Airway obstruction revealing a laryngopyocele: A case report

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ABSTRACT

AIM: To study clinical presentation and treatment of laryngopyocele
OBSERVATION: This is one of the few cases reported of an obstruction airway caused by pyolaryngocele, in a female patient with main symptoms including hoarseness, dysphagia, and shortness of breathing. Diagnosis was assessed with CT scan and direct laryngoscopy. She was treated initially with drainage of pus and antibiotics, followed by definitive surgical excision.
CONCLUSION: Laryngopyocele is a rare condition which diagnosis is based on endoscopy and CT scan. The treatment of choice is based on surgery, whether endoscopic marsupialization or external cervical approach.
KEYWORDS: laryngopyocele, Airway obstruction, endoscopy, Surgery

INTRODUCTION

Laryngocele is an air filled abnormal cystic dilatation of the laryngeal saccule that opens up into the larynx lumen. Laryngopyocele is a rare complication of laryngocele. Only 40 cases were reported in the world literature [1]. It is an infection process superimposed on a laryngomucocele leading to the formation of a laryngopyocele, a nosological entity which has not been thoroughly described [2].
It can be internal when it extends medially to enter the supraglottic space, external when it extends laterally through the thyrohyoid membrane manifesting a neck mass, or mixed where it combines both entities. It is usually asymptomatic. Rarely, it can cause an airway obstruction and becomes life threatening condition [3]. Only 4 cases of laryngopyocele have been reported to be responsible for an acute airway obstruction [1]. Through our case report, we aimed to describe clinical presentation and treatment of laryngopyocele.

CASE REPORT

A 96-year-old female patient with history of hypertension and diabetes, presented to our department with an acute onset of dyspnea. She also complained of progressive hoarsness and mixed dysphagia evolving since six months. There were no other complaints.
On examination, there was no cervical swelling. Flexible endoscopy of the larynx showed a right smooth supraglottic bulging mass repelling the right vocal cord and narrowing the laryngeal inlet.
Laboratory investigations revealed white blood cell count of 13000 and C- reactive protein of 22.
The CT scan demonstrated a 20*25 mm cystic mass in the supraglottic region, above the level of the right vocal cords, causing partial obstruction of the airway.Thickening of the walls was demonstrated and the lesion was confined within the larynx. (figure1)

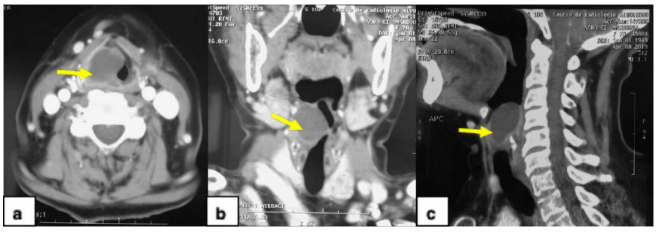

Figure 1 : axial (a), coronal (b) and sagittal (c) CT scan of the neck : showing internal right side laryngocele filled with fluid, with thickening of the walls obstructing the airways

The diagnosis of internal laryngopyocele was strongly suspected. The patient was firstly treated with cortisone and intravenous antibiotics with a good response and regression of the dyspnea.
Direct laryngoscopy confirmed the diagnosis of laryngopyocele which originated in the right ventricle. No visible neoplasm was noted. A marsupialization was recommended. The laryngopyocele was drained (figure 2).

The bacteriological examination revealed a Staphylococus Aureus. Histological examination of the sample showed a necrotic tissue without any sign of malignancy.

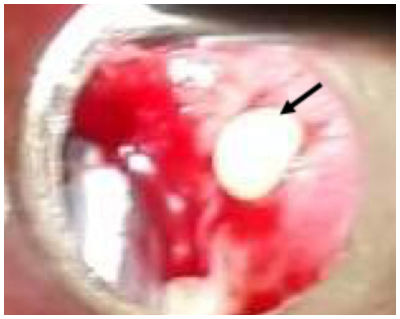

Figure 2 : incision of the laryngopyocele mucosa and drainage of the pus.

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The postoperative course was unremarkable.
The patient recovered and was discharged home 7 days later, with significant improvement of breathing, swallowing, and voice quality.

DISCUSSION

A laryngocele is a rare condition with an estimated incidence of 1 in 2,5 million people annually [3-5]. It is about 5 to 7 times more frequent in men than women [4]. This entity is usually diagnosed in patients in the sixth decade [4]. Its etiology is still unclear, but it is thought to have a congenital predisposition (represented by a large ventricular appendix), which is influenced by factors like coughing, straining, singing, glass blowing, playing wind instruments or any other factor that increases intralaryngeal pressure [6]. Laryngoceles may extend internally into the airway or externally through the thyrohyoid membrane. Thus, they may have internal, external or mixed presentation [6]. In our case, the laryngocele have internal presentation. The bilateral form is much more uncommon than the unilateral form [4,7]. An association between laryngocele and carcinoma of the larynx has been reported [2,8]. Celin et al. reported an incidence of laryngoceles concurrent with squamous cell carcinoma of the larynx as 4.9–28.8% [7].
Laryngopyocele is an infectious complication which constitutes 8% of all laryngoceles [5]. It is due to stasis of the glandular secretions and the subsequent bacterial infection [2].
The most common pathogens involved are Escherichia coli, Haemolytic Streptococcus B, Staphylococcus aureus, and Pseudomonas Aeruginosa [3]. The pathogen detected in bacteriological examination of our patent pus was staphylococcus aureus.
As the fundamental symptom is dysphonia , other symptoms can be present such as dysphagia, dyspnea, cough, sensation of a foreign body, and fever depending on the size and extending of the laryngocele [5]. The signs differ depending on the type of laryngocele. While the external form may cause neck tumefaction, the internal form may cause airway symptoms. In our case, the main complaints were dyspnea and hoarsness.
It becomes a life threatening condition when it obscures the airways. It may even require urgent tracheotomy.
Only 4 cases of laryngopyocele with acute airway obstruction have been reported in previous reports [1].
Laryngoscopy is not always contributive in purely external forms. However, in the internal and mixed forms, laryngoscopy can reveal submucosal tumefaction of the ventricular band and aryepiglottic fold [2].
The cervical CT scan is the best imaging method that enables diagnosis, and defines the spatial relationship with different structures of the larynx. It can also differentiate between laryngopyocele and other cystic formations. It can also identify the coexistence of a laryngeal cancer .
A review of the current literature reveals that there is no clear consensus on how to manage this entity, due to its rarity.
Acute presentations need urgent drainage to reduce the mass effect, and antibiotics to defeat the culprit bacterial pathogens. As it is evident, surgery is the treatment of choice to prevent recurrence [6].
For the treatment of internal laryngopyocele, an endoscopic decompression with marsupialization is recommended. The endoscopic manegement is a minimally invasive procedure that preseves the airways and voice, and reduces morbidity. It consists in a vestibulectomy and pus aspiration. The marsupilization may be performed first by avulsion of the cyst dome followed by stripping of the cyst wall. Laser surgery has recently been more used because it shows no evidence of respiratory distress, and less destruction of the laryngeal tissues. It is performed transendoscopically and requires less postoperative care.[9,10].The inconvenient of this procedure is the significant rate of recurrence.[10].
For external and combined laryngopyoceles, an additional external approach is mandatory [10]. Careful dissection of the neck, in the case of an external laryngocele sac, is important to prevent damage to the neurovascular bundle which penetrates the thyro-hyoid membrane at the site of penetration of the external laryngocele [8]

CONCLUSION

Laryngopyocele can present with rapid and alarming obstruction of the airway. It must be suspected especially when the dyspnea is associated with hoarsness, stridor and fever. CT scan is necessary in diagnosis, determining the site and the extending of the lesion. The surgical excision is the definitive management following antibiotics and pus drainage.

Competing interests: The authors declare no competing interests.

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