



A Review on Oro- Facial Tuberculosis: Knowledge from the Past, to be Prepared for the Future

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Abstract

Tuberculosis, a communicable chronic granulomatous disease, is a global health problem with 8 million people dying from diseases which are related to TB complications. India alone accounts for nearly one fifth of the global burden of tuberculosis. The incidence of TB in the underdeveloped countries is increasing due to poverty, lack of health care access, drug resistance, immune suppressed populations (eg. HIV infected persons) and global migration. Tuberculosis in oral cavity and its associated structures are well documented in the literature but because of its non-specific presentation it might be overlooked. Being a responsible health care professional, an oral clinician must be aware of oral manifestations of tuberculosis and help in early diagnosis of this potentially fatal disease. This is a review of oral manifestations of tuberculosis, which emphasizes the needful intervention in long standing oral lesions and also aims at highlighting the synergism between oral and general health.

Keywords: Dentist; Diagnosis; Mycobacterium; Oral Tuberculosis; Tuberculosis

Introduction

Tuberculosis, a chronic granulomatous infectious disease caused by *Mycobacterium tuberculosis* is a cause of morbidity and mortality worldwide. In 1882, it was first discovered by Robert Koch [1]. Tuberculosis usually affects the lungs, but can affect any part of the body. Extra pulmonary tuberculosis accounts 10 - 15% of all cases [2]. Primary oral tuberculosis is a rare entity and generally occur among younger adults, painless lesions in most cases, with associated caseation of dependent lymph nodes [3,4] The secondary lesions are relatively common, which are often associated with pulmonary disease and are seen in about 0.5 - 5% percent of total TB cases [5]. Most commonly affected site in oral cavity is the tongue and others include the lip, cheek, soft palate, uvula, gingiva and alveolar mucosa [6].

This review aims at highlighting the importance of synergism between oral and general health. It is a matter of concern as it may be the very first discovery of the disease by an oral clinician and often might be overlooked or might pose as a diagnostic challenge.

Considerations of tuberculosis for an oral clinician

Diagnostic importance of tuberculosis for dentist was reported in literature early 1990s. Long back in the year 1923 Ivy and

Appleton had pointed out that tuberculous lesions in mouth may be discovered by oral physician before the pulmonary condition has become obvious enough for the patient to seek medical attention [7].

Pathogenesis

Infected sputum is the potential inoculating substance or it might be through hematogenous spread. Infection via sputum is said to be the most commonly encountered method. Another mode of oral infection reported in the literature is that it is caused by general dissemination of the tuberculous infection.

It is generally considered that intact epithelium does not permit tubercle bacilli to gain entry into the underlying connecting tissue. The cleansing action of saliva and its antibacterial properties in general also contributes to the protection against the tubercle bacilli. This makes it obvious that any breach in the epithelium is a predisposing factor for oral infection by tubercle bacilli.

As per the reports of previous studies in the past the systemic and local risk factors are: systemic factors include lowered host resistance and increased virulence of the organism. Local factors include: Poor oral hygiene as reported by Thailander and

Wennstorm in 1956; Local trauma as mentioned by Brennan and Vrabec in 1970 and Prabhu, *et al.* in 1978; the presence of pre-existing lesions such as leukoplakia as observed by Mani in 1985; Brodsky and Klattel in 1943 reported periapical granulomas to be a risk factor; Frammer and Lawton in 1966 found tuberculous lesion associated with dental cysts; dental abscess was reported to be predisposing factor by Bradnum in 1961; Jaw fractures, as mentioned by Foster and Young in 1970; Periodontitis as reported by Bruce in 1954 [7].

Clinical features

The lesions are seen as superficial ulcers, patches, indurated soft tissue lesions or involving the jaw in the form of tuberculous osteomyelitis. The clinical presentation in oral cavity may be that of swelling or ulcerated or non-ulcerated lesions might give a false suspicion of malignancy [8-12].

Tuberculosis of salivary glands is usually secondary to infection of oral cavity or primary pulmonary tuberculosis. Parotid gland is commonly involved in TB of salivary glands [13]. Clinical presentation may be acute or chronic. Acute presentation might resemble acute sialadenitis and clinical diagnosis may be a challenge. Cervical tubercular lymphadenitis may present as multiple firm swelling in the neck with a stud collar appearance [12].

Lesions of jaw bone: The clinical presentation of a patient with jaw involvement in TB might range from painless jaw swelling to draining sinus or osteomyelitis. Tuberculous osteomyelitis of the mandible causes slow necrosis of the mandible which presents as irregular areas of radiolucency which gradually is followed by erosion of cortex and is replaced by soft tuberculous granulation tissue. Clinically at this stage a subperiosteal abscess is formed which presents as painless, soft swellings [12].

Lesions of Temporomandibular joint: It is a rare entity. Most of the cases are presented with preauricular swelling unresponsive to antibiotics and trismus, which is similar to arthritis, osteomyelitis or chronic joint disease, both clinically and radiologically. Radiographs and Computed tomography scans show destruction of condyle and soft tissue masses [12].

Tubercular lymphadenitis: It is one of the common forms of extra-pulmonary tuberculosis. Its involvement of cervical lymph nodes has been known for centuries as Scrofula or the King's Evil [14]. Prevalence rate of 4.4 per 1000 in rural India is reported [15]. In most cases of cervical lymphadenopathy, the underlying cause is attributed to tuberculosis [16]. At times, Lymphadenitis may be the only manifestation of the disease and there may not be typical manifestations like low-grade fever, cough, loss of weight or other respiratory problems [17].

Orofacial tuberculosis with vivid presentations

D. P. Von Arx, *et al.* (2001) reported a case of oral tuberculosis. A 36-year old lady presented with a non-healing ulcer of the right buccal mucosa at the right commissure of her mouth. Patient had noticed the ulcer 4 months ago and despite antibiotic therapy it had not healed, rather it was enlarged and eventually she had shifted to softer diet. She also had cough since 10 months and she felt hoarseness since 2 months and felt generally unwell. Histological examination revealed inflammation of ulcer with several granulomas involving the underlying submucosal and muscle tissue. Further sputum culture tests confirmed Mycobacterium tuberculosis infection [18].

Ramakant Dixit, *et al.* (2008) reported a case with tuberculous involvement of oral cavity. A 34-year old male patient presented a non-healing ulcer on upper lip mucosa; further biopsy from ulcer revealed tuberculous lesion. It was found that the patient had asymptomatic pulmonary tuberculosis on work up for the primary site of the disease. [19].

Shubha A B., *et al.* (2010) reported a case of tubercular lymphadenitis. A 5-year old male patient presented with pain, swelling in the lower right jaw, sub mandibular and sub mental lymph nodes enlarged, mobile and tenderness. It was initially diagnosed as a swelling arising from dental etiology, but there was no improvement in child's condition which led to extensive investigations that revealed tubercular lymphadenitis [20].

Preeti Sharma, *et al.* (2012) reported an interesting case of tuberculosis of odontogenic cyst. A 25-year old male patient presented with persistent pus discharge from the left side wisdom tooth region since two months. Incisional biopsy revealed features of a dentigerous cyst while histopathological examination showed keratinised cyst with secondary infection. Further investigation based on suspicion led to the diagnosis of tuberculosis [21].

AK Garg, *et al.* (2013) reported a case of multiple calcified tuberculous lymph nodes found on panoramic radiograph coincidentally diagnosed in an endodontic clinic. A 14-year old girl patient presented with painless swelling in the left side the lower jaw for the past 12 months. With the presenting signs and symptoms of bilateral carious mandibular molars, a periapical inflammatory process was considered in the provisional diagnosis. Further, on thorough investigations it was diagnosed to be cervical tuberculous lymphadenitis and the patient underwent excision of the same [22].

DN Kishore, *et al.* (2014) reported a case of sub masseteric tuberculous lesion of the mandible. A 48-year old male patient revealed a mild swelling at the angle of mandible. Intraorally,

grossly decayed 38 with vestibular obliteration was noted. The grossly decayed teeth 38 was extracted and healing was uneventful. However, the swelling didn't subside. A solitary swelling with moderately defined borders from the midbody of mandible up to angle and ramus region was seen. CT scan revealed cystic lesion in masseteric space involving the ramus of the left mandible with lytic and sclerotic area. Thus, an impression of osteomyelitis with sub masseteric abscess was suggested. Histopathological analysis revealed granulomatous tuberculosis [23].

Aaron Muthuraj MS., *et al.* (2017) reported a rare case of tuberculous enlargement. A 13-year-old boy presented with gingival enlargement in the maxillary and mandibular anterior region associated with enlargement of lower lip with no systemic manifestations. However, he had a history of tuberculous lymphadenitis before 5 years which was inadequately treated. The patient's erythrocyte sedimentation rate was 70 mm/h. Histopathological report of the gingival lesion revealed noncaseating granulomas with nests of epithelioid cells and multinucleated Langhans giant cells indicating tuberculosis [24].

Discussion

Tuberculosis remains the leading cause of death worldwide despite of wide spread use BCG vaccine and anti-tubercular therapy modalities. Although Oral tuberculosis is well documented, tuberculosis in oral cavity and para oral structures are quite rare. The diagnostic challenge and its non-specific presentation may mislead the dentist in early diagnosis.

It is believed that the infectious organism enter the mucosa through any break in the surface epithelium. Local factors include poor oral hygiene, leukoplakia, local trauma and by local irritation of the mucosa. Self-inoculation by the patient occurs from infected sputum or by hematogenous or lymphatic spread [25].

Diagnosis is initiated by performing a tuberculin skin test on the forearm with purified protein derivative, a mycobacterial antigen. If a red welt forms within 72 hours, the patient is considered to have been exposed to *Mycobacterium tuberculosis*. Signs and symptoms are evaluated to look for active disease which include productive cough, fever, chills or night sweats. Often a chest radiograph is taken to look for pulmonary involvement. Acid-bacillus test, involves collecting patient sputum to look for the infecting organism. If present patient is considered to have an active disease [26]. The review of various case reports reveal that certain cases of tuberculosis involving oral cavity presented with atypical signs and symptoms. Accordingly, we would suggest inclusion of Radiology, Incisional biopsy, Fine-needle aspiration cytology, Polymerase Chain Reaction and other relevant investigations based on the presentation of case for the effective, efficient and early diagnosis of the disease.

The differential diagnosis of a tuberculous ulcer of oral cavity includes aphthous ulcers, traumatic ulcers, syphilitic ulcers and malignancy, including primary squamous cell carcinoma, lymphoma and metastases [26].

Conclusion

- Necessity and importance of taking a thorough case history of the patient and a careful evaluation of the same.
- Needful interventions in long standing oral lesions.
- Necessity of histopathological examination of tissues removed in surgery.

The value of oral diagnosis to

1. The patient - leading to diagnosis and treatment of pulmonary condition,
2. Patient's contacts- for screening.
3. The role of an Oral clinician in early diagnosis of potentially fatal systemic conditions.

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