Prevalence of gastroesophageal reflux disease in patients with laryngeal and voice disorders

Naeem Makhadoom, MD, FACHARZT, Ali Abouloyoun, MD, Hassan A. Bokhary, ABIM, SCCGH, Khalid O. Dhafar, FRCS, FACS, Zohair J. Gazzaz, MBChB, PhD, Badr A. Azab, MBChB, PhD.

ABSTRACT

Objectives: To determine the prevalence of gastroesophageal reflux disease (GERD) for the management of patients with laryngeal and voice disorders.

Method: This study consisted of 30 patients from Ear, Nose and Throat (ENT) and Phoniatric outpatient clinics at Al-Noor Specialist Hospital in Holy Makkah, Saudi Arabia complaining of laryngeal symptoms mainly dysphonia, during one year period from May 2005 to May 2006. All patients were subjected to: voice evaluation, which include searching for etiological factors, auditory perceptual assessment (APA), laryngeal examination and upper gastrointestinal tract (GIT) endoscopy.

Results: The onset of complaint of voice changes was gradual (93%), the duration was more than 6 months (90%) and the course was intermittent in 43% of patients. Phonasthenia symptoms were common. The change of voice was mainly due to high vocal demand (63.3%), tense temperament (93.3%) and spicy foods (60%). The grade of dysphonia was slight in 50% of patients, the characters of voice were mainly strained and leaky (76.7%) and the pitch was mainly decreasing (56.7%). Hyperfunctional dysphonia was present in 26.7% of patients, phonasthenia in 16.7%, vocal fold (VF) polyp in 13.3% and contact granuloma in 6.7%. Presence of GERD with hiatus hernia in 63.3% of patients, GERD with acute gastritis and duodenitis in 10% and incompetent lower esophagus in 6.67%.

Conclusion: Laryngeal and voice disorders was mostly due to GERD in 80% of patients, which was mainly GERD with hiatus hernia.

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From the Department of Ear, Nose and Throat (Makhadoom, Abouloyoun), Department of Medicine (Bokhary, Gazzaz, Azab), and the Department of Surgery (Dhafar), Al-Noor Specialist Hospital, Makkah, Kingdom of Saudi Arabia.

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Address correspondence and reprint request to: Dr. Zohair J. Gazzaz, Health Research Center, Al-Noor Specialist Hospital, PO Box 6251, Holy Makkah, Kingdom of Saudi Arabia. Fax. +966 (2) 5666860. E-mail: hrd_alnoor@yahoo.com

Acid reflux is a common problem, and is thought to occur in 4-10% of patients presenting to Ear Nose and Throat (ENT) clinics. A recent study of reflux and voice disorders suggests that up to 55% of patients with hoarseness (dysphonia) have laryngopharyngeal reflux. Anti-reflux therapy is often used empirically in treating patients with hoarseness, where no other cause has been identified by examination.[1] Laryngopharyngeal reflux (LPR) refers to the backflow of stomach contents into the throat. Patients with LPR suffer from hoarseness, throat discomfort, dysphonia, chronic cough, chronic throat clearing and dysphagia.[2] Otolaryngological manifestations of acid reflux include a wide range of pharyngeal and laryngeal symptoms; and the constellation of symptoms has been called laryngopharyngeal reflux. Laryngopharyngeal reflux is a major cause of laryngeal inflammation and presents with a constellation of symptoms different from classic gastroesophageal reflux disease.[3] The goal of this study is to estimate the prevalence of gastroesophageal reflux disease (GERD) for the management of patients with laryngeal and voice disorders.

Methods. This study consisted of 30 patients from ENT and Phoniatric outpatient clinics at Al-Noor Specialist Hospital at Holy Makkah, Saudi Arabia complaining of laryngeal symptoms mainly dysphonia, during a one year period (from May 2005 to May 2006). All patients were subjected to: 1. Review of personal data such as age, gender and occupation, complaint and analysis of symptoms, which is mainly change of voice (dysphonia) with or without sensation of hyperacidity and reflux by onset, duration and course and phonasthenia manifestations. 2. Search for etiological factors by asking regarding vocal demand and its degree, smoking, spicy foods and temperament of the patients. 3. Auditory perceptual assessment: Every patient was asked to say some specific sentences and sustained vowel /a/, /i/ and /o/. Voice assessment was carried out by a

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consultant Phoniatrician for overall grade of dysphonia, character of voice and pitch of voice. 4. Every patient was subjected to laryngeal examination using: telescopic rigid fiber orolaryngoscopy 90 degrees or flexible nasofibrolaryngoscopy joined with stroboscope (ATMOS stroboscope Atmos Medizin Technik, Lenzkirch, Germany) to reach the final diagnosis and then the patients were referred to a gastrointestinal tract (GIT) consultant for evaluation using upper GIT endoscopy.

Results. In the present study, 30 patients with change of voice was consisted of 16 (53.33%) female and 14 (46.67%) male and the mean age of the patients was 43.7 ± 13.20 years (44.69 ± 16.02 years for male and 42.75 ± 10.61 years for female) with a range of 23-70 years. The sense of hyperacidity was present in 19 (63.33%) and not present in 11 (36.67%) patients. On the analysis of complaint of change of voice in the present study, it was observed that in most of the patients the onset was gradual (93%), the duration was more than 6 months (90%) and the course was intermittent in 43% and increasing in 40%. As regard to the phonasthenia symptoms, it was observed that most of the patients had throat dryness (93%), frequent throat clearing (93%), globus sensation (73%) and inability to continue speaking (90%). The etiological factors of change of voice of the patients were found mostly due to high vocal demand (63.3%), tense temperament (93.3%) and spicy foods (60%) (**Table 1**). The results of the auditory perceptual assessment (APA) of the patients are presented in **Table 2** and the results of the laryngeal examination and diagnosis are presented

Table 1 - Etiological factors of change of voice.

Etiological factors	n	(%)
Vocal demand		
High	19	(63.3)
Moderate	10	(33.3)
Low	1	(3.3)
Smoking	2	(6.7)
Heavy	1	(3.3)
Moderate	3	(10)
Mild	24	(80)
No		
Spirits	18	(60)
Yes	12	(40)
No		
Temperament	28	(93.3)
Tense	2	(6.7)
Quite		

Table 2 - Auditory perceptual assessment.

Auditory perceptual assessment	n	(%)
Overall grade	4	(13.3)
Normal	15	(50)
Slight	11	(36.7)
Moderate		
Character	3	(10)
Normal	1	(3.3)
Breathy	3	(10))
Strained	23	(76.7)
Strained and leaky		
Pitch	17	(56.7)
Decrease	1	(3.3)
Diplophonia	12	(40)
Increase		

Table 3 - Laryngeal diagnosis.

Diagnosis	n	(%)
1. Contact granuloma	2	(6.7)
2. Hyperfunctional dysphonia	8	(26.7)
3. Phonasthenia	5	(16.7)
4. Rienke's edema	2	(6.7)
5. Right vocal fold cyst	1	(3.3)
6. Vocal fold congestion	2	(6.6)
7. Vocal fold nodules	3	(10)
8. Vocal fold polyp	4	(13.3)
9. Ventricular dysphonia	3	(10)
Total	30	(100)

Table 4 - Gastrointestinal findings.

Gastrointestinal findings	n	(%)
Normal	6	(20)
GERD + HH	19	(63.3)
GERD + other findings		
Incompetent lower esophagus	2	(6.7)
Acute gastritis and duodenitis	3	(10)
Total	30	(100)

GERD - Gastroesophageal reflux disease, HH - Hiatus hernia

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in **Table 3**. Upper gastrointestinal endoscopies revealed the presence of GERD with hiatus hernia in 63.3% of patients, GERD with acute gastritis and duodenitis in 10%, incompetent lower esophagus in 6.67% of patients and normal in 20% (**Table** 4).

Discussion. Gastroesophageal reflux can cause serious voice problems and laryngopharyngeal disorders influencing the patient's quality of life.[4] Laryngopharyngeal reflux is present in up to 50% of patients with voice disorders.[5] Gastroesophageal reflux disease is associated with a wide spectrum of otolaryngologic disorders and extraesophageal complications of the upper aerodigestive tract. Previous studies of patients diagnosed with GERD have reported symptoms such as asthma, chronic cough, pneumonia, laryngitis, but also other oral, rhinopharyngeal and laryngeal disorders, such as sore throat, globus sensation, and hoarseness.[6] In a prospective study,[3] a total of 303 patients, 174 females and 129 males with age ranging from 19-88 years. Seventy-five percent had had symptoms for more than a year. Fifteen percent were smokers. Globus, voice change, sore throat, dysphagia and cough were the predominant symptoms.In the present study, it was noticed that female patients were predominant (53.33%) than male (46.67%) patients (range 23-70 years). Furthermore, the sense of hyperacidity was present in 19 (63.33%) and not present in 11 (36.67%) patients. This agrees with the study of Manabe et al,[7] which stated that the most commonly recognized manifestation of GERD is heartburn or a substernal burning sensation in the chest. Most patients with reflux esophagitis complain of typical symptoms such as heartburn, regurgitation or dysphagia. However, some patients complain of atypical symptoms such as hoarse voice, chronic cough, adult-onset asthma or vocal cord polyps. The prevalence of GERD was 3.5% in Korean population. Heartburn and acid regurgitation were significantly associated with chest pain, dysphagia, globus sensation, hoarseness, and asthma.[8] On the analysis of complaint of change of voice in the present study, it was observed that in most of the patients, the onset was gradual (93%), the duration was more than 6 months (90%) and the course was intermittent in 43% and increasing in 40% of patients. Our data agrees with previous report[3] where we found that 75% had symptoms for more than a year. As regard to the phonasthenia symptoms in the present study, it was observed that most of the patients had throat dryness (93%), frequent throat clearing (93%), globus sensation (73%) and inability to continue speaking (90%). Previous studies of patients diagnosed with GERD have reported symptoms such as asthma, chronic cough, pneumonia, laryngitis, but also other oral, rhinopharyngeal and laryngeal disorders, such as sore throat, globus sensation, and hoarseness.[3,6] Gastroesophageal reflux disease has been associated with a variety of supra-oesophageal symptoms, including asthma, laryngitis, hoarseness, chronic cough, frequent throat clearing and globus pharyngeus. Gastroesophageal reflux disease may be overlooked as the underlying mechanism for these symptoms because typical GERD symptoms may be absent, despite abnormal esophageal acid exposure. Two basic mechanisms linking GERD with laryngeal symptoms have been proposed: direct contact of gastric acid with the upper airway, in some cases due to micro-aspiration, and a vagovagal reflex triggered by acidification of the distal portion of the oesophagus.[9] In one study[10] of the otolaryngologic manifestations of GERD, they found that the most common symptoms were hoarseness (71%), cough (51%), globus (47%), and throat clearing (42%). Only 43% of the patients had gastrointestinal symptoms (heartburn or acid regurgitation). The etiological factors of change of voice of the patients were found mostly due to high vocal demand (63.3%), tense temperament (93.3%), spicy foods (60%) and smoking (20%). This is agrees with the previous study,[3] where they found that 15% of patients were smokers. The APA of the patients showed that the grade of dysphonia was slight in 50% of patients, the characters of voice were mainly strained and leaky (76.7%) and the pitch was mainly decreasing (56.7%). The epidemiology and correlation with perceptual voice analysis in pediatric patients with vocal nodules was presented. Hyperfunction of the larynx correlates with nodule size. The severity of hoarseness, breathiness, straining and aphonia correlates with the size of vocal nodules.[11] On laryngeal examination, it was observed that hyperfunctional dysphonia was present in 26.7% of patients, phonasthenia in 16.7%, vocal fold (VF) polyp in 13.3% and contact granuloma in 6.7%. Prevalence of pharyngeal acid reflux events is significantly higher in patients with vocal cord nodules compared with normal controls and suggests a contributory role for gastroesophagopharyngeal acid reflux in the pathogenesis of some vocal cord nodules.[12] The severity of hoarseness, breathiness, straining and aphonia correlates with the size of vocal nodules.[11] Also, some patients of GERD complain of atypical symptoms such as hoarse voice, chronic cough, adult-onset asthma or vocal cord polyps.[7] Pharyngeal acid exposure was significantly more prevalent in patients with contact granuloma than in healthy controls.[13] Idiopathic or contact granulomas are more frequent in the males. They are the result of vocal laryngeal hyperfunction, habitual throat clearing or cough-like throat clearing. Gastro-esophageal reflux of gastric juice, coughing or throat clearing may injure the mucosa. Symptoms, when

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present, are dysphonia, tiredness during or after voicing, bolus, laryngeal unilateral pain, sensation of something in the throat which is mobile during breathing and swallowing, traces of blood in the expectoration.[14]

In the present study upper gastrointestinal endoscopies revealed the presence of GERD in 63.3% of patients, GERD with acute gastritis and duodenitis in 10% and incompetent lower esophagus in 6.67% of patients.

A sliding hiatus hernia disrupts both the anatomy and physiology of the normal antireflux mechanism. It reduces lower oesophageal sphincter length and pressure, and impairs the augmenting effects of the diaphragmatic crus. It is associated with decreased esophageal peristalsis, increases the cross-sectional area of the esophago-gastric junction, and acts as a reservoir allowing reflux from the hernia sac into the oesophagus during swallowing. The overall effect is that of increased oesophageal acid exposure. The presence of a hiatus hernia is associated with symptoms of gastroesophageal reflux, increased prevalence and severity of reflux esophagitis, as well as Barrett's oesophagus and oesophageal adenocarcinoma. So, the hiatus hernia has major pathophysiological effects favoring gastroesophageal reflux and hence, contributing to oesophageal mucosal injury, particularly in patients with severe gastroesophageal reflux disease.[15]

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