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RESEARCH ARTICLE

DIAGNOSIS OF TUBERCULOSIS BASED ON PRELIMINARY ORAL FINDINGS: MULTIPLE CASES WITH VARIABLE ORAL MANIFESTATIONS AND A BRIEF REVIEW

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ABSTRACT

Objective: Tuberculosis (TB) is a systemic disease with world wide distribution and its occurrence in the oral cavity is well documented in the literature. Oral TB is currently reemerging as an infectious disease and may be a diagnostic challenge for dental care providers. The aim of this study was to report all patients with primary manifestations of oral tuberculosis and to evaluate the clinical characteristics of oral tuberculosis lesions. All these patients were subsequently diagnosed with tuberculosis based on oral histological findings and referred for management and therapy.

Material and methods: 10 patients with oral lesions were histologically diagnosed as having tuberculosis, who did not give any history of the disease, following surgical biopsy.

Results: Oral TB was found in all 10 patients, 7 males and 3 females, with male to female ratio 7:3. Involved oral sites included the angle of the mandible (1 case), right mandibular molar region (2case), left mandibular molar region (4 cases), Gingiva (2 cases), buccal mucosa (1 case). Oral TB patients in this series ranged in age from 6 to 35 years. All the lesions were suggestive of primary tuberculosis. The appearance of the affected mucosa in oral TB was variable. The most common manifestation was ulceration and swelling of the mucosa.

Conclusion: TB should be considered in patients with oral ulcerations and swellings. A biopsy specimen for histologic study, acid-fast stains and cultures should be obtained for confirmation and differential diagnosis with other conditions.

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INTRODUCTION

Tuberculosis (TB) is an infectious granulomatous disease caused by mycobacterium tuberculosis, an acid fast bacillus that is transmitted primarily via the respiratory route. Tuberculosis is a global health problem with 8 million people infected annually and 3 million people dying from diseases related to TB complications (Yepes *et al*., 2004). Tuberculosis chiefly affects the pulmonary system but it can also involve extrapulmonary sites including the head and neck region. Oral tuberculosis lesion may be either primary or secondary. Primary oral tuberculosis lesions are extremely rare and generally occur in younger patients associated with cervical lymphadenopathy. The secondary lesions, on the contrary, are more common and are seen mostly in older persons (Hock, 1996). This article reports 10 cases of tuberculosis diagnosed on the basis of oral lesions. The aim of this study was to report 10 patients with primary oral tuberculosis and to evaluate the clinical characteristics of oral tuberculous lesions, who after diagnosis were referred for appropriate medical management.

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MATERIALS AND METHODS

The records of all patients from the Oral Pathology Department at our institution with a histopathologically confirmed diagnosis of oral tuberculosis were surveyed. 10 cases were identified. The criteria for diagnosis of oral TB were histopathologic evidence of granulomatous inflammation with epithelioid cells and Langhans giant cells. The patient's clinical records were reviewed for details relating to presenting signs and symptoms, site and appearance of the lesions.

Table 1. Summary of data relating to the 10 patients with oral tuberculosis in the present study

Patient no.	Year of presentation	Age at diagnosis	Sex	Duration of symptoms	Site & Clinical appearance	Clinical impression prior to diagnosis	Classification
1	2006	30 y	M	3 mo	Swelling, 2×3 cm, firm, non tender, Rt angle of the mandible	TB Lymphadenitis	Primary
2	2006	15 y	M	1 mo	Swelling, 2×3 cm, non tender, Rt mandibular molar region	Garre's Osteomyelitis	Primary
3	2006	28 y	F	2 y	Generalized gingival enlargement involving marginal & attached gingiva	Inflammatory gingival enlargement	Primary
4	2006	10 y	M	15 d	Grossly decayed $+_5$, non tender, with periapical lesion, Lt mandibular region	Periapical lesion	Primary
5	2009	35 y	M	2 mo	Chronic ulcer on Buccal mucosa, non tender 3×3 cm in size.	Tuberculous ulcer	Primary
6	2009	25	F	1 mo	Swelling, 3×3 cm, non tender involving extraction socket i.r.t $+_5$, Lt mandibular region	Granulomatous lesion	Primary
7	2009	6	M	3 mo	Ulcer, 3×2 cm with undermined edges, non tender, Lt mandibular region	Tuberculous ulcer	Primary
8	2010	21	M	2.5 mo	Non healing ulcer, non tender, 2×1 cm, Rt mandibular, molar region	Tuberculous ulcer	Primary
9	2011	25	M	20 d	Swelling i.r.t $+_8$, 1×2 cm with discharge, non tender, Lt mandibular molar region	Odontogenic keratocyst	Primary
10	2011	35	F	4 y	Gingival enlargement i.r.t mandibular anterior region, 5×1 cm, non tender	Inflammatory gingival lesion	Primary

Table 2. Presenting symptoms of patients found to have oral TB in the present study

Symptoms	No. patients
Swelling	7
Ulceration	3

RESULTS

Clinical data relating to a total of 10 patients with histologically diagnosed TB of the oral cavity is summarized in Table 1. Oral TB was found in all 10 patients, 7 males and 3 females, with male to female ratio 7:3. Involved oral sites included the angle of the mandible (1 case), right mandibular molar region (2 case), left mandibular molar region (4 cases), Gingiva (2 cases), buccal mucosa (1 case). Oral TB patients in this series ranged in age from 6 to 35 years. The presenting symptoms with oral TB are summarized in order of frequency in Table II.

The duration of these symptoms before diagnosis in the patients with oral TB ranged from 15 days to 4 years. None of the patients complained of malaise, weight loss or persistent cough. All the lesions were suggestive of primary tuberculosis. The appearance of the affected mucosa in oral TB was variable. The most common manifestation was ulceration and swelling of the mucosa, ranging from 1cm to 5 cm in size.

DISCUSSION

Although tuberculosis has a definitive affinity for lungs, it can affect any part of the body including the mouth. Oral manifestations of tuberculosis are usually seen secondary to infection in some other part of the body, as a result of direct inoculation or, rarely, as a result of hematogenous spread from sites in the pulmonary, gastrointestinal, or genitourinary tract (McAndrew, 1976). Compared with tuberculous involvement of the other parts of the body, the primary occurrence of this disease in the oral cavity and jaw bones is relatively rare (Ebenezer *et al*., 2006). However in our study all the oral tuberculosis lesions were of primary occurrence as they were undiagnosed till then. When primary lesions of tuberculosis occur in the mouth, the most frequent sites of involvement are gingival, tooth extraction sockets and the buccal folds (Ebenezer *et al*., 1955). In our study, in 2 cases the lesions were found to be present in the gingiva, 5 cases were reported on the left and right mandibular molar region in the form of ulceration (2 cases) and swelling (3 cases).

In 1case ulcer was present on the buccal mucosa. 1 case was associated with tooth extraction socket and 1 case appeared in the form of periapical lesion. The systemic factors that favour the chances of oral infection in tuberculosis includes lowered host resistance and increased virulence of the organisms. The local predisposing factors may be poor oral hygiene, local trauma, the presence of existing lesions like leukoplakia, periapical granulomas, dental cysts, dental abscess, jaw fractures and periodontis (Bruce *et al*., 1954). In our study 1 case showed granulomatous lesion, 1 case showed periapical lesion, 1 case was diagnosed through the surgical enucleated specimen of odontogenic keratocyst and 2 cases were reported with gingivitis. The common manifestation of oral tuberculosis is an ulcerative lesion of the mucosa. The lesion may be preceded by an opalescent vesicle or nodule which may break down as a result of caseation necrosis to form an ulcer. The typical tuberculous ulcer is an irregular lesion with ragged undermined edges, minimal induration and often with a yellowish granular base (Ebenezer *et al*., 2006). In our study 3 cases were reported with clinical manifestation of tuberculous ulcer. Involvement of the bones of the maxilla and mandible usually results in tuberculous osteomyelitis. Tuberculosis of the jaw bones may be secondary or primary (Spilika *et al*., 1955) and occurs as a result of either deep extension of gingival lesions, from an infected post extraction socket, or through hematogenous spread of the infection. The mandible shows a greater predisposition to the infection than the maxilla. In our study non of the cases were involving the bones of maxilla and mandibular region. Compared with the previous studies of oral TB, the present study has similar findings such as presentation of oral ulcers and the majority of the patients being males (Wang *et al*., 2009). However in the previous studies most of the patients were at there fifth decade of life, our study showed that patients were at third and second decade of life and some were even less than 10 years of age.

Conclusion

With the increasing number of TB cases, unusual forms of the disease in the oral cavity are more likely to occur and be misdiagnosed. Therefore, dental practitioners need to be aware that TB may occur in the oral cavity and consider TB in their differential diagnosis of any ulcerated or granulated and indurated lesions of the oral cavity (Sezer, 2004). This is especially important considering difficult clinical diagnosis because TB can mimic a variety of other conditions including reactive and traumatic lesions, malignant tumors, deep fungal infections, inflammatory gingival enlargements and oral manifestations of systemic diseases such as sarcoidosis and Wegener's granuloma (Dadgarnia *et al*., 2008). Any lesion presenting in the oral cavity must be fully investigated and assessment should include full physical examination, biopsy and chest x-ray examination. Diagnosis of TB is made by identification of a caseating granuloma, macrophages, epitheloid cells and Langhans gaint cells in a biopsy specimen. Acid- fast stains and cultures obtained from the tissue specimen should be used to confirm the diagnosis. If tuberculosis is suspected, the patient should be referred to a pulmonary or infectious disease specialist for confirmation of the final diagnosis and treatment.

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