

# Primary Gingival Tuberculosis, Diagnosis and Treatment: Case Report

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**Abstract:** Tuberculosis is a chronic specific granulomatous disease and a major cause of death in developing countries. The clinical presentation of tuberculosis lesions of oral cavity varies widely, including ulceration, diffuse inflammatory lesions, granulomas and fissures. Oral lesions usually appear as secondary to primary tuberculosis infection elsewhere, although primary infection of the oral mucosa by *Mycobacterium tuberculosis* has been described. We are reporting a case of tuberculosis of gingiva, manifesting as gingival ulceration in a 18 years old female patient. Diagnosis was based on histopathological examination, complete blood count, X-ray chest and immunological investigations with detection of antibodies against *Mycobacterium tuberculosis*. Anti-tuberculous therapy was carried out for over six months. This case report emphasizes the need for dentists to include tuberculosis in the differential diagnosis of various types of gingival ulcerations not responding to conventional dental treatment.

**Keywords:** Gingiva, langhan cells, tuberculosis, Antitubercular treatment, mycobacterium tuberculosis

## 1. Introduction

Tuberculosis (TB) is a chronic granulomatous infectious disease caused by *Mycobacterium tuberculosis*. Primary oral tuberculous lesions are much rarer, as early diagnosis and treatment of TB elsewhere in the body may be the reason for its uncommon presentation.<sup>1</sup> Primary oral TB lesions generally occur in young adults. Tongue ulcer is the commonest form of presentation of oral TB, followed by gingival involvement. Rare clinical presentation and increased chance of being overlooked during routine intraoral examination make it worthy of documentation. Although the incidence of disease is continuously decreasing, TB still remains a major health problem, especially in developing countries.<sup>2</sup> The purpose of this article is to emphasize the importance of early diagnosis of primary TB of oral cavity and especially of gingiva, which may be misdiagnosed when oral lesions are not associated with any apparent systemic infection.

## 2. Case report

A 18-years-old female reported to the Dental OPD with painful ulcerations of the gingiva in maxillary anterior region and palate. She complained of discomfort and bleeding from the gingiva, while eating and brushing. The patient noticed ulcerations in gingiva in maxillary anterior region about 6 months ago with mobility of maxillary right lateral incisor. The ulcerations rapidly involved adjacent regions after exfoliation of right lateral incisor after 2 months. Her medical history revealed no systemic problems and she was apparently healthy with no history of cough or expectoration, fever, or weight loss. There was no cervical lymphadenopathy or any other abnormal findings. The patient never visited a dentist in her lifetime and had no history of dental trauma or any surgery.

On intraoral examination there were gingival ulcerations involving marginal and attached gingiva, alveolar mucosa in the maxillary canine to canine region, right second premolar - first molar region facially, and palatal mucosa of left premolar - molar region (Figures 1-3). The gingiva was fiery red, with necrotic slough and was painful on touch with spontaneous bleeding on provocation. There was severe soft and hard tissue destruction with denuded roots of the anterior teeth along with moderate to severe mobility. The amount of destruction was not commensurate with the local factors. There was incomplete healing of the wound in exfoliated right lateral incisor region.

A clinical differential diagnosis of acute necrotizing ulcerative Gingivitis (ANUG), syphilis, human immunodeficiency virus (HIV), TB, and actinomycosis was made. Complete hemogram, enzyme-linked immunosorbent assay (ELISA) for HIV, antinuclear antibody (ANA), chest radiograph (posteroanterior (PA) view), and intraoral occlusal and intraoral periapical radiographs were advised. Consent for HIV test was taken from the parents of patient. Results of complete blood count were within normal limits and HIV test was negative. Erythrocyte sedimentation rate (ESR) was elevated (44 mm after 1hour) and ANA was negative (5.8 units). No lesions were detected in chest radiograph. Intraoral radiographs showed extensive bone loss with respect to maxillary anterior teeth (Figure 4). Incisional biopsy was performed on the gingiva in relation to maxillary left lateral incisor, canine, and palatal mucosa of posterior region. Histopathological examination showed necrotizing granulomatous inflammation with Langhans type giant cells on ulcerated mucosa. On Ziehl-Neelsen (ZN) staining, acid-fast bacilli were demonstrated and imprint gingiva showed cellular mass revealing predominantly neutrophils in sheets, a few lymphocytes, plasma cells, benign superficial cells, and epithelioid cell granulomas. The features were suggestive of tuberculous granulomatous lesion (Figure 5). Consultant medical officer has started the antitubercular therapy with isoniazid 300mg,

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rifampicin 600mg, ethambutol 1100mg and pyrazinamide 1600mg per day for 2 months followed by isoniazid, rifampicin and ethambutol for the following 4 months. During the period, the patient was instructed not to undergo any surgical procedure within the oral cavity. However, patient responded well to the conservative periodontal therapy with minimal trauma to gingiva (Figure 6).

### 3. Discussion

TB is a reemerging infectious granulomatous disease caused mainly by *Mycobacterium tuberculosis*, an acid-fast bacillus that is transmitted primarily via the respiratory route. According to the World Health Organization, TB is responsible for death of approximately 2 million people each year and it is estimated that between 2002 and 2020, approximately 1 billion people will be newly infected, over 150 million people will get sick, and 36 million will die because of TB. It remains a major health problem in most developing countries. Among the world population, the Southeast Asian countries carry 88% of world's burden of TB.<sup>3</sup> Lesions of TB in the oral mucosa are seldom primary, but rather secondary to pulmonary disease. Farber *et al.* indicated that less than 0.1% of the patients whom they examined, exhibited oral lesions.<sup>4</sup> Tongue is most affected followed by palate, buccal mucosa lips, salivary glands, tonsils, uvula, and mandibular ridge. The most common occurring lesion is an ulcer, characterized by irregular edges with minimal indurations. The base of an ulcer may be granular or covered with pseudomembrane.<sup>4,5</sup> Primary oral TB that usually involves gingiva may present as diffuse, hyperemic, nodular or papillary proliferation of the gingival tissues, or an irregular, superficial or deep, painful ulcer which tends to increase in size. Primary oral TB is usually associated with regional lymphadenopathy.<sup>5</sup> The mechanism of primary inoculation is unknown. However, it is thought that the *Mycobacterium* is inoculated directly into the oral mucosa. The intact oral mucous membrane presents a natural resistance to *Mycobacterium* invasion. This resistance has been attributed to the cleansing action of saliva; the presence of salivary enzymes, tissue, antibodies, and oral saprophytes; and the thickness of the protective epithelial covering. Any break or loss of this natural barrier, which may be result of trauma, inflammatory conditions, tooth extraction, or poor oral hygiene, may provide a route of entry for the *Mycobacterium*. Diffuse involvement of the maxilla and mandible may also occur, usually by hematogenous spread of infection, but sometimes by a direct extension or even after tooth extraction.<sup>6,8</sup> In this patient there was a rapid spread of the lesions after exfoliation of maxillary right lateral incisor. However, in those areas of the world where unpasteurized milk is consumed, bovine tubercle bacilli often cause human infection. This patient lived on a farm where the consumption of unboiled or raw milk is common and, presumably she had consumed infected milk. It is vital for clinician to conduct a complete physical examination including signs and symptoms of pulmonary TB with various diagnostic tests and by performing a biopsy. Histopathological study is needed to exclude carcinomatous changes and to confirm the diagnosis of TB. Since the introduction of effective chemotherapy, tuberculous lesions of the oral cavity have become so infrequent that it is virtually a forgotten disease entity and pose a diagnostic

problem. They account for less than 1% of cases of extrapulmonary TB, and are usually associated with foci of disease elsewhere in the body.<sup>2,4</sup> It should be considered in the differential diagnosis, particularly in a nonhealing lesion that does not respond to the usual therapy. Thus, a periodontist or general dental surgeon can contribute in early diagnosis and prompt treatment of infectious disease as TB.<sup>3</sup>

### 4. Conclusion

Tuberculosis infection of the gingiva is relatively rare; oral lesions would most commonly be secondary to pulmonary tuberculosis. Hence, to characterize oral lesions as primary tuberculosis, a thorough examination to rule out other primary sites should be attempted. With the recent increase in the incidence of tuberculosis, clinicians need to be aware of this possibility, consider tuberculosis in the differential diagnosis of gingival ulceration and, thus, play a role in the early detection and treatment of this disease.

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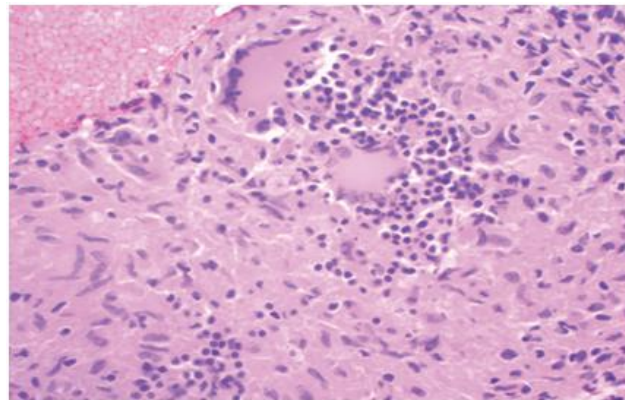
### Figures



**Figure 1:** Tuberculous ulcer involving marginal and attached gingiva, alveolar mucosa in the maxillary canine to canine region.



**Figure 2:** Tuberculous ulcer involving marginal and attached gingiva, palatal mucosa of left premolar-molar region.



**Figure 5:** Necrotizing granulomatous inflammation with Langhans type giant cells on ulcerated mucosa suggestive of TB.



**Figure 3:** Tuberculous ulcer involving marginal and attached gingiva, right second premolar- first molar region facially.



**Figure 6:** Post treatment healthy gingiva.



**Figure 4:** Radiographs showing extensive bone loss with respect to maxillary anterior teeth