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OTOLARYNGOLOGICAL MANIFESTATIONS OF GASTRO-OESOPHAGEAL REFLUX DISEASE

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Summary

Gastro-oesphageal reflux disease (GORD) is a multifactorial process whose importance lies in its ubiquity, diverse clinical presentation and potential morbidity. GORD is the most common disease affecting the oesophagus, the major indication for antacid consumption, and probably the most prevalent condition originating from gastrointestinal tract. This report is highlight of selected topics discussed the otolaryngological aspects of GORD, which were raised in recent years, the topics discussed included: manifestations, investigations and treatment of these GORD related ENT problems.

Introduction

Gastro-oesophageal reflux disease (GORD) is the term now used to encompass all the manifestations of exposure of the oesophagus to gastric acid[1]. Although a small amount of reflux is physiological[2,3], oesophageal acid exposure can lead to oesophagitis, stricture, bleeding and oesophageal adeno-carcinoma[4-7]. GORD has been implicated in numerous respiratory tract disorders, including sinusitis, laryngitis, recurrent pneumonia and apnoea[8]. It can lead to unexplained dental erosions, chronic unexplained cough, vocal nodules, Reinke's oedema, contact ulcer and granuloma, laryngeal stenosis and paroxysmal laryngospasm[9-11]. Symptoms are mediated through gastric acid induced mucosal inflammation with oedema and through stimulation of protective airway reflexes[8]. The mechanisms involved with GORD includes the lower oesophageal sphincter (LOS), oesophageal clearance, gastric volume and emptying. Incompetence of LOS stands as the single most important factor in GORD. Prompt oesophageal clearance diminishes contact time with mucosa and minimizes deleterious effects. The clearance mechanism depends on gravity, oesophageal peristalsis and salivation. Because reflux depends on reservoir of gastric fluid, the volume of fluid and the rate of gastric emptying are other determining factors in the frequency and severity of GORD[12]. Laboratory studies have suggested that diet, cigarette smoking, alcohol intake,

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and body weight can promote reflux[13]. Genetic factors may be important, case series have reported several family members with GORD[14,15]. The symptoms of heartburn and acid regurgitation can be used to make the diagnosis of GORD, without the need for additional tests[16]. Determination of the symptomatic response to 40 mg of omeprazole for 14 days is a simple and inexpensive tool for the diagnosis of GORD, with a sensitivity and specificity comparable to 24 hours pH monitoring[17].

GORD and ENT Problems

The first report in the otolaryngology literature of the effect of GOR on the larynx (contact ulcer and granuloma of the larynx) was those of Cherry and Mrgulies in 1968[18]. Since that time, GOR has received increasing attention as a possible co-factor in laryngeal disorder and carcinogensis[19,20]. Subsequently, studies estimated that 10% of persistent coughers, 5% -10% of patients with hoarseness, 25%-50% of patients with globus sensation, and a small but definite group of patients with laryngeal cancer have GORD as a primary aetiological factor [21]. In addition, ear, nose and throat complaints may be the sole manifestation of GORD contributing to the difficulty in determining the true frequency of this atypical presentation of reflux disease [22].

Clinical presentation

Acid related ENT problems include hoarseness, chronic cough, throat clearing, chronic laryngitis, globus syndrome, vocal cord granulomas, laryngeal and tracheal stenosis, aspiration syndromes and carcinoma of the larynx, other less common presentations include, soreness of the mouth, halitosis, sore throat, otalgia, stridor and abnormal or loss of taste[22]. Chronic exposure of the oral cavity to gastric acid predominantly causes dental changes these changes are erosion, attrition and abrasion [11].

Hoarseness

Hoarseness is the perceived rough quality of the voice, this rough quality can be caused by structural changes within the larynx or by functional abnormalities[23]. There are many studies concluded that chronicaly hoarse patients with no detectable cause, the majority of these patients had abnormal 24-hour oesophageal pH studies. Thirty-three patients with chronic hoarseness not responding to conventional therapy were studied by Weiner et al[24], he found 26 (79%) of these patients had abnormal 24-hour oesophageal pH studies. McNally[25]study showed (55%) of hoarse patients with no detectable cause had abnormal pH studies, Katz[26] studied 10 patients who were referred because of suspected reflux-induced hoarseness, and 7 (70%) patients had abnormal oesophageal acid exposure.

Chronic laryngitis and Sorethroat

Of all the causes of non-infectious laryngitis in adults, reflux disease is probably the most common, it has been estimated that as many as 50% of patients with laryngeal complaints have reflux related causes [27]. For many years clinicians have looked for "posterior laryngitis" (piled up interarytenoid mucosa and erythematous arytenoids) as the principle finding in reflux disease, however, oedema (and not erythema) is the principals finding in reflux disease[27].

The most common findings of laryngopharyngeal reflux are effacement of the ventricles by the swollen false and true vocal cords, so called ventricular obliteration and subglottic oedema[28]. Forty-three patients with a history of contact ulcers were studied by Ohman et al[29], more than 50% had abnormal

exposure time by pH monitoring and this is comparable to the study performed by Koufman [30].

Chronic cough

Cough is one of the most common symptoms for which patients seek medical attention, most illnesses associated with cough are due to self-limited viral upper respiratory tract infections. When cough becomes chronic, the otolaryngologist may be consulted for more extensive evaluation[8]. Coughing may present as a nonspecific symptom from stimulation of cough receptors and this stimulation may occur in reflux disease[8]. After sinus problems and asthma many studies suggest that GORD is the third leading cause of chronic persistent coughing[31]. Batch and Thompson [32] reported on seven patients primarily with nocturnal coughing, their symptoms improved with antireflux treatment. Other study reported that 15 of 20 patients with chronic cough of unknown aetiology also had typical symptoms of reflux disease[23,] Koufman[30] found a relatively low incidence of GORD defined by 24 hour pH monitoring in patients with chronic cough (13 of 25 patients) 52%.

Stridor

Stridor is the harsh sound produced by turbulent airflow through the upper airway. This turbulence is caused by a narrowing of the airway[33]. One of the most common causes of obstructive laryngitis is reflux disease so if the infant or child develops obstructive laryngeal inflammation and there are no definitive signs of infection, GORD should be considered the most likely diagnosis [27]. Toohill and Kuhn[10] found a close relationship between GORD and reflux laryngitis, laryngeal stenosis and laryngospasm. In 1983 a study performed on several patients with stridor, intra-oesophageal acidification resulted in recurrence of symptoms in three of five children undergoing evaluation of chronic and intermittent laryngospasm, in these patients anti reflux therapy resulted in clinical improvement[34].

Reactive Airway Diseases

Many studies demonstrate that there is a causal relationship between reactive airway diseases of children and gastro-oesophageal reflux, the incidence of reflux range from 43% to 63%[34], Martin et al[35] found a close relationship between wheezing and reflux and he performed an experiment of intra-oesophageal acidification, the result of this experiment was a broncho-constriction. Boyle et al[36] suggested that all patients with reflux-induced broncho-spasm have oesophagitis. Nocturnal wheezing or coughing, poor response to medical therapy for asthma, lack of family history of atopy, and early onset of reactive airway disease characterize the individual who may have reflux related asthma[34]. Recurrent attacks of pneumonia[37], attacks of asthma and apnoeaic episodes resulting in near- miss sudden infant death syndrome have been ascribed to aspiration of gastric contents[38]. Neer-miss sudden infant death syndrome results from either laryngo-spasm or reflux bradycardia [39].

Globus pharyngis

Globus sensation, a feeling of something in the throat, from the Latin globus, a ball, was observed by Hippocrates and constituted the graphic "suffocation of the mother" which was known to Shakespeare and was one of the definitive symptoms of hysteria in the seventeenth century[40] .

Using the barium meal to diagnose gastro-oesphageal reflux disease, several authors have found gastro-oesphageal

reflux in approximately 80%-90% of patients with globus.

Batch[41] in1988, concluded that pH monitoring in globus sensation was reflux related on 60% of patients, other well performed study, however, fail to document a high prevalence of gastro-oesphageal reflux disease in patients with globus, for example, Wilson and colleagues[42] found that only 7 of 49 (14%) patients with globus had abnormal 24 hour pH studies, whereas 6 (12%) had endoscopic evidence of oesophagitis.

In summary, globus pharyngis is a non-specific symptom of throat discomfort that encompasses a wide variety of otolaryngological pathologies, GORD, as a cause of globus pharyngis should be considered as a prime suspect in many patients.

On the basis of careful history, physical examination and 24- hour pH probe studies, patient with GORD should be able to be correctly identified and treated with greater certainty.

Carcinoma of the larynx

Although reflux has not yet been proven to be a carcinogenic co-factor, it is clear that reflux may cause acute and chronic laryngeal inflammation. . The evidence that there may be a connection among smoking, reflux, inflammation and malignant degeneration started to accumulate[43]. In 1988, a causal relationship among reflux, inflammation, and laryngeal carcinoma in non-smokers was found by Morrison[20]. Olson[44] in 1997 concluded that there is a strong suspicion among clinicians that reflux of stomach or upper intestinal substances (bile, pepsin, acid) lead to cancer in the areas exposed to or bathed by these materials. The interested study was that of Koufman and Cummins[45], in 1995, they reported reflux-testing results for 50 consecutive, prospectively studied patients with early laryngeal squamous cell carcinoma. Thirty-three of them had abnormal pH studies, and additional 5 patients i.e. 38 of 50, had documented reflux by radiographic detection, and this result is significant because smoking appeared to be not significant as additional co-factor only 44%were current smokers (22 of 50), 42% were ex-smokers with a median duration of smoking cessation of 8 years (21of 50), and 14% were lifetime nonsmokers (7 of 50).

Diagnosis of GORD –related ENT problems

There are several methods commonly used in the diagnosis of GORD with the barium meal being the oldest study followed by oesophageal pH measurement and scintigraphy. Manomatrey, although useful in identifying the site of lower oesophageal sphincter, the study of mechanism of reflux and possible associated oesophageal motility disorder, is not considered a diagnostic method for GORD. Similarly, endoscopy is useful in the diagnosis of complications but it is not a diagnostic study for reflux per se. More recently, ultrasonography has been reported to be useful in the diagnosis of reflux disease[46] .

Laryngeal examination

The most common laryngeal abnormalities seen with GORD related disease include erythema and oedema of the cricoarytenoid fold or the posterior portion of the true vocal cord, these are the hypo-pharyngeal regions in closest proximity to the proximal oesophagus[18,22,28]. Chronic acid reflux also may produce leukoplakia, contact ulcers of the larynx, vocal cord granulomas and ulcers, vocal nodules, Reinke's oedema and even carcinoma[10,28].

Oesophageal pH monitoring

Twenty -four hour pH monitoring can provide significant information about patients in whom reflux is suspected, this test is sensitive in confirming the presence or absence of GOR[12,27,47]. In this test, a small volume of 0.1 M HCL is instilled into the stomach, a special electrode is placed in the oesophagus and the pH is recorded while the patient perform various maneuvers like coughing, deep breathing, and the valsalva test in various positions. A fall in pH to below 4.0 is taken as indicator of reflux disease[47].

Treatment of GORD related ENT problems

Persons with reflux should avoid lying down after meals and elevate the head of the bed on blocks (6-8) inches (15-20) cm high. Weight reduction and avoiding fatty foods are helpful, as are smaller meals. Other measures include avoidance of substances that lower LOS pressure, such as chocolate, fat, peppermint, cigarettes, and coffee. Potentially harmful medications like nitrates, theophylline and calcium channel blockers which may lower LOS pressure, as well as doxycycline, quinidine, and nonsteroidal anti-inflammatory drugs (NSAIDs), which may induce mucosal injury[12,27]. Most treatment studies have involved anti-reflux measures such as antacids after meals, however, most physicians initiate treatment with H2-antagonists, proton-pump inhibitors, and promotility agents[12,19,22,49]. Proton-pump inhibitors like omeprazole and lansoprazole are often used as a first-line medical treatment for GORD related ENT problmes[12,28]. Hallerback et al[49] found that proton-pump inhibitor is superior to the H2 antagonist both as a primary treatment and as maintenance therapy. The studies of the choices of treatment are many, Kamal et al[50] studied 15 patients with a 3- months history of laryngeal symptoms and reflux laryngitis using omeprazole 40 mg at bed time at least for 6 month, significant improvement of laryngeal symptoms occurred but this took longer time than the improvement of oesophageal symptoms. Koufman[30] found that 85% of his patients with GORD related ENT problem got benefit from H2 antagonist therapy (Ranitidine 300 mg three times per day) for 6 months. Surgery is reserved for patients who fail medical therapy. Patients committed to a lifelong coarse of medical therapy are often considered for anti reflux surgery. Diagnostic work up, including oesophageal manometry should always be performed prior to anti reflux surgery to exclude any concomitant motility disorders. The most commonly performed anti reflux surgery in United State is the Nissen-fundoplication, this type of surgery provided more effective remission than continuous medical therapy in patients with sever oesophagitis over a 2-year period[12].

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