Simultaneous oral, bone, and lung manifestations of tuberculosis

Antonione Santos Bezerra Pinto 1,2
Cristiane Furuse 3
Haroldo Arid Soares 4
Luiz Alexandre Thomaz 2
Lucas Novaes Teixeira 2

Abstract:
Tuberculosis (TB) is a chronic granulomatous disease caused by Mycobacterium tuberculosis, which is transmitted by saliva droplets from patients with active pulmonary disease to persons in close contact with those infected. TB remains a leading cause of morbidity and mortality in developing countries, including Brazil. This disease primarily occurs in the lungs; however, other organs can be affected. Cervical tuberculous lymphadenitis or scrofula is the commonest form of extrapulmonary TB, particularly in immunocompromised patients. In the stomatognathic system, the tongue is the site most often affected by TB, whereas bone is rarely affected. The diagnosis of the active form of TB is made based mainly on clinical and radiographic findings, histopathologic features and sputum culture for M. tuberculosis, while the latent form of TB can be detected by tuberculin skin test or an interferon-γ release assay. The present article aimed to report a case of TB occurring concurrently in the oral cavity, bone and lungs.

Keywords: Tuberculosis; Communicable Diseases; Oral Medicine.
INTRODUCTION

Tuberculosis (TB) is an infectious disease caused by Mycobacterium tuberculosis responsible for millions of deaths worldwide yearly\(^1\). Despite advances in diagnosis and treatment, the incidence of this disease remains high, particularly in developing countries\(^1\). Such increase may be partly attributed to an increased incidence of HIV co-infection, which reduces cell-mediated immunity\(^2\), as well as the development of multidrug-resistant strains of *M. tuberculosis*\(^3\).

TB affects mainly the lungs, although other extrapulmonary sites may be involved. Cervical tuberculous lymphadenitis or scrofula is the most common form of extrapulmonary TB and is the presenting form of the disease in 5% of the cases in the community, whereas in immunocompromised patients, scrofula may be the presenting form of TB in up to a third of cases\(^4\). In the head and neck region, TB may affect several structures such as the buccal mucosa, gingiva, lips, jaw bones and tongue\(^5,6\). Bone TB may account for approximately 10-20% of extrapulmonary TB cases, with the spine being the most affected anatomical structure\(^7\). In spite of being a rare condition, multifocal skeletal TB has been described elsewhere\(^7\).

The present paper aimed to report an unusual case of TB arising simultaneously in the oral cavity, bones and lungs.

CASE REPORT

A 44-year-old woman was referred to the primary care center of Campo Limpo, São Paulo State – Brazil, complaining of a wound on the dorsum of her tongue for 45 days, which was accompanied by a report of backache. On extraoral examination, palpable, painful and mobile lymph nodes were noticed in the submandibular region on both sides. Intraoral examination revealed an ulcer with irregular erythematous borders on the dorsum of tongue (Figure 1A).

Her medical history was positive for anemia, kidney stones and cervical arthrosis. Her social history included a high alcohol intake and smoking 15 cigarettes daily for 30 years. As a first approach, an incisional biopsy was performed and the specimen was fixed in 10% buffered formalin. Additionally, a chest radiograph was taken to assess the lungs, which showed multiple nodules in a miliary pattern, particularly in the upper lobes (Figure 1B). Based on these clinical and radiographic findings, the differential diagnosis included TB and paracoccidioidomycosis.

The patient was put on anti-tubercular therapy, though after 3 months of treatment, the patient still reported pain in her back and hips. A computed tomography (CT) scan of the spine as well as an anteroposterior radiograph of the pelvis were then performed. The CT showed hypodense areas in the vertebral bodies (Figure 3A), while a diffuse bone rarefaction was detected in the wing of the ilium (Figure 3B).

These findings combined with a previous diagnosis of TB led to a diagnosis compatible with osteoarticular tuberculosis and spondylitis tuberculosis. After 6 months of treatment, there was complete remission of the ulcer in her tongue (Figure 4A). Furthermore, a significant improvement was noticed in the radiographic appearance of the bones.
M. tuberculosis is an aerobic bacillus that grows effectively in tissues with high levels of oxygen. Indeed, the lungs are usually the first organs affected by this disease. However, other anatomical sites may be involved, such as the oral cavity and bones. The lesions in these sites occur either by direct inoculation of the bacilli or dissemination of M. tuberculosis via the lymphatics or bloodstream.

Oral TB is an uncommon manifestation of extrapulmonary TB occurring in nearly 0.1-5% of all cases. Oral TB can be classified as primary or secondary lesions. The occurrence of primary oral TB is rare, probably due to the continuous wash-out effect of saliva on the oral mucosa, which protects the oral tissues against M. tuberculosis invasion. The secondary oral TB lesions are related to pulmonary disease and represent approximately 58% of all cases of oral TB. This form of oral TB affects primarily middle-aged individuals and elderly people. The infection may affect any structure of the stomatognathic system, including lips, palate, floor of the mouth, mandible, maxillary sinuses, and temporomandibular joint. However, the tongue has been described as the most commonly affected site.

Clinically, oral TB lesions in the tongue typically present as a single ulcer with irregular margins and a necrotic base. These non-specific clinical features may lead to misdiagnoses as other unrelated diseases, particularly when they arise before the systemic symptoms of TB become evident.

Indeed, due to the history of heavy smoking (15 cigarettes daily) for 30 years associated with alcohol intake reported by the patient described herein, it was initially thought that the lesion could be a squamous cell carcinoma. The dorsum of the tongue, however, is not a common site for development of such neoplasm, which usually arises in the posterior border of the tongue. Thus, other diseases were also considered as differential diagnoses, including TB, paracoccidioidomycosis, and eosinophilic ulcer. The combination of backache with the imaging features observed on the chest radiograph strongly suggested a case of TB. This hypothesis was reinforced by positive Ziehl-Neelsen staining and further confirmed by sputum culture.

Bone TB comprises 10-20% of all the extrapulmonary TB and affects particularly the spine, long bones and joints. The affinity of the M.
In conclusion, simultaneous involvement of the lungs, oral cavity and bones by TB is a very rare occurrence. Considering the complications caused by bone TB when vertebrae are affected, especially of neurological basis, early diagnosis and treatment is essential to prevent such sequelae, which could bring catastrophic consequences to quality of life.

CONFLICT OF INTERESTS

The authors declare no conflict of interests regarding the publication of this paper.