CASE REPORT

An unusual presentation of an infected vallecular cyst presenting as supraglottitis

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SUMMARY

A 50-year-old gentleman presented to the emergency department with a 24 h history of stridor, dysphonia, dysphagia and vomiting. On examination, the patient had fever and tachycardic. There was no palpable cervical lymphadenopathy. Flexible nasendoscopy and lateral neck x-ray revealed soft tissue swelling around the epiglottis. The swelling subsided with conservative management of intravenous antibiotics and steroids, only to later reveal a vallecular cyst, which was confirmed on microlaryngoscopy. The cyst was subsequently deroofed and sent for biopsy. Histological examination revealed an infected, benign vallecular cyst consisting of a squamous epithelium with underlying lymphoid tissue. In adults, vallecular cysts are usually asymptomatic, but can become infected and initiate acute supraglottitis, potentially leading to life-threatening airway obstruction. The case described here, although rare, highlights how early definitive diagnosis and management of vallecular cysts can lead to significantly improved patient outcomes.

BACKGROUND

Vallecular cysts, although usually asymptomatic, can become infected and affected patients present with stridor, dysphonia and dysphagia usually via the emergency department to ear, nose and throat (ENT) surgery. Although vallecular cysts are considered to be benign, self-limiting lesions of the larynx, they may be associated with airway obstruction owing to obstruction of the laryngeal inlet.¹ Vallecular cysts can become infected and initiate acute supraglottitis, and therefore may mimic other obstructive airway diseases leading to misdiagnosis by clinicians.² Early diagnosis of vallecular cysts and airway management may reduce patient's morbidity and mortality.³

CASE PRESENTATION

A 50-year-old gentleman presented to the emergency department with a 1-day history of stridor, dysphonia, dysphagia and vomiting. He had repeated unproductive coughing episodes. After two episodes of vomiting, he later developed a hoarse voice and experienced intermittent rigours. There was no history of recent weight loss, otalgia, malignancy or respiratory tract infections and no medical or family history of note. He had a 35 pack-year smoking history.

On examination, the patient had fever 38°C, tachycardic at 122 bpm and tachypnoeic with a respiratory rate 26 and oxygen saturation 93% on air. The patient had inspiratory stridor and

decreased chest expansion, but vesicular breath sounds on auscultation of the chest. There was no palpable cervical lymphadenopathy and no obvious abnormality seen in the oropharynx. Flexible nasendoscopy revealed marked supraglottic swelling. However, his airway was not immediately compromised and admission to the intensive care unit for airway observation or intubation was not indicated. Systemic examination was otherwise unremarkable.

INVESTIGATIONS

A lateral soft tissue neck x-ray in the emergency department demonstrated swelling around the epiglottis, with no obvious foreign body. A full blood count revealed an elevated white blood cell count of $18.32 \times 10^9/l$ with neutrophilia $14.77 \times 10^9/l$. C reactive protein was elevated at 56 mg/l. All other blood tests including clotting screen, renal function and liver function were within the normal range.

DIFFERENTIAL DIAGNOSIS

Acute supraglottitis should be considered in the differential diagnosis of a patient who presents with stridor, respiratory distress, tachycardia and a raised white cell count.⁴ Supraglottitis is a bacterial infection of the supraglottic structures, which produces inflammation and can result in life-threatening upper airway obstruction.^{4 5}

Considering a differential diagnosis of infected vallecular cysts in the context of acute airway obstruction can help initiate early management and improve patient outcomes.

Other conditions that must be considered are malignancy of the supraglottis, glottis and tongue base areas. If malignancy is suspected, cross-sectional imaging with CT scanning should be considered subject to the patient's airway status.

TREATMENT

The patient was treated conservatively with intravenous dexamethasone, cefuroxime and metronidazole. He clinically improved with conservative management, with the supraglottic swelling eventually subsiding to reveal a vallecular cyst (figure 1). This was then confirmed on microlaryngoscopy, where the vallecular cyst was subsequently deroofed and biopsies sent for histological examination.

OUTCOME AND FOLLOW-UP

Histological examination of the excised cyst (measuring $20 \times 10 \times 5$ mm) revealed benign, squamous epithelium with the underlying lymphoid material showing prominent reactive germinal centres

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Figure 1 Vallecular cyst at microlaryngoscopy.

(figure 2). A part of the tissue towards the base of the specimen comprised a layer of granulation tissue with evidence of haemorrhage. There was no evidence of minor salivary gland tissue. These features are characteristic of a benign vallecular cyst.

On a 4-week outpatient follow-up, he had made a complete recovery.

DISCUSSION

Vallecular cysts are classified as ductal cysts that result from the obstruction and retention of mucus in the collecting ducts of submucosal glands.^{1–6} Ductal cysts may occur at any location in the larynx lined by mucosa, with 52% of cysts originating from the epiglottis.⁶ The most common location of epiglottic cysts is the lingual surface of the epiglottis and in the vallecular space, and constitute approximately 5% of benign laryngeal lesions.⁷

The peak incidence of vallecular cysts is in the sixth decade of life with a greater preponderance in men.^{2–9} Vallecular cysts are diagnosed incidentally on routine endoscopic laryngeal examination or during rapid-sequence induction of general anaesthesia, when they cause difficulty in endotracheal intubation.^{1–10}

Although vallecular cysts are asymptomatic in two-thirds of adult patients, they can become infected and initiate supraglottitis with or without abscess formation, and cause life-threatening airway disease owing to obstruction of the laryngeal inlet.^{1–8} Patients presenting with these symptoms must be managed to ensure that their airway remains secure. Intubation or cricothyroidotomy may need to be considered if there is imminent airway compromise. Vallecular cysts may only be visible on flexible nasendoscopy once supraglottic inflammation has subsided,

Figure 2 A section showing the roof of the vallecular cyst lined with squamous epithelium embedded in the connective tissue (H&E stain, original magnification $\times 5$).

Figure 3 A treatment protocol of acute supraglottitis with or without infected vallecular cysts (adapted from Yoon *et al*¹²).

so can be easily missed by clinicians. Berger *et al*¹ found in a retrospective cohort study that vallecular cysts were frequently associated with the development of suppurative infection of the epiglottitis.

Depending on the severity of the airway obstruction, patients with infected vallecular cysts can be managed differently (figure 3). Patients at low risk of airway obstruction can be managed conservatively with intravenous antibiotics and steroids to enable inflammation to subside.⁴ Vallecular cysts can be treated using spinal needle aspiration,¹¹ although this technique does not deroof the cyst, possibly allowing future recurrence.^{1 7 9 12} The recommended treatment of choice is to deroof vallecular cysts under direct microlaryngoscopy (marsupialisation) or through resection using an endoscopic CO₂ laser.^{1 7 9 12} These procedures offer superior surgical precision and enhanced depth perception while also decreasing the incidence of postoperative pain and oedema.^{9 12}

Learning points

- ▶ Although rare, vallecular cysts should be considered as a differential diagnosis in life-threatening airway disease.
- ▶ Vallecular cysts can become infected and increase the risk of supraglottitis and airway obstruction.
- ▶ Vallecular cysts may only be visible on flexible nasendoscopy once supraglottic inflammation has subsided.
- ▶ Surgically deroofing vallecular cysts with direct microlaryngoscopy is the recommended treatment of choice.
- ▶ Patients with acute supraglottitis should undergo endoscopic follow-up examination several weeks after discharge to examine for any possible vallecular cysts.

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