Case Report

A Patient Presenting with Posterior Glottic Stenosis from an Actinomyces Infection of the Cricoid Cartilage

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Abstract

Posterior glottic stenosis is defined as a narrowing of the airway at the posterior portion of the true vocal folds, and is most commonly caused by prolonged endotracheal intubation. We report a rare presentation in a patient infected with HIV who was later diagnosed with a primary actinomyces infection of the cricoid cartilage. This case report documents an important new complication for both primary care providers and Otolaryngologists to note in treating patients with HIV. While the use of anti-retrovirals has led to a dramatic increase in the lifespan of patients, the increased prevalence of patients has yielded new associations not previously seen. As noted within this case report, patients who are infected with HIV and present with stridor or dyspnea should be referred to a laryngologist without delay. Earlier recognition and treatment with antibiotics may help these patients avoid surgery.

Keywords

posterior glottic stenosis; HIV; actinomyces

1. Introduction

Posterior glottic stenosis has been associated with a variety of causes, with injury from traumatic or prolonged endotracheal intubation being the most common [5]. It has been reported to occur in as high as 14% of patients who are intubated for more than 10 days [2]. The pathogenesis involves posterior displacement of the endotracheal tube by the tongue base which results in inflammation of the posterior glottic space and subsequent scar tissue formation [2, 4]. Fibrosis of one or both of the arytenoid cartilages can impair the mobility of the vocal folds, typically resulting in a narrowed airway, and subsequent stridor on exam [4].

Actinomyces is a filamentous, gram-positive anaerobe that is part of the oropharyngeal flora [6]. While a commensal organism in most hosts, the bacteria can become pathogenic, typically in association with prolonged mucosal damage or following trauma to the oromaxillofacial region [6]. Orocervicofacial actinomycosis can be described as a slowly progressive chronic granulomatous disease that typically presents as multiple abscesses with draining sinus tracts [3]. Although approximately 50% of all cases of actinomycosis are found within the head and neck, the disease is extremely rare overall.

Posterior glottic stenosis has been associated with laryngeal actinomycosis in less than 20 cases worldwide [1, 7]. Previous case reports have described this phenomenon in a select group of patients who had either undergone radiation to the larynx for squamous cell carcinoma, or were medically immunocompromised following an organ transplant. Other granulomatous diseases, such as tuberculosis, sarcoidosis, and Wegener’s, have also been documented as causes of posterior glottic stenosis in the U.S. but not actinomycosis [2]. Our case report elucidates a new set of risk factors for developing laryngeal actinomycosis.

2. Case presentation

A 57-year-old man with a history of HIV (compliant with HAART) presented with hoarseness and difficulty breathing for the past several months. He denied odynophagia, dysphagia, weight loss, palpable neck masses, or any history of head and neck cancer. On physical exam, the patient had audible stridor and dysphonia, and video stroboscopy confirmed both left vocal cord fixation as well as impaired mobility of the right vocal fold. The patient underwent a CT scan of the neck, which revealed severe erosion of the cricoid cartilage (Figure 1). He was subsequently started on a 10 mg dose of Prednisone and later underwent tracheotomy for protection of his airway. A biopsy of the left vocal fold done at the time of his initial operation was negative for carcinoma, but did show an evidence of granulomatous inflammation and a filamentous species consistent with actinomyces.

Several months later, the patient was taken back to the operating room to undergo a transverse cordotomy. After general endotracheal anesthesia was achieved with the laser-safe tube via the tracheotomy site, the Ossoff-Pilling microlaryngoscope was inserted into the oral cavity and used to inspect the oral cavity, oropharynx, hypopharynx, and larynx. Abnormalities were localized to the respiratory...
glottis, where a membranous band was found in the interarytenoid region. A more prominent obstruction was noted at the glottic level, resulting in a bilateral cricoarytenoid joint fixation and type 4 posterior glottic stenosis (Figure 2). The digital AcuBlade CO₂ laser was used in the scanning line mode at a depth of 4–8 to perform transverse cordotomy anterior to the vocal process to the apex of the ventricle. Following this, the vocal process and medial aspect of the arytenoid were removed flush with the cricoid cartilage on the left, which was then raised and expanded related to the patient’s infection. Once this was achieved, an improved airway was accomplished. Mitomycin C 0.4 mg/m² was then applied topically to the wound for 2 min. The patient tolerated the procedure without complication and was discharged from the hospital a day later.

3. Conclusion

With the use of broad-spectrum antibiotics and improved oral hygiene, the incidence of laryngeal actinomycosis in developed countries is believed to be in a sharp decline. Although orocervicofacial disease is the most common site of presentation of actinomycosis, laryngeal lesions are very rare. To our knowledge, this is the first case in the United States of a patient with no known risk factors who developed posterior glottic stenosis from a primary actinomyces infection of the cricoid cartilage.

According to a review of the literature, previous case reports in Turkey and France have documented this association in several patients who had either been treated with radiation for squamous cell carcinoma, or were medically immunocompromised after receiving an organ transplant. Our patient did not meet either of these criteria, nor did he have any history of prior intubation. Perhaps even more interesting, this patient’s only identifiable risk factor was his concomitant diagnosis of HIV, which had been kept under control with HARRT. This suggests that patients with HIV who have normal CD4 counts and a low viral load are still at risk of developing an infectious granulomatous process within the larynx. Furthermore, this case report also shows that actinomyces can act as pathogens in more than just the scenarios previously described. Therefore, suspicion should be high in patients who have any degree of immunosuppression and present with symptoms of an upper airway obstruction (i.e., dysphonia, stridor, etc.).

Treatment of these patients requires early recognition with a biopsy, as bacterial cultures can be negative. A biopsy can also help rule out the more common causes of posterior glottic stenosis, such as fibrosis and/or carcinoma. If caught early, treatment with Penicillin or Amoxicillin can resolve the infection and help these patients avoid surgery.

Consent  Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

Competing interests  The authors declare that they have no competing interests.

Authors’ contributions  S. E. Long III conducted the literature review and was a primary contributor in writing the manuscript. M. M. Johns III and L. A. Giraldez completed the diagnostic work-up and treatment, analyzed and interpreted the patient data, and supplied all photographs. M. M. Johns III and L. A. Giraldez were also instrumental in providing supplemental patient information and helped revise the original manuscript. All authors read and approved the final manuscript.

References


