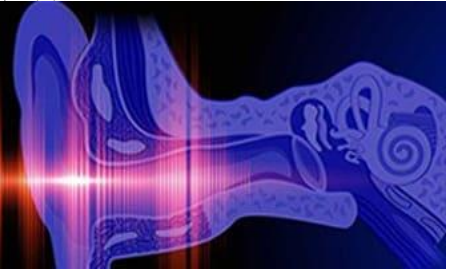


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Endoscopic pharyngo-laryngeal findings in adult patients with afebrile sore throat before and after usage of proton pump inhibitors

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Abstract

Background: Chronic afebrile sore throat in adults is a common complaint due to different etiologies, of which, gastroesophageal reflux represents a prominent one.

Aim of the work: The study aims to monitor endoscopic pharyngeal and laryngeal findings in adult patients complaining of chronic afebrile sore throat and assess the effect of proton pump inhibitors on these findings, as well as on other patient symptoms.

Methods: A total of 50 consecutive patients were selected between the 1st of November 2019 till end of October 2022, at the Otorhinolaryngology Department, Tanta University Hospital, complaining of chronic afebrile sore throat, for at least 12 weeks.

All patients were assessed by rigid endoscopy for nasopharyngeal and laryngeal examination, respectively, in addition to filling a questionnaire considering signs and symptoms, before usage of proton pump inhibitors (PPI), and after three weeks of continuous treatment.

Results: The current study showed significant reduction in sore throat complaint after treatment with proton pump inhibitors, with a relief of 72% of patients.

Keywords: Chronic sore throat, reflux pharyngitis, endoscopic pharyngo-laryngeal findings, proton pump inhibitors, extra-oesophageal manifestations of reflux

Introduction

Sore throat, is the term used by the patient to describe felt sensation of irritation and pain caused by inflammation and/or irritation of the oropharynx and hypopharynx with occasional overlapping symptoms from nasopharyngitis. There are many different causes of sore throat including; viral agents responsible of about 50% of sore throats and another 20% are thought to be due to bacterial infections. Unfortunately, the remaining 30% are believed to be due to unclear causes, which include gastro-oesophageal reflux, allergies, mouth breathing, post nasal drip, allergic rhinitis and other environmental agents and social habits e.g. alcoholism, spicy food, smoking etc. ^[1].

Gastroesophageal reflux disease (GERD), is an important public health issue because of its significant healthcare costs of treatment, with rising prevalence over the world ^[2, 3]. It is defined as the state in which gastric contents ascend retrograde into the esophagus and may be, further to adjacent organs causing varying degrees of symptoms and signs with or without tissue damage, such as heartburn, chronic cough, chronic sore throat, reflux induced asthma, laryngitis and dental erosion. etc. ^[4].

The term laryngopharyngeal reflux (LPR) indicates reflux that reaches the upper airway, causing supra-oesophageal manifestations of GERD ^[5, 6]. It is usually associated with GERD. Various symptoms have been proposed for the clinical characterization of LPR, like, sore throat, globus, dysphagia, post nasal drip, nasal blockage, hoarseness of voice, halitosis, chronic cough and others ^[7].

The etiology of afebrile chronic sore throat is proposed to be due a wide variety of causes. These include allergies, autoimmune disorders, environmental causes, postnasal drip, mouth breathing, smoking and acid reflux ^[8, 9].

Coffin in 1903 was the first to mention the correlation between GERD and laryngeal and nasal symptoms [10].

Between 2016 and 2017, Zhao Yanlian, performed a study to analyze the etiology of chronic pharyngitis, using a questionnaire and clinical manifestations. He proposed 36 cases out of 128 to have chronic pharyngitis due to LPR [11].

Yazici *et al.* 2009, investigated the role of LPR in chronic nonspecific pharyngitis

patients based on the patient's history and clinical examination. He suggested pharmacotherapy with proton pump inhibitors as acceptable treatment [12].

Hom and Michael, 2013, concluded that appropriate diagnosis of reflux as the cause of patients' complaints is a challenge, assuming that upper gastrointestinal endoscopy and pH monitoring suffer from poor sensitivity while laryngopharyngoscopy suffers from poor specificity in diagnosing reflux in LPR patients. Alternatively, they recommended empirical trial of PPIs as the initial approach in the presence of such symptoms, to diagnose and treat the potential underlying cause of these extra-esophageal symptoms [13].

Methods

This study was carried out at The Department of Otolaryngology, Tanta University Hospitals. Fifty consecutive patients attending outpatient clinic were included in this study, with recorded complaint of afebrile chronic sore throat.

The study started from the 1st of November 2019 till end of October 2021. It was held after approval of the local ethics committee for clinical studies. Written consents have been obtained from all patients considering handling their collected personal data or medical and clinical findings as well as publishing them with results while encoding names and hiding faces.

Study Design

Original descriptive prospective study.

The inclusion criteria

Patients older than 18 years old, with afebrile chronic sore throat for at least 12 weeks.

The exclusion criteria

- Pharyngeal or laryngeal tumors, or receiving radiotherapy.
- Active or recent febrile upper respiratory tract infections.
- Patients under treatment with PPIs or H2 blockers, anti-allergic or antibiotic drugs less than one month prior to examination.
- Patients in close contact to chemical or irritant inhalants, such as cement, insecticides, fertilizers or chlorine.

Used instruments

The study used

- Two rigid endoscopes; one of zero degree angle view, 4 mm diameter and 11cm length, for examination of the nasopharynx via nostrils, the other of 70 degrees angle view of 6 mm diameter and 17 cm length, for examination of the hypopharynx and larynx, via oral route.
- Digital color camera 520 TV-line resolution.
- LED cold light source.

Procedure

All patients in this study were subjected to history taking by filling a questionnaire by the examiner concerning their personal history, symptoms like heart burn, acid regurgitation, globus, dysphagia, halitosis, hoarseness of voice, as well as risk factors, as smoking, spicy food habits and drug intake e.g. NSAIDs and antacids, as these symptoms and risk factors are thought to be closely related to GERD [7,10].

Candidates had undergone rigid endoscopy with a mounted high resolution camera, using a zero degree lens introduced nasally for nasopharyngeal examination. A nasal wick soaked with Lidocaine 10% spray is introduced for 1-2 minutes prior to examination for local anesthesia. Local decongestants were not used as they can alter monitored signs such as congestion and turbinate size. Thereafter, another 70 degrees lens was introduced orally under local anaesthesia using Lidocaine 10% spray for oropharyngeal, hypopharyngeal and laryngeal examination.

Re-examination and comparison of results was done after at least 3 weeks of continuous intake of proton pump inhibitors. Omeprazole was used here with a twice daily dose of 20 mg.

Results

The study included fifty consecutive patients with mean age 40.4 ± 11.0 , mostly females (60%). Age range was from 22 to 70 years with a mean age 40.4 ± 11.0 years. A female over male predominance was noticed with a ratio of 1.5. A high prevalence of antacid usage, fatty and spicy food intake was noticed among the majority of patients.

These habits have been proved to be closely related to the occurrence of chronic sore throat [8, 14]. About 42.9% of studied cases were smokers mainly males (90%). A reported medical history of gastritis was present in 68% of patients. (Table-1)

Table 1: Patients' habits and medical history

Characteristics	n	%
Smoking	21	42.9
Spicy food	30	60
Fatty food	37	74
Coffee	23	46
History of gastritis	34	68
History of H. pylori positive test	18	36
History of antacids	37	74
NSAIDs usage	15	30

According to the main complaint, this study showed it to be significantly reduced after PPI therapy, with a relief of 72% of patients. Significant reductions in some associated symptoms were also noticed such as acid regurgitation, heartburn, stinging, globus, postnasal drip and nasal obstruction.

According to the associated signs recorded in this study, only mucosal congestion and erythema of both pharynx and larynx showed reduction post therapy. Throat congestion showed significant reduction with relief of 36 patients out of 46. On the other hand, coated tongue, tongue base follicles and lymphoid follicular hyperplasia of the posterior pharyngeal wall (cobblestoning), were refractory to therapy in spite of relief of sore throat complaint. (Table -2)

Table 2: Signs and symptoms before and after PPI therapy

Signs & Symptoms	Before		After		p
	n	%	n	%	
Symptoms					
Sore throat	50	100	14	28	<.001*
Acid regurgitation	33	66	11	22	<.001*
Halitosis	17	34	10	20	.177
Heartburn	40	80	16	32	<.001*
Epigastric pain	19	38	18	36	1
Stinging	30	60	10	20	<.001*
Belching	19	38	10	20	.078
Cough	11	22	8	16	.610
Globus	39	78	16	32	<.001*
Dysphagia	16	32	7	14	.057
Hoarseness of voice	21	42	15	30	.298
Postnasal drip	50	100	23	46	<.001*
Nasal obstruction	47	94	33	66	.001*
Signs					
Throat congestion	46	92	11	22	<.001*
Coated tongue	46	92	44	88	.739
Congested large uvula	27	54	10	20	.001*
Erythema of soft palate	36	72	11	22	<.001*
Tongue base follicles	34	68	29	58	.407
Enlarged tonsils	4	8	4	8	1 [¥]
Hypertrophied turbinates	48	96	42	84	.096
Posterior granular pharyngitis	50	100	45	90	0.056 [¥]
Nasopharyngeal congestion	44	88	26	52	<.001*
Adenoid enlargement	4	8	4	8	1 [¥]
Epiglottic congestion	31	62	8	16	<.001*
Vocal cord congestion/oedema	25	50	14	28	.040*
Interarytenoid oedema	34	68	15	30	<.001*

*Significant at 0.05 significant level. [¥]p value of Fisher exact test.

Discussion

This study adopted the idea of performing an empirical therapeutic trial with PPI as a possible measure for the effect of acid reflux as a possible cause of sore throat in adults, using a combination of symptoms and endoscopic signs.

In this study, all included patients had chronic afebrile sore throat.

The associated symptoms and endoscopic mucosal signs were compared before and after 3 weeks treatment with twice 20 mg daily dose of omeprazole.

According to the main complaint, the current study showed significant reduction in sore throat complaint after PPI therapy, with relief of 72% of patients.

Consequently, this indicates that there is a relationship between the chronic sore throat complaint and acid reflux.

On the other hand, 28% of patients didn't experience a relief regarding sore throat sensation. As by Belafsky, 2001 the dilemma is that the probability of association between GERD and laryngopharyngeal symptoms may be in those unresponsive to PPI therapy^[15].

This irresponsiveness should bring in mind other differential diagnosis of etiology of afebrile chronic sore throat like allergy, immunological disorders or other chemo-physical irritants like smoking or inhalants pollutants, Obstructive Sleep Apnea/Hypopnea Syndrome (OSAHS), but - on the contrary -some of these cases may still be related to the same etiology of LPR but without showing adequate response to PPI treatment as by Richter, 1996, who thought that even in cases proved to have LPR with positive results

of pharyngeal pH testing, a favorable response to anti-reflux therapy may not be predicted^[16].

On the same way, the theory of non -acid reflux can be an alternative interpretation for failure of treatment in relieving sore throat complaint. Vela *et al.* 2001, proved that during treatment with omeprazole, postprandial reflux still occurs but it becomes predominantly non-acid, due to Transient Lower Esophageal Sphincter Relaxations (TLESR), which is the primary causative mechanism for both acid and non-acid reflux. Vela's study made an important shift in treatment protocols focused on the competence of the LES rather than the pH of the refluxate alone, and suggested the use of GABA B-antagonist to diminish TLESR to prevent both acid and non-acid noxious refluxates^[17].

Beside the sore throat complaint, we found significant reductions in some associated symptoms after PPI therapy like acid regurgitation, heartburn, stinging, globus, postnasal drip and nasal obstruction. On the opposite side, other investigated symptoms like halitosis, epigastric pain, belching, cough, dysphagia, and hoarseness of voice didn't show adequate response to PPI therapy. This may be due to multiple other causes^[18].

Surprisingly, Reimer and Bytzer, 2008, concluded that PPI therapy is no more effective than placebo in relieving symptoms in patients suspected of LPR disease. Moreover, they stated that there is neither a reliable diagnostic measure for LPR, nor an existent test to expect response to PPI^[19].

According to the associated signs recorded in current study, only congestion and erythema of pharyngo-laryngeal mucosal lining, showed reduction post therapy. On the other

hand, coated tongue, tongue base follicles and lymphoid follicular hyperplasia of the posterior pharyngeal wall (cobblestoning), were refractory to therapy, in spite of somewhat relieved symptom. Belafsky, 2001, explained this by stating that on treatment with PPIs the physical findings of LPR usually improve more slowly than symptoms and continue to get better throughout a period of at least 6 months of treatment [15].

Meanwhile laryngeal signs appeared to be more responsive to PPI treatment with reduction of epiglottic congestion, vocal folds oedema and interarytenoid oedema, which is convenient with the study of Williams *et al.* 2004, finding that endoscopic signs of laryngitis shows good improvement, on Omeprazole in cases of reflux laryngitis [20].



Fig 1: Shows coated tongue and tongue base follicles before PPI.



Fig 2: Shows coated tongue and tongue base follicles after PPI.



Fig 3: Shows uvular oedema before PPI



Fig 4: Shows uvular oedema after PPI.

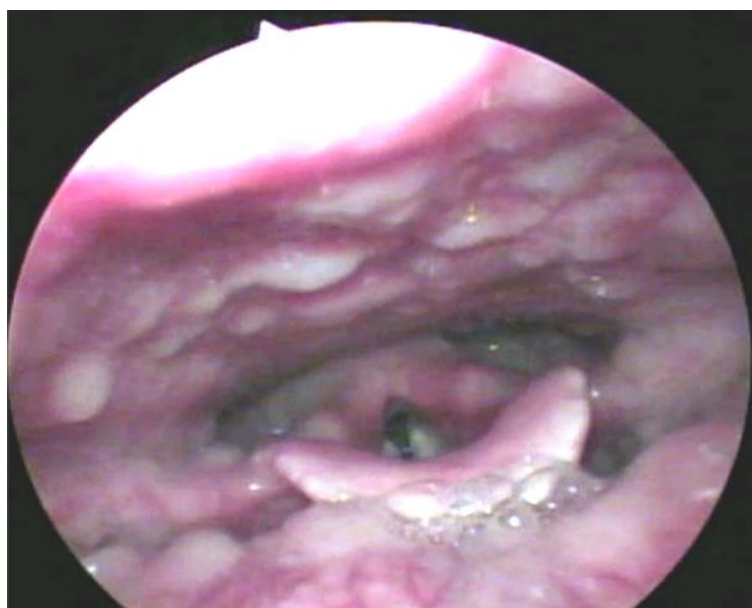


Fig 5: Laryngoscopic view showing cobblestoning of posterior pharyngeal wall before PPI treatment.

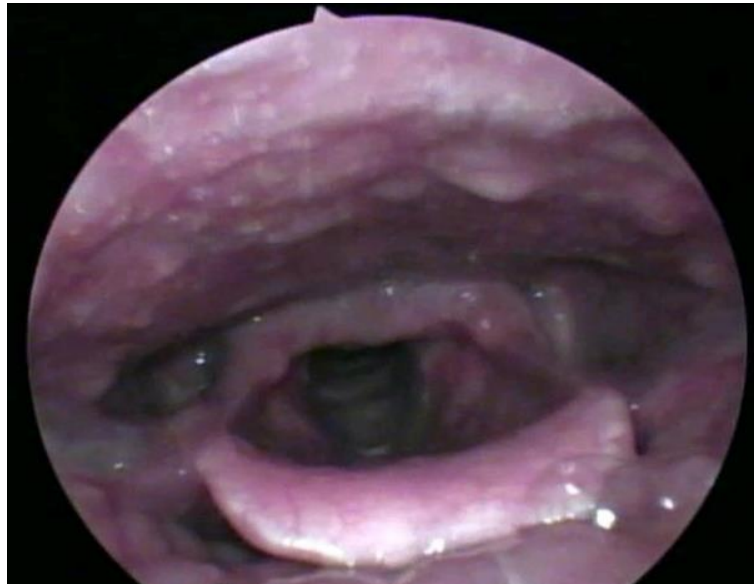


Fig 6: Laryngoscopic view showing cobblestoning of posterior pharyngeal wall after PPI treatment.

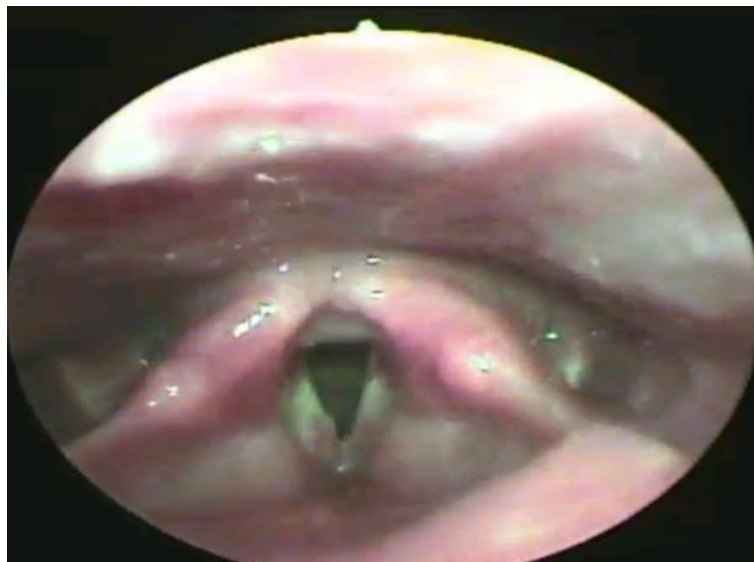


Fig 7: Laryngoscopic view showing hypopharynx and laryngeal inlet before PPI.



Fig 8: Laryngoscopic view showing hypopharynx and laryngeal inlet after PPI.



Fig 9: Hypertrophied inferior turbinates via nasal endoscopy before PPI.



Fig 10: Hypertrophied inferior turbinates via nasal endoscopy after PPI.

Conclusion

The current study showed that the usage of twice daily 20 mg Omeprazole for 3 weeks showed significant improvement of chronic sore throat complaint in afebrile adult patients, as well as some associated symptoms and signs, revealing the effect of acid refluxate as a contributing factor in chronic sore throat complaint.

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