

# Role of Adjuvant Lifestyle Modifications in Patients with Laryngopharyngeal Reflux Disease in Hilly Areas

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## Abstract

**Introduction:** Laryngopharyngeal reflux (LPR) is defined as a backflow of gastric contents into larynx and pharynx. This study aims to evaluate the effect of lifestyle modifications (LSM) as an adjuvant treatment along with proton pump inhibitors (PPIs) for the management of LPR disease.

**Materials and Methods:** A total of 200 patients with clinically and endoscopically diagnosed LPR disease were taken up in this study. 100 patients in the study group were asked to follow a list of LSM explained and given to them in their own language and were given oral rabeprazole tablet 20 mg twice daily 1 h before meals for 90 days. Remaining 100 patients in the control group were given 20 mg rabeprazole twice daily without LSM. The above treatment in both groups was given for 90 days. The patients in both groups were evaluated clinically and endoscopically after 45 days and 90 days of the treatment for improvement in clinical and endoscopic signs of LPR and patient satisfaction.

**Results:** The results showed that the major risk factors for LPR are spicy food and over intake of beverages along with habits like alcohol abuse and cigarette smoking. The results showed better and faster relief from reflux symptoms in the study group following LSM as compared to control group. There was a faster recovery of endoscopic signs in study group patients than the control group and greater patient satisfaction in the study group.

**Conclusion:** Hence, it can be concluded that life style modifications can be considered as an effective treatment if followed along with PPIs in patients with LPR disease.

**Key words:** Gastroesophageal reflux disease, Laryngitis, Laryngopharyngeal reflux, Lifestyle modifications, Proton pump inhibitors, Rabeprazole

## INTRODUCTION

The prevalence of laryngopharyngeal reflux (LPR) among the population has increased dramatically at 4% a year.<sup>1</sup> It is a very common disease seen in ENT OPD and its treatment is a challenge for ENT surgeons as it affects half of patients with laryngeal and voice disorders.<sup>2</sup> LPR is defined as a reflux of stomach contents into larynx and pharynx<sup>3</sup> leading to tissue damage at upper airway level due

to acidity of gastric juice.<sup>4</sup> There is an association between LPR and gastroesophageal reflux disease (GERD) with LPR being seen in 60% of patients with GERD.<sup>3</sup> The main manifestations of LPR are symptoms such as cough, sore throat, hoarseness, dysphonia, and globus, and laryngeal signs like erythema and edema seen at laryngoscopy.<sup>5</sup>

There is no standard treatment for LPR so far.<sup>6</sup> Since a long-time proton pump inhibitors (PPI) have been used as a potent suppressor of gastric secretions.<sup>7</sup> But its effect alone is doubtful. Many studies have failed to demonstrate any benefit of PPI alone.<sup>8</sup> A surgical treatment for LPR though tried but has also shown poor results in controlling the disease.<sup>9</sup>

Dietary and behavior modifications have been found to be a very effective in the management of LPR.<sup>10</sup> However,

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their effects have not been fully assessed. The results of various studies have remained controversial so far. Though recommended by many there is little evidence to prove their benefit. Even studies have shown that most general physicians do not believe in recommending and more than that insisting on lifestyle modifications as a part of treatment.<sup>11</sup> The main risk factors of LPR are dietary habits like alcohol, coffee, smoking, and psychological reasons.<sup>12</sup> Our institute being in hilly terrain here people are more habitual of beverages like tea, and there is a greater tendency to smoke and consume alcoholic drinks leading to greater incidence of LPR seen here. Hence, we have conducted this study to confirm whether lifestyle modifications (LSM) are effective in improving reflux symptoms and signs when given along with PPI in patients with LPR disease.

## MATERIALS AND METHODS

This study was conducted in Department of ENT of our medical college and hospital which is located in hilly area from August 2013 to July 2014. 200 patients with diagnosed LPR were included in the study. The diagnosis of LPR was made by clinical history, endoscopic laryngeal findings and 24 h pH monitoring. The permission of local ethics committee was taken and written consent obtained from all the patients enrolled in the study. Only adult patients above the age of 18 years were included in the study. Exclusion criteria were patients known allergic to PPI, patients on any medications for chronic disorders like diabetes, hypertension, pregnant or nursing mothers, patients with diagnosed malignancies, achalasia and chronic peptic ulcers and patients unwilling to participate in the study.

All the 200 patients enrolled in this study underwent detailed history taking and diagnostic laryngoscopy examination at each visit. The patients were randomized alternatively into study and control group. 100 patients in the study group were advised to follow a set of LSM which were explained and given to them written in their own language (LSM details in the box below) along with tablet rabeprazole 20 mg twice daily 1 h before breakfast and evening meals. Remaining 100 patients in the control group were given tablet rabeprazole 20 mg twice daily 1 h before breakfast and evening meals without advising any LSM. The above treatment in both groups was given for 90 days.

The patients were assessed at the first visit, after 45 days and after 90 days of the treatment. The assessment points were as the following section.

1. The risk factors for LPR were investigated
2. The patients were assessed for clinical symptoms of LPR at each visit

3. The patients were assessed for endoscopic laryngeal signs at each visit
4. The patient satisfaction was assessed according to LIKERT SCALE at each follow-up visit.

### 10 point lifestyle modifications (LSM) for patients

- To avoid hot, spicy and oily food
- To avoid alcohol and cigarette smoking
- To avoid beverages like coffee and tea
- To avoid lying down for 1 h after meals
- To avoid going to sleep for 2 h after dinner
- Reduce to 3 meals a day with proper gap and a light dinner
- Head end elevation while lying down
- To drink small sips of water throughout the day
- Voice rest
- To avoid forceful throat clearing

## RESULTS

About 200 patients who gave consent were enrolled in this study. All the patients underwent detailed clinical history taking and laryngoscopic examination at each visit. Data were collected on all patients. All the patients were above 18 years of age with the youngest patient of 20 years and eldest of 75 years of age. We found the majority of patients of lower middle age group (31-45 years 45%). There was a slight female predominance with male:female ratio of 1:1.3 (Table 1).

Regarding the risk factors of LPR, most of the patients had a habit to eat lots of spicy food (93%) and intake lots of tea during day time (96%). There was a tendency of cigarette or beedi smoking (42%) and alcohol intake abuse (38%) among the patients with LPR. (Figure 1) We found the habit of cigarette smoking and alcohol intake even among females in this area.

100 patients in the study group were advised to follow 10 point LSM as described earlier along with tablet rabeprazole 20 mg twice daily. Remaining 100 patients in the control group were given tablet rabeprazole 20 mg twice daily without advising any LSM. The above treatment in both groups was given for 90 days. The patients were assessed at the first visit, after 45 days and after 90 days of treatment.

**Table 1: Age and sex distribution**

Age group (years)	Male	Female	Total
<30	22	29	51
30-45	41	49	90
46-60	18	24	42
>60	7	10	17
Total	88	112	200

The major clinical symptom seen in our patients with LPR was foreign body sensation in throat or globus follow by change in voice or hoarseness. The other major symptoms were chronic non-productive cough, sore throat, heartburn, and post nasal discharge (Table 2). Regarding the endoscopic signs 59% patient in study group and 61% patients in control group had laryngeal congestion or edema at initial visit. The most common part of larynx was the posterior larynx involving arytenoids, interarytenoid area and posterior vocal cords. Around 25 % patients in both groups at initial visit had posterior pharyngeal wall congestion (Table 3).

Our results showed comparatively more number discontinued study in study group with LSM as compared to control group. This was due to difficulty in understanding and the following 10 points LSM by these patients in study group. On the contrary, much lower number of patients were lost to follow-up in study group at end of 90 days (14% in study group as compared to 24% in control group. This could be attributed to better cure rate in study group (Table 2).

Regarding the results 67% of patients had some improvement in their symptoms after 45 days in study group as compared to 50% in control group. This shows better and faster improvement in patients following 10

point LSM. There was greater patient satisfaction at the end of 90 days treatment in study group than control group (Table 4). There was much better faster improvement in clinical symptoms in study group as compared to control group (Table 2).

There was a better relief of laryngeal congestion and edema in study group than control group. This difference was a more remarkable after 45 days of treatment (Table 5). This shows faster relief of endoscopic signs of LPR when adjuvant lifestyle modifications were advised. Patients with posterior pharyngeal wall congestion were also much lower in study group.

We found in our results that most patients were able to follow this 10 point LSM as were they were explained and given to them in writing in their own language. Since the literacy rate of our region is high, and most of patients could read and understand in their native language we achieved a higher response rate of 74% patients in study groups following the treatment protocol and completing the study (Table 2).

## DISCUSSION

The efficacy of LSM as adjuvant treatment along with PPI in patients with LPR was investigated in this study. The primary aim of this study was to evaluate the role of lifestyle modification in the treatment of signs and symptoms of LPR and the second aim was to evaluate the risk factors of the LPR.

We have devised a 10 point LSM in patient’s own language so that the patient can understand and follow them in a better way and the response we got as explained earlier was very encouraging.

LPR is defined as backflow of stomach contents up the esophagus into larynx and pharynx leading to chronic laryngeal and pharyngeal disorders. There is growing prevalence of LPR in patients with GERD. The reflux

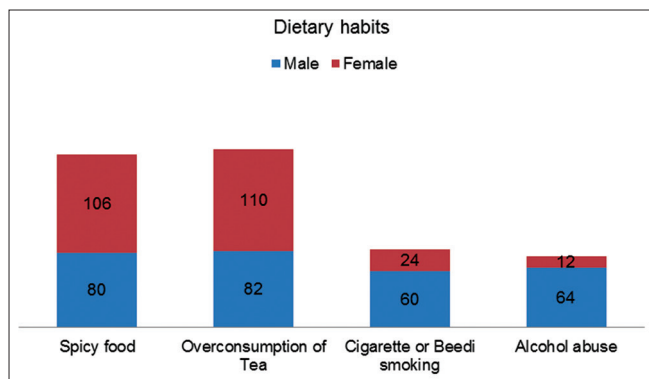


Figure 1: Risk factors of laryngopharyngeal reflux in the patients. The number denotes the number of patients

Table 2: Clinical symptoms in the patients at each visit

Symptom	First visit (%)		After 45 days (%)		After 90 days (%)	
	Study group	Control group	Study group	Control group	Study group	Control group
Foreign body sensation (Globus)	88 patients (88)	85 patients (85)	49 patients (60)	56 patients (70)	26 patients (35)	29 patients (42)
Change in voice (Hoarseness)	56 patients (56)	58 patients (58)	30 patients (37)	35 patients (44)	18 patients (24)	19 patients (28)
Chronic cough	30 patients (30)	31 patients (31)	16 patients (20)	20 patients (25)	10 patients (14)	11 patients (16)
Post nasal discharge	15 patients (15)	14 patients (14)	9 patients (11)	9 patients (11)	5 patients (7)	5 patients (7)
Sore throat	18 patients (18)	19 patients (19)	10 patients (12)	13 patients (17)	4 patients (6)	7 patients (10)
Difficulty in swallowing (Dysphagia)	3 patients (3)	3 patients (3)	2 patients (2)	2 patients (2)	2 patients (3)	2 patients (3)
Heart burn	18 patients (18)	20 patients (20)	8 patients (10)	12 patients (15)	4 patients (6)	7 patients (10)
Discontinued study	-	-	10 patients	5 patients	12 patients	7 patients
Lost to follow-up	-	-	8 patients	15 patients	14 patients	24 patients

of gastric contents contains harmful agents like acid and activated pepsin. Pepsin causes inflammation and mucosal damage of larynx leading to laryngitis. This disease according to studies is now prevalent in younger age group.<sup>13</sup> In our study, we found the most common age group affected to be between 30 and 45 years of age (Table 1). According to Haruma *et al.* 58% of patients with reflux disease are females.<sup>14</sup> Similarly, in our study, we found female predominance among patients in our study and control group (Table 1). The major risk factors in our study were spicy food and overconsumption of tea along with alcohol and cigarette smoking (Figure 1) with similar findings in literature available.<sup>12</sup>

According to a study, the most common symptoms of LPR are a persistent cough (97%), globus (95%), and hoarseness of voice (95%).<sup>15</sup> In our study, we found globus to be the most common symptom followed by hoarseness, cough and sore throat (Table 2). Literature shows not all patients with reflux to have physical findings.<sup>16</sup> In our study, we found only 60% patients with reflux symptoms having

laryngeal signs (Table 3). Lundy *et al.* found erythema of larynx to be the most common sign.<sup>17</sup> The literature shows that thickness, redness and edema of posterior larynx is most common in reflux laryngitis.<sup>18</sup> In our study, we found the most common region involved to be posterior larynx and most common sign seen was laryngeal congestion (Table 3).

The mainstay of treatment of LPR so far has been PPI. But its efficiency alone is doubtful.<sup>8</sup> Studies have shown that even after PPI treatment more than 30% patients fail to respond.<sup>19</sup> In our study, we found nearly half of the patients in control group with only rabeprazole given as treatment did not respond to the treatment with no improvement in their symptoms at end of 45 days treatment (Table 4). There is a lack of enough studies to prove the effect of LSM. Steward *et al.* found that lifestyle modifications for 2 months with PPI therapy improved chronic laryngitis symptoms.<sup>20</sup> Similar results regarding efficacy of LSM were obtained by Hamilton *et al.* in 1988.<sup>21</sup> According to studies for other diseases changes in lifestyle promotes a sense of well-being in the patient by shifting his focus from his disease.<sup>22</sup>

In our study, we found advising LSM (10 point LSM) along with PPI led to greater improvement in patients as compared to PPI alone after 90 days of treatment. We also obtained faster improvement in patients in study group as compared to control group after 45 days treatment (Table 4). This improvement was much better for clinical symptoms such as globus, hoarseness, chronic cough, heartburn, and sore throat at end of 90 days treatment in study group with 10 point LSM than control group and much faster relief after 45 days of treatment using LSM (Table 2). Laryngeal and posterior pharyngeal wall congestion was also much lesser in study group than control group after 45 and 90 days of treatment (Table 5).

**Table 3: Diagnostic laryngoscopy findings at initial visit**

Signs	Study group (%)	Control group (%)
Posterior larynx (arytenoids, interarytenoid area, posterior vocal cords) congestion or edema	41 patients (41)	42 patients (42)
Anterior larynx (anterior vocal cords, ventricles) congestion or edema	8 patients (8)	10 patients (10)
Diffuse laryngeal (both anterior and posterior) congestion or edema	10 patients (10)	9 patients (9)
Total patients with laryngeal signs	59 patients (59)	61 patients (61)
Posterior pharyngeal wall congestion	24 patients (24)	25 patients (25)

**Table 4: Patient satisfaction in both groups**

Satisfaction	After 45 days (%)		After 90 days (%)	
	Study group	Control group	Study group	Control group
Very comfortable (total relief)	20 patients (25)	14 patients (18)	26 patients (35)	22 patients (32)
Comfortable (improvement)	35 patients (42)	25 patients (32)	35 patients (47)	29 patients (42)
No change	25 patients (31)	39 patients (48)	11 patients (15)	16 patients (23)
Uncomfortable (worsened)	2 patients (2)	2 patients (2)	2 patients (3)	2 patients (3)

**Table 5: Diagnostic laryngoscopy findings at follow-up visits**

Signs	After 45 days (%)		After 90 days (%)	
	Study group	Control group	Study group	Control group
Laryngeal congestion or edema	33 patients (41)	40 patients (50)	19 patients (25)	23 patients (33)
Posterior pharyngeal wall congestion	14 patients (17)	16 patients (20)	8 patients (11)	10 patients (15)

## CONCLUSION

Life style modifications when advised along with PPIs are effective in treating the signs and symptoms of LPR. When used as adjuvant treatment along with PPI they fasten the relief to the patients suffering from LPR. Patient satisfaction was much higher when 10 points LSM was followed by the patient along with rabeprazole. There is a need to properly explain the LSM in patient's own language to make him understand and gain his confidence.

The major risk factors of LPR are overconsumption of beverages like tea and too much spicy food. Habit like alcohol intake and cigarette smoking also contribute to LPR.

There is the scope of further studies along this line of management.

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