

Lingual Actinomycosis Mimicking Lingual Squamous Cell Carcinoma (SCC)

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Abstract

Actinomycosis is an infection caused by *Actinomyces israelii* and mainly affects cervicofacial areas. In women, other regions, such as the chest, abdomen, and pelvic cavity can involve actinomycosis. Actinomycosis lesions in the oral cavity can cause pain, swelling, induration, pus discharge, and discomfort similar to other benign or malignant pathologies. This condition can mimic lingual cancer, such as squamous cell carcinoma (SCC), which is highly invasive with a poor prognosis. It is necessary to distinguish actinomycosis from SCC and other malignancies to choose the proper treatment. The current study presents a patient with a suspicious lingual mass for SCC diagnosed as actinomycosis after partial glossectomy and pathological studies.

Keywords: Actinomycosis, carcinoma, squamous cell, squamous cell carcinoma

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INTRODUCTION

Actinomycosis is a sub-acute to chronic bacterial infection caused by a gram-positive anaerobic bacteria called *Actinomyces israelii*. Actinomycosis causes suppurative, widespread granulomatous disease, especially in the head and neck. The chest, abdomen, and pelvic cavity are other affected areas.^[1,2]

Lumpy jaw syndrome is the most frequent manifestation of actinomycosis in the cervicofacial area. Masses after dental procedures or poor oral hygiene can affect the tongue and present as an abscess with or without the sinus tract.^[3] Lingual involvement is a rare presentation of actinomycosis in about 3% of the cases with difficult differentiation from other tongue pathologies, especially malignancies. Tongue masses can mimic both benign and malignant lesions with

the same presentation. Therefore, the accurate diagnosis is complicated.^[4,5]

Squamous cell carcinoma (SCC) of the tongue, especially in the lateral border, is the most common cancer in the oral cavity. Due to the extensive lymphatic drainage of this area, a cancer diagnosis mostly includes regional or distant metastasis and a high mortality rate.^[6] Smoking and alcohol consumption are the most common risk factors for oral cavity cancers, especially SCC. Feeling discomfort, dysphagia, pain, and weight loss are probable symptoms. Tongue SCC prognosis is based on the disease's stage and the affected area, so the advanced tumors with basal tongue involvement are the worst.^[7-9]

This case report presents a central cervicofacial lesion diagnosed as tongue actinomycosis with rapid growth mimicking SCC in an older woman.

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CASE REPORT

A non-smoker, non-alcoholic 73-year-old female with a history of hypertension visited a general clinic in Tehran, Iran, in March 2023 with tongue swelling (about 3 mm in diameter) for four months. Her vital signs were normal except for a mild elevation in her blood pressure (125/80). She had pain, dysphagia, weight loss, and difficulty in moving the tongue. The patient did not have any recent oral trauma or dental work. She did not have oral implants or any complications due to gingivitis in her past medical records. Hematologic examinations showed a mild elevation of white blood cells, especially monocytes. Other laboratory results were normal. This swelling was small at first without any complications. In physical examination, the lesion was a 3 mm in diameter nodular lesion with an inflamed appearance. There was no sign of bite marks or other erosions. There were not any abnormal findings in near or distant lymph node examinations.

After the tongue biopsy, squamous hyperplasia along with large basophilic filamentous was reported, and the patient was given topical treatments.

Based on the clinical and pathological findings, there were a few differential diagnoses included, such as malignancies and actinomycosis. Traumatic lesions, *Nocardia*, and *Botryomycosis* were excluded according to the past medical history and pathological findings.

Gradually, the lesion starts to grow more prominent, along with purulent spots, tongue inflammation, painful swallowing, and halitosis.

Due to the clinical worsening and suspicion of malignancy (according to the clinical manifestations such as dysphagia, weight loss, and growing lesion), a partial glossectomy was done. Unfortunately, magnetic resonance imaging (MRI) was not done in this case due to the patient's claustrophobia. The patient was referred to our complex after a glossectomy. In post-surgical pathology, in Imam Khomeini Hospital, Tehran, Iran actinomycosis was reported [Figure 1].

After actinomycosis confirmation, the patient was given oral clarithromycin 250 mg daily for 6 months.

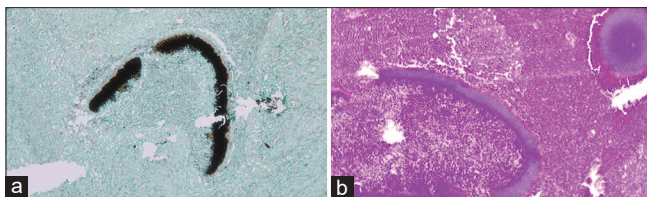


Figure 1: Post-surgical patient's microscopic images. (a) GMS stain, $\times 100$ magnification: GMS stain showed dark colonies of filamentous bacteria in a light green background. Peripheral eosinophilic club-shaped thin filaments with central basophilic areas. (b) H and E stain, $\times 100$ magnification: Inflammation surrounding filamentous bacteria along with sulfur granule formation in tonsillar tissues. Abbreviations: GMS = Grocott methenamine silver, H and E = Hematoxylin and eosin

In follow-up sessions after 1, 3, and 6 months, the patient's general condition was perfect (no reports of pain, dysphasia, or other symptoms). There was no evidence of relapsed swelling or other lesions. Due to the partial glossectomy, satisfying response to the treatment, and clinician's opinion, re-imaging was not necessary to monitor the patient's condition. Finally, the clarithromycin was discontinued after 6 months of follow-up.

DISCUSSION

Actinomycosis is a suppurative infection mainly affecting the cervicofacial area that presents with a tumor-like mass. This condition can be acute or chronic with or without pus discharge and usually occurs in patients with previous traumatic events in the area. In chronic cases, the lingual induration can have fibrosis tissues without suppuration.^[5,10] It can spread via lymphatic and blood pathways to other sites and cause severe and lethal conditions such as osteomyelitis.^[11]

Besides the cervicofacial area, abdominopelvic and thoracic regions can be affected by actinomycosis. Abdominal actinomycosis usually occurs in sustained inflammatory conditions such as appendicitis, diverticulitis, and salpingitis. There were few reports of intrauterine devices (IUD) associated with abdominopelvic actinomycosis.^[12] Thoracic actinomycosis is a very rare condition that usually occurs in those with underlying pulmonary conditions such as emphysema and bronchitis. This diagnosis should be considered in those with chronic unresolved pneumonia.^[13]

Tongue actinomycosis is primarily present with pain, swelling, foul odor, macroglossia, and discomfort, which can mimic other benign and malignant tongue pathologies.^[14,15] Tongue SCC is a malignant pathology with a high mortality rate due to late diagnosis. Therefore, tongue masses are considered malignancies while other pathological results are gained.^[16]

Exceptional imaging, such as MRI, can differentiate actinomycosis from other malignant conditions, but radiologists should be experts and familiar with different clinical and radiological presentations of actinomycosis.^[17]

High doses of intravenous penicillin G for six weeks, followed by oral penicillin V, are used for all types of cervicofacial actinomycosis treatment. Third-generation cephalosporins, macrolides, amoxicillin, and clindamycin are other treatment options for those with known penicillin allergies or other contraindications. Surgical options followed by pathological studies are critical in cases with high suspicion of malignancy, extensive fibrosis, and sinus tract formation.^[3,18] In this case, oral therapy was preferred to increase the patient's adherence to the treatment plan.

Due to frequent recurrences of actinomycosis, long-term follow-ups are vital even after treatment. There is no report of lingual actinomycosis recurrence after complete treatment, but brain abscess recurrence is reported 15 months after the complete treatment of nasopharyngeal actinomycosis.^[19]

In the presented patient, we have done a partial glossectomy due to the lack of facilities, access to advanced imaging, and the patient's clinical condition, primarily suspicion of malignancy. After pathology studies, the diagnosis of actinomycosis was made.

CONCLUSION

Tongue actinomycosis is a rare condition that mimics other benign and malignant pathological conditions. It can present acute or chronic with or without severe manifestations. Differentiating actinomycosis from other malignant diseases, especially SCC, is critical due to the high mortality and poor prognosis.

Ethics approval and consent to participate

This study has been approved by the ethics committee of the Tehran University of Medical Sciences and adheres to the Declaration of Helsinki.

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initials will not be published and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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