

Oral tuberculosis diagnosed from exfoliative cytology – two case reports

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Abstract

Oral lesions of tuberculosis though uncommon, are seen in both the primary and secondary stages of the disease. Primary oral tuberculosis is very rare and may present a diagnostic challenge for the clinician. This article presents two rare cases of oral tuberculosis manifesting as non-healing oral ulcers which were suspected to be squamous cell carcinoma on clinical examination. The cases were detected initially by exfoliative cytology of oral ulcer and subsequently confirmed by histopathological examination and Ziehl Neelsen (ZN) stain of the cytosmears. The patients underwent anti-tuberculosis therapy and the oral conditions improved rapidly. Although oral manifestations of tuberculosis are rare, it should be considered in the differential diagnosis of various types of oral ulcers with the non-healing tendency.

KEY WORDS: Oral tuberculosis, Exfoliative cytology, Histopathology, Z-N stain.

Introduction

Tuberculosis (TB) is a communicable chronic granulomatous disease caused by *Mycobacterium tuberculosis*.^[1] Tuberculosis has been the most important of human infections, in its global prevalence, devastating morbidity, and massive mortality. South-East Asia carries a disproportionate 88 percent of the world's burden of TB. India accounts for nearly one-third of the global burden of TB.^[2] Pulmonary TB is most commonly observed but all parts of the body, including the oral cavity, can be affected.^[3] It may take any form clinically, but with a decline in number, these tuberculosis lesions of oral cavity have become so rare that they are frequently overlooked in the differential diagnosis of oral lesions. Oral tubercular lesions can be either primary or secondary to pulmonary tuberculosis with secondary lesions being more common.^[4] There are about 1–1.5% cases of pulmonary

tuberculosis with associated oral cavity lesions.^[2] Primary oral lesions are rare with few reported cases. Here we report two cases of tuberculosis of oral mucosa, one was primary and the other was secondary.

Case reports

Case 1:

A 41-year-old male presented to the Department of Head and Neck Oncology, with a painful ulcerative lesion on the hard palate, right buccal mucosa and upper lip of 3-month duration with difficulty in swallowing. His initial clinical symptom was a burning sensation and subsequently ulceration. The lesion remained unhealed after conservative treatment. There was no history of cough, fever, and hemoptysis. The patient was a chronic alcoholic. The general physical examination did not reveal any abnormality. There was no lymph node enlargement. Oral examination revealed ulcerative lesion measuring 5cm x 4cm in hard palate and upper lip ulcer measuring 1.5 cm x 1 cm with an irregular border. The ulcer had an irregular margin with a slightly undermining edge (Figure 1a). Exfoliative cytology of the oral ulcer was done. Smears stained with hematoxylin and eosin showed clusters of epithelioid cells, inflammatory cells on a caseous necrotic background and reported as granulomatous lesion (Figure 1b).

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An incisional biopsy was performed under local anesthesia. Histological examination revealed granulomas composed of epithelioid histiocytes, Langhans giant cells and lymphocytic infiltrate in the subepithelial tissue (Figure 1c and Figure 1d). On smear examination of the ulcer, several acid-fast bacilli were identified using Ziehl-Neelsen stain. Complete blood count was within normal limits except a raised erythrocyte sedimentation rate which was 42mm in the first hour. Chest X-ray together with laboratory tests including coagulation profile, urea, and electrolytes, as well as renal and liver function tests were found to be within normal limits. Serological tests for HBV, HCV, HIV and syphilis were negative. ELISA for TB was positive. Hence, the diagnosis of primary oral tuberculosis was confirmed. The patient was then referred to the Department of internal medicine where he was started on anti-tubercular therapy.

Case 2:

A 47-year-old male presented to the Department of Head and Neck Oncology, with a ulcerative lesion in the hard palate with difficulty in deglutition since 1 year. On oral examination,

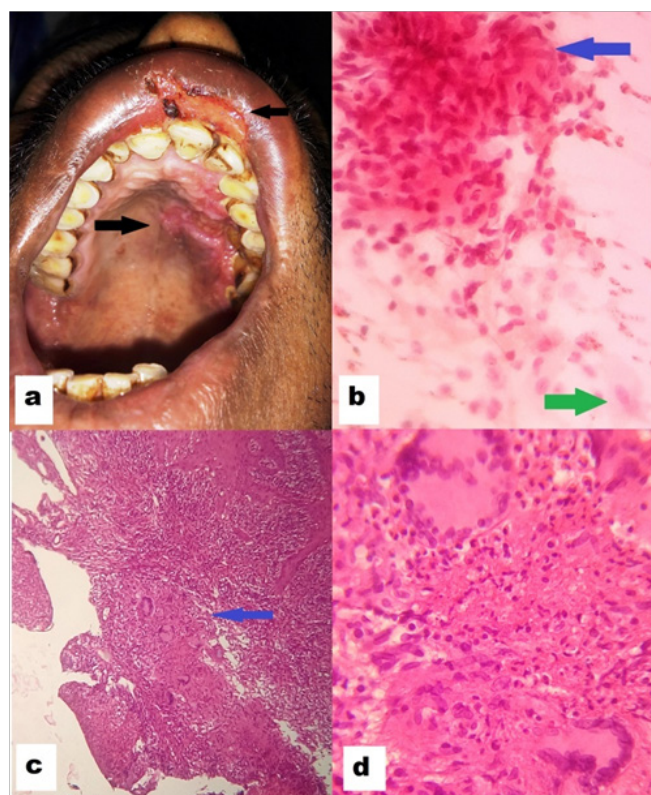


Figure 1: Primary oral tubercular lesion. (a) Photograph of case 1 showing ulcer in hard palate and the upper lip having an irregular margin with a slightly undermined edge. (b) Cytosmear showing epithelioid cells (blue arrow) and squamous cell (green arrow) (Pap, 100x). Photomicrograph (c) H&E, 40x, and (d) H&E, 400x, showing granulomatous inflammation consisting of epithelioid cells, Langhans giant cells and lymphocytes Langhan's giant cells.

there was a tender large ulcer on the hard palate and soft palate, extending up to the posterior pharyngeal wall. The ulcer had a granular surface with erythematous areas and covered with slough. The edge of the ulcer was thin (Figure 1a). There was no cervical lymphadenopathy. The patient was a chronic smoker and an alcoholic. Cytological smears taken from the ulcerated lesion stained with Papanicolaou stain was reported as granulomatous inflammation consistent with tuberculosis. An incisional biopsy from the ulcer histologically revealed granulomas consisting of epithelioid histiocytes, Langhans giant cells, and caseous necrosis. The investigations showed Hb-9.4 gm%, ESR-30 mm in the first hour. The chest X-ray showed small nodular opacities distributed throughout both lungs suggestive of miliary tuberculosis. So the patient was referred to the Department of Internal Medicine and anti-tubercular therapy was started.

Discussion

The World Health Organization (WHO) estimates that 2 billion people or one-third of the world's population are infected

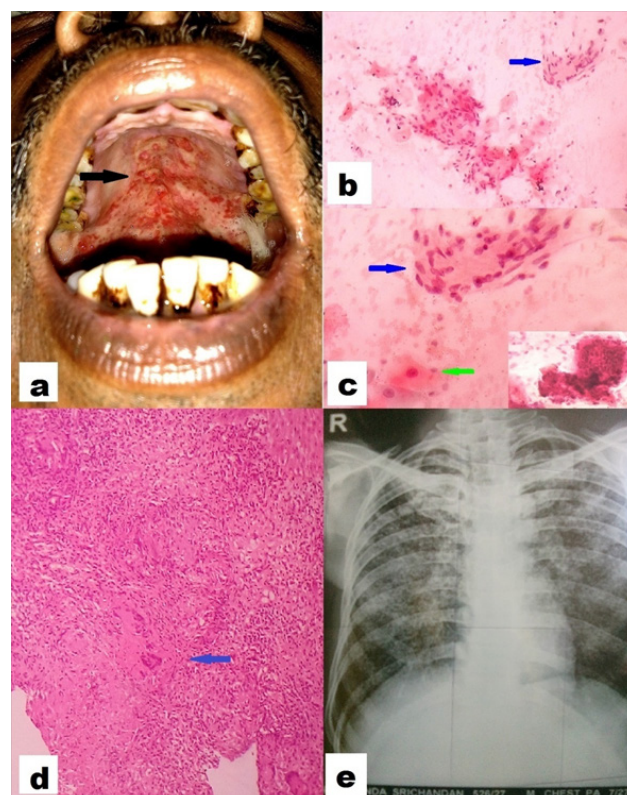


Figure 2: Secondary oral tubercular lesion. (a) Photograph of case 2 showing ulcer in the hard and soft palate. (b) Pap, 40x, and (c) Pap, 100x, Cytosmear showing epithelioid cells (blue arrow) and giant cell (inset) and squamous cells (green arrow). (d) Histopathology (H&E, 100x) showing granulomatous inflammation (blue arrow) consisting of epithelioid cells, giant cells, and lymphocytes. (e) X-ray of chest showing bilateral diffuse nodular opacities in lungs.

with tuberculosis bacilli and the global tuberculosis incidence is growing at 1% a year.^[6] Despite these staggering figures, oral tubercular lesions have a relatively rare occurrence.^[4]

The incidence of oral tuberculosis is quite rare occurring in 0.05% - 5% of all tuberculosis cases.^[2]

Oral TB may be either primary or secondary. The secondary form is observed more often than the primary one. In secondary form, the oral focus of *M. tuberculosis* infection may appear as a result of autoinfection from sputum, but a hematogenous or lymphatic route of transmission is also possible.^[3] In primary oral tuberculosis, the organisms are directly inoculated in the oral mucous membrane of a person who has not been infected.^[7] Primary oral TB is observed more commonly in children and adolescents.^[7] Oral manifestations of tuberculosis are quite rare due to the inability of *Mycobacterium tuberculosis* to invade the intact mucosa of oral cavity or pharynx. Cleansing action of saliva, the presence of salivary enzymes, tissue antibodies, oral saprophytes and the thickness of the protective epithelial covering have been proposed as the underlying mechanism.^[8] Any break or loss of these natural barriers, which may be the result of trauma, inflammatory conditions, tooth extraction or poor oral hygiene, may provide a route of entry for the mycobacterium in the primary forms of the disease.^[9]

Oral lesions of tuberculosis are non-specific in their clinical presentation and are often overlooked in differential diagnosis, especially when oral lesions are present before systemic symptoms become apparent.^[4] Aird has developed an oral TB classification basing on five different oral changes: ulcers, tuberculomas (granules that collapse forming ulcerations), tuberculous fissures, tubercle papillomas (overgrowths of the tuberculous fissure margins) and cold abscesses. Apart from ulcers, other forms of oral TB are sometimes distinguished in the literature: nodules or papules, fissures, tissue overgrowth or infiltration, periapical granulomas.^[3] The common manifestation of oral tuberculosis is an ulcerative lesion of the mucosa.^[10] Oral TB may occur at any location on the oral mucosa, but the tongue is most commonly affected. Other sites include the palate, lips, buccal mucosa, gingiva, palatine tonsil, and floor of the mouth. Salivary glands, tonsils, and uvula are also frequently involved.

Primary oral TB can be present as painless ulcers of long duration and enlargement of the regional lymph nodes^[4]. Ulcerations in secondary tuberculosis cause profound pain. Painful changes may interfere with speech and food ingestion and often cause hypersalivation.^[3] Eruptions are superficial or deep, oval or elongated, and their central part covered with a necrotic tissue may make a few millimeters deep depression. The lesion margins are irregular, undermined, indurated and ragged.^[3] The base of an ulcer may be granular or covered with pseudomembrane.^[7]

The differential diagnosis of indurated tongue ulcers includes oral cancer (squamous cell carcinoma), lymphoma, salivary gland tumors and metastatic deposits. Other non-neoplastic differentials are traumatic ulcerations, aphthous ulcers and certain infections (such as primary syphilis, histoplasmosis,

and blastomycosis). The histopathological differential diagnosis includes other orofacial granulomatous conditions such as sarcoid, Crohn's disease, deep mycoses, cat-scratch disease, foreign-body reactions, tertiary syphilis and Melkersson-Rosenthal syndrome.^[6]

The differential diagnosis is made with the identification of a caseating granuloma with associated epithelioid cells and giant cells of the Langhans type during histological evaluation of biopsied tissue. Confirmatory diagnosis of tuberculosis is the presence of Acid Fast bacilli in the specimen or can also be confirmed by culture of tuberculosis bacilli.^[4] However, exfoliative cytology of oral mucosa is an effective and rapid procedure which can also be done for detection of granulomatous lesions. The acid-fast bacilli can also be detected by Ziehl-Neelsen stain in these cytosmears. In our case, the mucosal involvement was found to be primary in the first case and secondary to pulmonary TB in the second case.

A radiological examination of the chest and a Mantoux skin test are mandatory to rule out systemic TB.^[4]

There is a delay in diagnosis due to the rarity of the condition. So clinician should be aware of mucosal TB and do the further investigations for a favorable outcome in such cases.^[2]

Conclusion

These lesions of the oral cavity can assume a non-specific clinical appearance adding to the difficulty in its early diagnosis. Therefore it should be considered as differential diagnosis in the chronic mucosal lesion in developing country like India. In this assessment, a complete physical examination should also be included, with diagnostic tests such as chest radiographs, biopsy specimens for histological studies and tests for identifying the organism. Exfoliative cytology of oral mucosa is also very effective in detecting this granulomatous lesion. Immediate referral of the patient to a specialist and prompt treatment leads to full recovery, diminishes the number of complications in the TB course and helps in controlling the spread of this potentially lethal disease.

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