of the diagnosis and the management should be multidisciplinary. In our study we found treatment with proton pump inhibitors along with life style modification provides great relief to the patient. Laryngoscopic observation of laryngeal mucosal changes is of great value in diagnosis of [LPR] and in following up the improvement of the patient.

#### REFERENCE

- [1] Belafsky, Peter C, Gregory N. Postma, and James A. Koufman. "The validity and reliability of the reflux finding score (RFS)." *The Laryngoscope* 111.8(2001): 1313-1317.
- [2] Koufman JA. The otolaryngologic manifestations of gastroesophageal reflux disease (GERD): a clinical investigation of 225 patients using ambulatory 24-hour pH monitoring and an experimental investigation of the role of acid and pepsin in the development of laryngeal injury. *Laryngoscope*. 1991;101(4 pt 2 suppl 53):1-78
- [3] Hopkins C, Yousaf U, Pedersen M. Acid reflux treatment for hoarseness [protocol]. *Cochrane Database Syst Rev* 2005(3) Accession No. 00075320-10000000-03935
- [4] Belafsky PC. Abnormal endoscopic pharyngeal and laryngeal findings attributable to reflux. *Am J Med*. 2003;115(Suppl 3A):90S-96S.
- [5] Koufman, James A, et al. "Reflux laryngitis and its sequelae: the diagnostic role of ambulatory 24-hour pH monitoring." *Journal of Voice* 2.1 (1988): 78-89.
- [6] Koufman, James A, et al. "Laryngopharyngeal reflux: position statement of the committee on speech, voice, and swallowing disorders of the American Academy of Otolaryngology-Head and Neck Surgery." *Otolaryngology-Head and Neck Surgery* 127.1(2002): 32-35.
- [7] Vaezi, Michael F, et al. "Laryngeal signs and symptoms and gastroesophageal reflux disease (GERD): a critical assessment of cause and effect association." *Clinical Gastroenterology and Hepatology* 1.5 (2003): 333-344.
- [8] DelGaudio, John M, and J. Patrick Waring. "Empiric esomeprazole in the treatment of laryngopharyngeal reflux." *The Laryngoscope* 113.4(2003): 598-601.
- [9] Bilgen C, Ogut F, Kesimli-Dinc H, Kirazli T, Bor S. The comparison of an empiric proton pump inhibitor trial vs. 24 hour double probe pH monitoring in laryngopharyngeal reflux. *The Journal of Laryngology and Otology* 2003;117: 386-390
- [10] Koufman JA, Belafsky PC, Bach KK, Daniel E, Postma GN. Prevalence of esophagitis in patients with PH documented laryngopharyngeal reflux. *Laryngoscope* 2002;112:1606-1609.
- [11] Eubanks, T.R., Omelanczuk, P.E., Maronian, N., Hillel, A., Pope II, C.E., & Pellegrini, C.A (2001). Pharyngeal pH monitoring in 222 patients with suspected laryngeal reflux. *Journal of Gastrointestinal Surgery*, 5(2), 183-191.
- [12] Mesallam, T.A., Stemple, J.C., Sobehi, T.M., & Elluru, R.G. (2007). Reflux symptom index versus reflux finding score. *Annals of Otolaryngology & Laryngology*, 116(6), 436-440.
- [13] Toros, S.Z., Toros A. B., Yüksel, O. D., Ozel, L., Akkaynak, C., & Naiboglu, B. (2009). Association of laryngopharyngeal manifestations and gastroesophageal reflux. *European Archives of Oto-Rhino-Laryngology*, 266(3), 403-409.
- [14] Sabri Tezer, M., Cem Kocakar, M., Koçkar, O., & Celik, A. (2006). Laryngopharyngeal reflux finding scores correlate with gastroesophageal reflux disease and Helicobacter pylori expression. *Acta oto-laryngologica*, 126(9), 958-961.
- [15] Belafsky, P.C., Postma, G.N., & Koufman, J.A. (2002). The association between laryngeal pseudosulcus and laryngopharyngeal reflux. *Otolaryngology-Head and Neck Surgery*, 126(6), 649-652.
- [16] Reichel, O., Dressel, H., Wiederänders, K., & Issing, W. J. (2008). Double-blind, placebo-controlled trial with esomeprazole for symptoms and signs associated with laryngopharyngeal reflux. *Otolaryngology-Head and Neck Surgery*, 139(3), 414-420.