Inspiratory dyspnea revealing a base of tongue abscess: a case report

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Abstract

Background: A base of tongue abscess is a rare but serious condition that can compromise vital prognosis due to upper airway obstruction and the septic syndrome it may cause.

Case presentation: **This case is about a** 62-year-old diabetic woman who presented with inspiratory dyspnea in the context of fever. On examination, she showed signs of respiratory distress, with an oxygen saturation of 78%, submandibular and supraclavicular retractions. Due to the impossibility of intubation, a tracheotomy was performed. Radiological exploration revealed an abscess at the base of the tongue, exerting a mass effect on the upper airways. The patient underwent endoscopic drainage of the abscess and was treated with cefotaxime, gentamicin, and metronidazole. After stabilization, the dental origin of the abscess was confirmed.

Conclusion: A base of tongue abscess is a diagnostic and therapeutic emergency to preserve vital prognosis.

Keywords: Abscess, Tongue, Dyspnea, Tracheotomy, Case Report

INTRODUCTION

A tongue abscess (TA) is an uncommon yet potentially severe condition because it can lead to airway obstruction. The tongue's unique anatomical, vascular, and muscular makeup, along with the natural antibacterial properties of saliva, play a role in its susceptibility to infection, play a key role in preventing infections. However, certain factors, such as the presence of foreign bodies or immunosuppression, can increase susceptibility to this infection. After respiratory stabilization, a cervical and facial CT scan was performed, revealing a hypodense mass measuring 45x37x35 mm at the base of the tongue, laterally shifted to the right, exerting mass effect on the airway, leaving a small patent opening. The mass did not enhance after contrast injection and was

thick wall that took up the contrast. These scan findings were consistent with a diagnosis of a base of tongue abscess. (Figure 1).

Tongue abscesses typically occur as a single, localized lesion in the front two-thirds of the tongue. However, abscesses in the posterior region, including the tongue's base, are often linked to conditions like infections of the lingual tonsils, infected thyroglossal duct cysts extending to the base, ectopic thyroid glands, or infections that spread from the roots of the upper molars. [1].

Abscesses at the base of the tongue demand special attention due to the risk of rapid respiratory failure. This condition can be life-threatening, as swelling in the tongue can quickly block the airway [2].

The available literature on this topic is primarily in the form of case reports, and the number of patient series remains limited. In this study, we present a rare case of acute dyspnea revealing a base of tongue abscess.

CASE PRESENTATION

This is a 62-year-old diabetic woman on insulin, brought to the emergency department by civil protection for progressively worsening inspiratory dyspnea over the past 24 hours in the context of fever.

Her medical history dates back one week, marked by the onset of febrile odynophagia, for which she was prescribed amoxicillin (3g/day) and Solumedrol (60mg/day). Initially, there was improvement in her symptoms, followed by a secondary deterioration. The patient became aphagic, with changes in her voice and the onset of inspiratory dyspnea, first with exertion, then at rest (without any history of foreign body aspiration).

On examination, the patient was agitated, cyanotic, tachypneic, with muffled speech, and febrile at 39°C. She exhibited inspiratory dyspnea with submandibular, suprasternal, and supraclavicular retractions. The respiratory rate was 40 cycles per minute, oxygen saturation in ambient air was 78%, blood pressure was 110/56 mmHg, and heart rate was 112 beats per minute. Pulmonary and cardiac auscultation were normal, and the Glasgow Coma Scale score was 13/15. The oropharyngeal and oral cavity examination showed no obstructive signs, only simple pharyngitis. The patient had poor oral hygiene.

Laboratory results revealed metabolic acidosis (pH=7.23; pCO2=60mmHg, HCO3=25; pO2=55mmHg), with a significantly elevated inflammatory marker (CRP=240g/L; 18,600 white blood cells/mm³). Blood glucose was 2.8g/L. Liver and renal function tests, as well as a chest X-ray, were normal.

Given the imminent respiratory distress, the patient was placed on non-invasive ventilation. However, her oxygen saturation did not improve, and the signs of inspiratory distress persisted. We decided to intubate the patient. During intubation, we observed an

inflammatory mass at the base of the tongue obstructing the pharyngo-laryngeal pathway. Due to the inability to intubate, we performed a surgical tracheotomy under general anesthesia between the second and third tracheal rings.

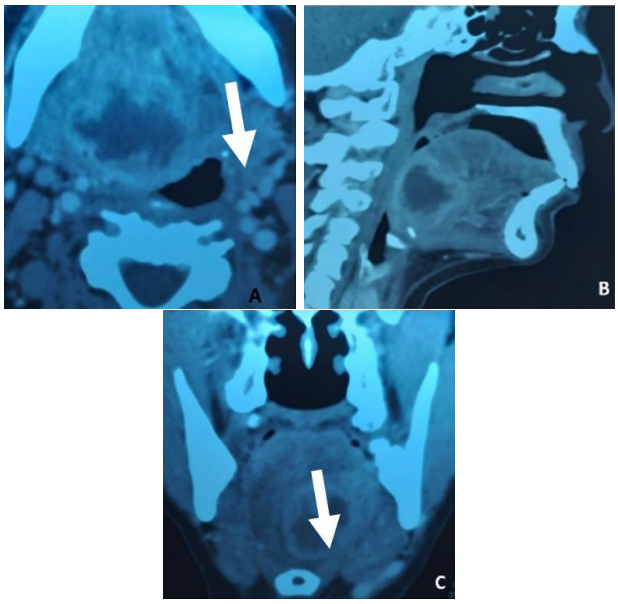

Figure 1: Cervicofacial CT scan with contrast injection; A: Axial section; B: Sagittal reconstruction; C: Coronal reconstruction.

An endoscopic drainage of the abscess was performed under general anesthesia. After puncturing the prominent area and collecting a sample for bacteriological examination, the abscess was flattened and drained.

Postoperatively, the patient was placed on intravenous antibiotics including cefotaxime (2g three times a day), gentamicin (160mg/day for 5 days), and metronidazole (500mg three times a day). The tracheostomy tube was removed after 48 hours, following an endoscopic assessment of the pharyngeal-laryngeal airway.

The bacteriological examination did not reveal any specific microorganism, while the histopathological examination concluded with a non-specific inflammatory reaction without evidence of epithelioid granuloma, caseous necrosis, or tumor cells.

The patient's progress was marked by gradual improvement of the odynophagia, resolution of the fever, stabilization of respiratory status, normalization of inflammatory markers, and stabilization of blood glucose levels. The patient remained on intravenous antibiotics for one week, followed by oral amoxicillin-clavulanic acid (3g/day) for an additional week. The dental origin of the tongue abscess was confirmed following a dental examination.

DISCUSSION

Tongue abscesses (TA) are relatively rare conditions in healthy individuals but are more commonly seen in those with compromised immune systems. This phenomenon can be attributed to the natural resistance of the tongue to infections, despite its constant exposure to various pathogens. The tongue has several defense mechanisms that play a crucial role in preventing infections. Among these mechanisms, the continuous mobility of the tongue helps facilitate its self-cleansing through saliva. Additionally, its thick, keratinized mucosa acts as an effective barrier against microorganisms. The muscle tissue of the tongue ensures a rich blood supply, which helps maintain proper immune function. Finally, the tongue benefits from an extensive lymphatic network and immune properties present in the

saliva, further enhancing its resistance to infections [3].

However, when these defense mechanisms are impaired, especially due to factors such as trauma, the presence of foreign bodies, or conditions related to immunodeficiency, the risk of infection and, consequently, the development of a tongue abscess significantly increases. Tongue abscesses can then form, affecting not only the structure of the tongue but also the overall well-being of the patient. A weakened immune defense allows bacteria or other pathogens to more easily infiltrate the tissues, leading to localized, sometimes severe infections.

The location of the abscess also plays a determining role in understanding its cause. Abscesses located in the anterior two-thirds of the tongue, also referred to as the "oral tongue," are typically unilateral and are frequently associated with direct trauma, such as accidental bites or injuries from sharp objects like fish bones. These infections often result from breaks in the mucosa, allowing bacteria to infiltrate the tissues. In contrast, abscesses in the posterior part of the tongue, particularly at the base, are often linked to infections of the lingual tonsils, infected thyroglossal duct cysts, or the spread of infections from the roots of the upper molars. These abscesses can be more challenging to diagnose due to their deeper location and potential to cause airway obstruction [4].

The diagnosis of TA relies on identifying specific characteristic symptoms. Patients often complain of painful swelling, difficulty swallowing, changes in voice, and localized tongue pain. High fever and inspiratory dyspnea can also be significant clinical signs. In severe cases, where airway obstruction is imminent, a tracheotomy may be required to restore normal breathing [5, 6]. A thorough clinical examination, including palpation, is essential for detecting the presence of an abscess, especially in the posterior region of the tongue, where these abscesses are harder to detect visually.

Several differential diagnoses must also be considered when a lingual abscess is suspected. These conditions include tumors, cysts, hematomas, hormonal disorders such as hyperpituitarism or hypothyroidism, anomalies like lingual thyroid, and conditions associated with ectopic lymphoid tissue [5]. To properly evaluate a tongue abscess, various imaging techniques can be used, such as ultrasound, computed tomography (CT), and magnetic resonance imaging (MRI). Ultrasound, although useful for differentiating abscesses from other vascular lesions, can be challenging to perform, particularly with an intraoral probe. Typically, a lingual abscess will appear as a hypoechoic lesion surrounded by a hyperechoic ring on ultrasound [5]. CT scans are particularly effective in visualizing abscesses in the posterior region of the tongue and in distinguishing external lesions from the tongue musculature [7]. MRI, on the other hand, provides excellent soft tissue resolution and is ideal for assessing the tongue and floor of the mouth, allowing for better observation of inflammatory processes

that appear as solid or cystic areas on radiological images [1].

The treatment of tongue abscesses requires several key steps, primarily ensuring the patency of the airways. If airflow is compromised, drainage must be performed. This can be done either through needle aspiration or surgical incision. If carcinoma is suspected, a biopsy of the abscess wall should be performed to rule out malignancy. It is important to note that aspiration alone is insufficient, and proper drainage must follow [1]. Abscesses smaller than 1 cm in size may sometimes be managed with medical treatment alone, without the need for surgical drainage [8]. Antibiotic therapy should be guided by Gram staining results and culture of the abscess drainage. Empirical treatment should target oral streptococci and anaerobic Gram-negative bacteria. Given the increasing resistance of certain Bacteroides strains to penicillin, alternative antibiotics such as clindamycin, ampicillin/clavulanic acid, or a combination of penicillin and metronidazole may be used. Once the patient's clinical condition stabilizes, a comprehensive dental evaluation is crucial to address any underlying dental infections that may have contributed to the development of the abscess [9].

In conclusion, while rare, tongue abscesses require prompt and appropriate management to prevent severe complications, including respiratory obstructions and systemic infections.

CONCLUSION

Lingual abscess is a rare infection that should be suspected in cases of acute tongue swelling. Delays in treatment may jeopardize the patient's life. Early treatment, including antibiotic therapy and abscess drainage, is crucial to prevent the risk of fatal asphyxiation.

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- Dr Houcem Ben Rhouma: Data collection and secondary ENT management
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