

A Comparison of Alkaline Water and Isotonic Saline Gargles vs Proton Pump Inhibitors for Treatment of Laryngopharyngeal Reflux

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Abstract:-

➤ Introduction

Laryngopharyngeal reflux is a condition in which there is backward flow of stomach content to the larynx and pharynx and its contact with upper aerodigestive tract.

➤ Aim

This study is aimed to determine whether treatment with alkaline water and isotonic saline gargles with standard reflux precautions only can improve symptoms of laryngopharyngeal reflux compared with proton pump inhibitors with standard reflux precautions.

➤ Materials and method

It is a prospective study conducted on sample size of 120. Patients were diagnosed with LPR using reflux symptom index. After four weeks of treatment RSI was studied again to see improvements. A 6- point reduction in the RSI score was considered to be significant.

➤ Results

Out of 60 treated with proton pump inhibitors, 45 (75%) were responders and out of 60 treated with alkaline water and isotonic saline gargles, 39 (65%) were responding to the treatment.

➤ Conclusion

It was found that treatment with alkaline water and isotonic saline gargles was significantly effective but not more than proton pump inhibitors. Hence for long term treatment, alkaline water and isotonic saline gargles would be a better alternative.

Keywords:- Laryngopharyngeal Reflux, Proton Pump Inhibitors, Reflux Symptom Index, Alkaline Water, Isotonic Saline Gargles.

I. INTRODUCTION

Laryngopharyngeal reflux is a condition in which there is backward flow of stomach content to the larynx and pharynx and its contact with the upper aerodigestive tract^[1]. Laryngeal diseases such as reflux laryngitis, laryngeal carcinoma, granulomas, subglottic stenosis, contact ulcers, and vocal nodules are associated with laryngopharyngeal reflux^[1,5]. With similar symptoms

like chronic dysphonia, dysphagia excessive throat clearing, persistent cough laryngopharyngeal reflux is often undiagnosed as it could be a manifestation of other aetiologies such as infection, vocal abuse, allergy, smoking, irritant inhalation, heavy drinking^[1].

Basis to the pathophysiological mechanism of reflux disease at the cellular level is pepsin where both laryngeal damage and esophageal damage are due to pepsin which requires acidic environment for it to get activated^[2].

Long term use of proton pump inhibitors have been suspected to cause vitamin B12 deficiency, hypomagnesemia, high risk for fractures and higher risk for infections^[3,4,6,7]. Pepsin gets inactivated in the presence of gastric pH greater than 8 which is brought about by alkaline water suggesting that it would be a better alternative for treatment of laryngopharyngeal reflux in the long term^[2]. Dietary modification based approach is by reducing pepsin secretion by taking food with low acid content, less spice to control the symptoms of laryngopharyngeal reflux disease^[1,10].

II. MATERIALS AND METHODS

The study's protocol was approved by the institutional board review of Saveetha Medical College and Hospital, Thandalam. Informed consent was provided by the patients willing to participate in the study. Patients who were diagnosed with Laryngopharyngeal reflux for the first time were included in the study.

It is a prospective study with sample size 120 and they were divided into two study groups. Patients attending the OPD of ENT department of a tertiary care hospital were included in the study. Patients previously on proton pump inhibitors were excluded. Patients with concomitant diagnosis of a benign condition causing dysphonia, which includes muscle tension dysphonia, vocal cord polyp, unilateral vocal fold paralysis, vocal fold cyst, subglottic stenosis, vocal fold scar, Reinke's edema, vocal nodules, granuloma, anterior web, and ectasia were excluded^[1]. Patients with concurrent neuropathic cough or previous treatment with neuropathic pain medication or allergic rhinitis, sinusitis or recent upper respiratory illness were excluded^[1]. Patients with history of laryngeal malignant abnormality or radiation therapy or nasopharyngeal or oropharyngeal mass were excluded^[1]. Smokers were also excluded from the study. Patients were diagnosed with LPR

with the help of reflux symptom index^[8,9]. One study group treated with proton pump inhibitors and the other group treated with alkaline water (ph >8) and isotonic saline gargles for four weeks. Both the groups were advised to follow the standard reflux precautions devised which include avoiding coffee, alcohol, spicy food, smoking, etc..After the completion of four weeks reflux symptom index scores were studied again to see any improvements. 6-point scaling down in the RSI score was considered to be significant.^[1]

III. RESULTS

A total of 120 patients were identified with laryngopharyngeal reflux. Out of 120, 60 underwent proton pump inhibition therapy and the other 60 underwent alkaline water and isotonic saline gargles therapy. Approximately four weeks after intimation of treatment, follow-up was done. Considering 6- scaling down (improvement) in RSI score as response to treatment, both proton pump inhibition therapy and alkaline water and isotonic saline gargles therapy for laryngopharyngeal reflux has been found to be significant.

	PPI	Alkaline water
No. of patients	60	60
No. of responders	45	39
No. of non responders	15	21

Table 1

	PPI treatment	Alkaline water treatment
df	59	59
t stat	20.1286	18.55
P(T<=t) two tail	4.13575E-28	2.60904E-26

Since the p value is less than 0.0001 for both the treatments, they both are considered to be significant.

Treatment of laryngopharyngeal reflux with proton pump inhibition therapy is found to be much more effective compared to the treatment with alkaline water and isotonic saline gargles.

Though proton pump inhibition treatment is better for acute or short term therapy but for a long term purpose, treatment with alkaline water and isotonic saline gargles could be a good alternative.

IV. DISCUSSION

The study suggests that treatment with alkaline water treatment is comparatively less effective than PPI therapy but it does have clinically significant results. Control group of standard reflux precautions for laryngopharyngeal reflux disease symptoms alone have shown minimal clinical change in reflux incidence but by augmenting them with alkaline water and isotonic saline gargles, effective control of symptoms without PPI use is noted. This treatment with alkaline water also decrease the risk of cardiovascular disease, stroke, diabetes and also the risk of drug interaction is avoided.

Though through the years PPI therapy and reflux precautions are being continuously used, the gold standard or ideal treatment for LPRD remains difficult to find. PPI causes suppression of hydrogen ion secretion thereby increasing the ph of the stomach. Patients response to proton pump inhibitors treatment is variable and few have found to be resistant to them and it plays a vital role in cases of refractory LPRD, poor diet control and complicated diseases. The major disadvantage of using PPI is their adverse effects like hypomagnesemia, bone

fractures, diarrhoea, vitamin B12 deficit and hypocalcemia. Myocardial infarction, dementia and stroke have also been associated to the use of proton pump inhibitors.

Another issue is that there is no ideal diagnostic test for LPRD. RSI has been used for first line assessment for suspected cases and to check for prognosis. It is a self directed survey consisting of scaling 9 components that constitute various manifestations of LPRD.

Though pepsin has been attributed as one of the causative factor for LPRD, no treatment modalities have yet been targeted against it.

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