Intermittent Airway Obstruction Caused by a Laryngeal Cyst Masquerading as Asthma Attacks

Yoon Kyoung So, MD

Department of Otorhinolaryngology-Head and Neck Surgery, Ilsan Paik Hospital, Inje University College of Medicine, Goyang, Republic of Korea

－ ABSTRACT －

Laryngeal cysts are uncommon and account for approximately 5% of all benign laryngeal lesions. Airway obstruction associated with laryngeal cysts has rarely been reported in adults. We report the first case of a laryngeal cyst causing sudden airway obstruction in an adult patient with asthma. A 70-year-old man who had been recently diagnosed with asthma presented to an emergency room (ER) with sudden dyspnea and a choking sensation. These symptoms disappeared soon after arrival to the ER but recurred several days later, again spontaneously resolving without medication or further treatment. Interestingly, a pedunculated laryngeal cyst was diagnosed incidentally by esophagoduodenogastroscopy and was completely removed by CO_2 laser. Laryngeal cysts should be considered in the differential diagnosis of patients with asthma who show the unusual symptoms of airway obstruction. **(J Clinical Otolaryngol 2015;26:117-120)**

KEY WORDS : Cyst · Asthma · Airway obstruction · Dyspnea · Larynx.

Introduction

Laryngeal cysts arise as a consequence of mucus retention within the submucosal glands or mucosal dilations of saccular larynges.[1] They can occur at any site of the larynx and at any age. Symptoms can vary depending on the size of the cyst and the age of the patient. In most cases, patients are asymptomatic, but symptoms may include hoarseness, dysphagia, or neck swelling. Airway obstruction associated with laryngeal cysts has been frequently reported in infants due to their small airways,[2-6] but is rarely seen in adults.[7] Therefore, the diagnosis of laryngeal cysts is often difficult and relies largely on clinical suspicion. Moreover, in adult patients with other airway diseases such as asthma or chronic obstructive pulmonary disease, diagnosing a laryngeal cyst is further complicated. Missing the diagnosis of this disease may result in fatal outcomes. We present the first case of a laryngeal cyst coexisting with newly diagnosed asthma.

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교신저자 : 소윤경, 411-706 경기도 고양시 일산서구 주화로 170
인제대학교 의과대학 일산백병원 이비인후과학교실
전화 : (031) 910-7250 · 전송 : (031) 910-7219
E-mail : hn0131@paik.ac.kr

Case Report

A 70-year-old male patient with a 74 pack-year smoking history presented with persistent dyspnea for several hours. Oxygen saturation by pulse oximeter (SpO_2) was 94%. Wheezing was present over all lung fields, and no active lesions were found on chest X-ray. Pulmonary function testing showed a mild obstructive lung defect with full bronchodilator response (increase of FEV1 from 2.59 L/85% to 3.02 L/99%). Total IgE was 277 IU/mL and allergen specific IgE tests (MAST) were positive for *Dermoides farinae and Dermoides pteronyssinuswas,* class 4 and 3, re-

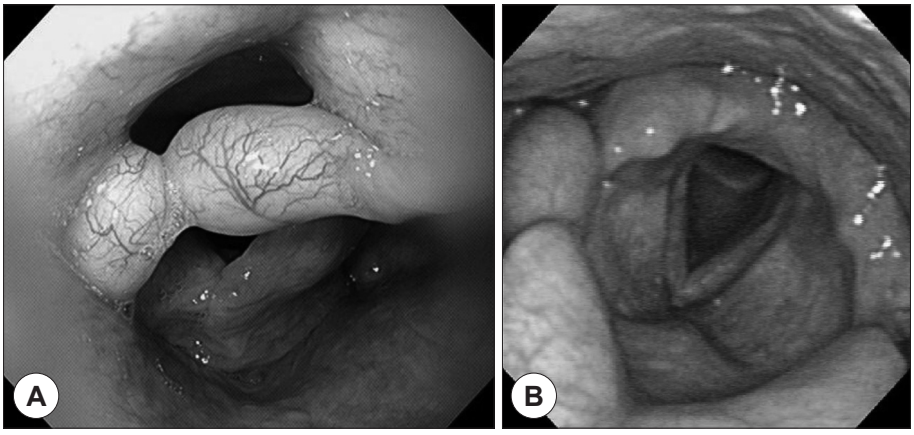

Fig. 1. A : With esophagoduodenoscopy (EGD), a pedunculated laryngeal cyst was detected. The cyst originated from right aryepiglottic fold and obstructed the laryngeal inlet partially. B : When examined by tele-laryngoscopy, the laryngeal cyst was much smaller. There was not airway obstruction by the laryngeal cyst.

spectively. Asthma was suspected. After two days of nebulized bronchodilator treatments and systemic steroid, his symptoms almost normalized and wheezing was no longer appreciated on physical exam. He was discharged with a steroid/bronchodilator inhaler and an oral steroid. One day after discharge, he revisited the emergency room (ER) with sudden dyspnea and a choking sensation for 4 hours. However, his symptoms disappeared spontaneously soon after arriving at the ER. Auscultation revealed faint wheezing in the right lower lung field and SaO2 of 97%. The patient was admitted to the hospital for close monitoring, and again developed an abrupt choking sensation later during the admission. At that time, oxygen saturation was found to be 94%, but a bronchodilator nebulizer could not be applied due to patient irritability. However, the symptom disappeared spontaneously after several minutes without intervention. The treating physician suspected gastroesophageal reflux disease or emotional instability after smoking cessation. Esophagogastroduodenoscopy was done, and a laryngeal cyst was detected incidentally. The cyst was pedunculated and partially obstructed the laryngeal inlet (Fig. 1A). However, when examined by an otolaryngologist, the cyst had changed in appearance and had substantially decreased in size (Fig. 1B). A neck computed tomography (CT) scan showed a small cystic mass originating from the right aryepiglottic fold. The cyst was completely removed using a CO_2 laser without rupture. Pathology review revealed a laryngeal ductal cyst. The cyst was lined with stratified squamous epithelium and filled with abundant inflammatory cells, including histiocytes and neutrophils. Beneath the epithelium, there was a fibrous stroma with lymphocytic infiltration. The patient was discharged the day after the surgery without any problems. One month later, the diagnosis of asthma was confirmed by a Mannitol provocation test. The patient has been followed without evidence of recurrence of the laryngeal cyst for 4 months.

Discussion

Laryngeal cysts are an uncommon disease and account for approximately 5% of all benign laryngeal lesions.[8] While mostly asymptomatic, laryngeal cysts have sometimes been reported to cause sudden airway obstruction and death. Cases of fatal airway obstruction associated with laryngeal cysts have been predominantly reported in infants due to small airway caliber. On the other hand, reports in the adult population are rare.[7] However, there have been several autopsy reports on the sudden death of adult patients with laryngeal cysts.[9-11]

The diagnosis of laryngeal cysts relies largely on

clinical suspicion, particularly in cases of acute dyspnea. Moreover, laryngeal cysts coexisting with other respiratory diseases are difficult to diagnose. In this case, the patient was recently diagnosed with asthma and revisited the ER with sudden dyspnea. Although upper airway obstruction caused by a laryngeal cyst is fundamentally different from asthma symptoms, upper airway disease such as vocal cord dysfunction or a laryngeal cyst is not readily suspected in patients with a history of asthma in an ER setting. In fact, even without coexisting asthma, laryngeal cysts rank low in possible diagnoses for patients with acute dyspnea. However, if patients do not respond to asthma medications or recover without medications, as in this case, physicians should suspect other causes of dyspnea.

In this case, the episodic nature of the presenting symptoms made the diagnosis more difficult. Episodic dyspnea is not a typical symptom of laryngeal cysts and may be confused with an asthma attack. Additionally confounding and atypical was the morphologic change seen with the cyst. By laryngoscopy, the laryngeal cyst was small and did not seem capable of causing such dramatic upper airway obstruction. If the patient had not been examined by esophagoduodenoscopy prior to laryngoscopy, the laryngeal cyst might not have been diagnosed. In this context, a diagnostic trial and suspicion for another airway disease is important when symptoms persist despite appropriate asthma management. Other upper airway diseases such as acute epiglottitis, vocal cord paralysis, laryngopharyngeal reflux, or bronchial foreign bodies can coexist and result in a diagnostic dilemma. In fact, these airway diseases are much different from asthma in terms of the nature of airway symptoms. However, when combined with asthma, the diagnosis can be difficult and other diagnostic pitfalls may exist, as in this case.

The episodic nature of dyspnea in this case may have been associated with the pedunculated structure of the cyst, which may have allowed for movement into or out of the laryngeal inlet. In terms of the decrease in cyst size, spontaneous rupture or decreased inflammation within the cyst by systemic steroids are two possible mechanisms for the observed size change.

Needle aspiration, incision and drainage, endoscopic marsupialization, and resection via external or endoscopic approaches have all been used for the removal of laryngeal cysts.[12-16] However, external approach can cause significant morbidity, while marsupialization, needle aspiration, or incision and drainage often lead to cyst recurrence.[17,18] Recently, endoscopic CO_2 laser excision has been increasingly performed when possible. This method is reliable and safe for the removal of laryngeal cysts. In this case, the laryngeal cyst was completely removed using a CO_2 laser, and there have been no symptoms of dyspnea or evidence of cyst recurrence after 4 months of follow-up.

In conclusion, we report the first case of a laryngeal cyst coexisting with asthma. Clinical suspicion of a laryngeal cyst is important for correct diagnosis, especially when the nature of the symptoms is somewhat different from those of preexisting asthma or symptoms that are nonresponsive to typical management. Diagnosing a laryngeal cyst is of great importance due to the possible fatal outcome associated with this condition. It is important to remember that a laryngeal cyst can occur at any age, with any configuration, and at any site of the larynx, and may cause severe dyspnea. Because of the dangerous nature of this condition, it is worth the consideration of practitioners.

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