



Primary Tuberculosis of the Oral Cavity: A Case Report

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Abstract

Tuberculosis is a chronic granulomatous disease that usually affects the lungs but could also occur in other organs such as the oral cavity. *Mycobacterium Tuberculosis* is the main causative organism and is typically transmitted through the respiratory tract by inhaling droplets contaminated by these organisms. Oral tuberculosis is a challenging lesion to diagnose due to its various clinical presentations. Hereby, we present an interesting case of gingival overgrowth in the anterior maxilla that mimics a malignant lesion. Unexpectedly, histopathological examination confirmed the diagnosis of tuberculosis. Further investigations were done to rule out pulmonary tuberculosis.

Keywords: Tuberculosis; Oral tuberculosis; Gingival enlargement

Introduction

Tuberculosis (TB) is a chronic infectious disease that is caused by the *Mycobacterium* species, most commonly *M. Tuberculosis*. It commonly affects the lungs but could also present as extra-pulmonary or secondary TB by residing in other organs such as skin, bone, gastrointestinal tract, genitourinary system and oral cavity [1]. Extra-pulmonary TB accounts for approximately 10-15 % of TB cases while only 0.2 - 1.5 % of these cases occurs in the oral cavity as secondary to pulmonary TB [2].

Pulmonary TB is the common presentation of TB with the classical symptom of a productive cough. TB can spread to the oral cavity through either infected sputum or through a hematogenous route [3].

Oral TB is uncommon and has various clinical pictures, which makes it easier to miss in diagnosis. It commonly presents as ulcers, granules or indurated soft tissue lesions. It can be commonly found on the tongue but can also be seen in other sites such as the lip, cheeks, soft palate, and uvula, gingival and alveolar mucosa [3].

This paper presents a case of oral tuberculosis affecting the maxilla in a Saudi female patient with no symptoms of pulmonary TB.

Case Presentation

This is a case report of a 72 year-old Saudi female, known to have diabetes mellitus, hypertension and hypothyroidism with a positive history of cerebrovascular accident 10 years back. The patient presented to the Oral and Maxillofacial outpatient clinic in King Abdulaziz Medical City (KAMC) in Riyadh, Saudi Arabia complaining from a painless swelling in the anterior maxilla, which was noticed 1 year ago. The swelling was gradually increasing in size with a negative history of cough, fever or weight loss. Extra-oral examination revealed non-tender and non-palpable lymph nodes. Intraoral examination showed an ill-defined granular papillary growth in the anterior maxilla extending from area of right canine to left first premolar. The lesion was firm, non-tender, erythematous, and shiny in appearance with areas of ulceration. However, there was no bleeding or pus discharge. Based on the suspicious clinical presentation an initial diagnosis of squamous cell carcinoma was made (Figure 1).

Orthopantomography (OPG) was taken for the patient and showed no osseous involvement (Figure 2). Blood work up including; complete blood count, basic screening and coagulation profile were within normal limits. Incisional biopsy was done under local anesthesia, fixed in formalin and sent for histopathological & PCR examination. Neck & facial bone CT and chest x-ray were also done.

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Received Date: 03 Jan 2017

Accepted Date: 20 Mar 2017

Published Date: 30 Mar 2017

Citation:

Ababtain R, Alohalı A, Binahmed A. Primary Tuberculosis of the Oral Cavity: A Case Report. *Clin Surg*. 2017; 2: 1377.

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Figure 1: Granular growth in the anterior maxilla.

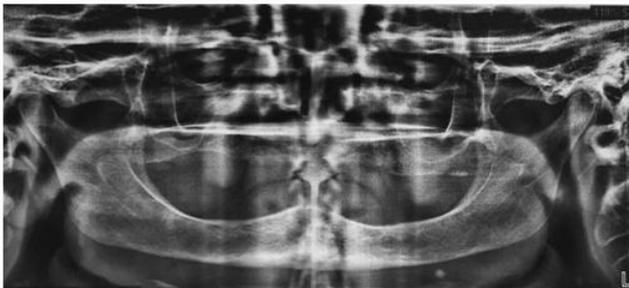


Figure 2: Orthopantomography (OPG) was taken for the patient and showed no osseous involvement.

The histopathological findings in the excised specimen included granulomatous inflammation highly suggestive of tuberculosis. TB PCR analysis was positive for *M.tuberculosis* complex.

Radiographic findings of the CT showed few bilateral pathological lymph nodes at the right level I B, left level II A&B, and smaller ones seen at level III & IV bilaterally. It also displays patent neck vessels and clear upper lungs.

Cardiomegaly with torturous aorta was seen in the chest X-ray with clear lung fields, no pleural effusions or pneumothorax, and no significant osseous abnormalities seen (Figure 3).

Patient was referred to the infectious disease department in KAMC for management with regular follow up appointments with OMFS clinic. Anti-tubercular treatment was initiated by her physician with phase I including isoniazid, ethambutol and pyrazinamide for 3 months. Followed by a second phase, which includes isoniazid and moxifloxacin for 6 months. Patient was seen with infectious disease after 3 weeks of treatment she was doing well and tolerating the medications. There was regression in the size of the lesion.

Discussion

Mycobacterium Tuberculosis is an anaerobic, non-motile, non-capsulated, non-spore forming rod shaped organism that is the main bacteria responsible for tuberculosis [4]. Epidemiology of TB

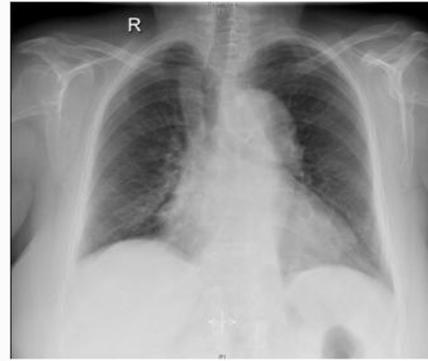


Figure 3: Chest radiograph showing absence of foci of infection.

is affected by ethnicity, age, and socioeconomic status [5]. The global burden of TB can be appreciated in a recent report by the WHO where cases of TB reached 8.6 million cases worldwide and death-related TB cases were around 1.3 million [6]. In the Kingdom of Saudi Arabia (KSA) the latest prevalence of TB ranged from 8.5 % in central region to as high as 23.1 % in Hail [7]. According to a recent study done by Alorainy "et al." [8]. Assessing the incidence of tuberculosis in Saudi Arabia, "There were a total of 64,345 TB cases reported to the Ministry of Health during 1991-2010. Of these, there were 46,827 (73%) pulmonary TB cases and 17,518 (27%) extra-pulmonary TB. There were 33,468 (52%) Saudi patients and 30,837 (48%) non-Saudis. The majority (62%) were males. Over 70% of the cases were reported from the Central and Makkah regions". The pathogenesis of oral tuberculosis is not clearly understood; however different routes of inoculation were suggested. It can occur through a hematogenous or lymphatic route in secondary TB or through direct inoculation as in primary TB. The incidence of oral TB is rare and has been attributed to the mucous membrane that acts as a barrier for the direct penetration of the organisms. Furthermore, the cleansing action of the saliva, local PH and the antibodies increase the resistance of the oral cavity. On the other hand, trauma, inflammatory conditions, and tooth extractions cause a break in the mucosa providing an access for the organisms [4-6,9-11].

Children and adolescents appear to be the most common group affected by primary TB [10,11] with a male predominance [9]. While secondary TB appears to affect older age groups [4]. The tongue is the most common site for oral TB but can also be found in other sites including the palate, lip and buccal mucosa. It is not uncommon to see oral TB lesions in the alveolar mucosa, tonsils, salivary gland and uvula [4,6,10-12].

General systematic symptoms include a productive cough, weight loss, anorexia, night sweats, fever, lymphadenopathy and hemoptysis. These general symptoms are rarely associated with primary oral TB. Nonetheless, TB should be ruled out if the patient presents with these symptoms [10]. In secondary TB, oral lesions secondary to the pulmonary changes may appear prior to systemic symptoms [12].

The presentation of oral TB is not specific but most commonly occurs as an ulcer. This makes differential diagnosis difficult and should include ulcerative diseases such as syphilis, malignancies, traumatic or aphthous ulcers, sarcoidosis, actinomycosis, and erosive lichen planus [11,12]. Ulcers caused by TB are usually painful, persistent, not responding to topical treatment, with indurations and irregular borders [4,6]. Variations in presentation can occur including

nodules, granulomas, verrucous proliferation, and papillary forms [10].

Diagnosis of oral TB is very difficult to be done based on clinical presentation only. It is essential to have histopathological analysis to confirm the diagnosis. The histological picture of TB is generally the presence of a granulomatous inflammatory infiltrate with Langerhans giant cells and lymphocytes. It is also common to observe foci of caseating necrosis in the tissues [6,12]. Culture test can show the presence of acid-fast bacilli; however it takes 4-6 weeks and lacks sensitivity [14]. Due to the relative scarcity of bacilli within the oral biopsy, it can only be detected in 27-60% of the cases [9,11]. This lead to the emergence of polymerase chain reaction (PCR) analysis in detecting and amplifying the DNA even if few genomes are present. PCR is highly specific (98%) and sensitive (94%) in detecting *M.Tuberculosis* [19,13]. In our case, the histopathological examination showed the classical picture of TB and was confirmed by PCR analysis.

Tuberculosis is treated with systematic anti-tubercular therapy in two phases regardless of the primary site. The first phase requires 2 months of therapy with 3 or 4 antibiotics including isoniazids, rifampicin, pyrazinamide and ethambutol. Followed by second phase of 4 months with only two drugs most commonly isoniazids and rifampicin [6,10,12]. In case of drug resistance, a second-line of drug therapy is recommended which includes amino glycosides, polypeptides, flouroquinolones, cycloserine, and terizidone.

Conclusion

Oral tuberculosis lesions are relatively rare, difficult to diagnose and could be a possible infectious hazard to the healthcare personnel. Thorough history and clinical examination should be done to rule out TB and explore other primary sites.

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