

Tuberculous Osteolytic Lesion of Mandible: A Rare Entity

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ABSTRACT

Background: Tubercular osteomyelitis of mandible is an extremely rare condition, particularly in comparison to pyogenic infections and neoplastic diseases involving the mandible. Tuberculosis can affect any part of the body involving both soft and hard tissues. Tuberculous involvement of cranio-facial bones is relatively rare. After affecting the bone, it is rare for a mycobacterial infection to get directed towards the skin and present as multiple draining sinuses. Here, we report such a type of case in 17yr old male, who presented with a draining sinus over the left mandible for 6 months followed by extraction of left third molar. This rare incidence is the primary reason that this lesion gets misdiagnosed often. Here we have reported the diagnosis, definitive treatment along with Anti tubercular therapy, and follow-up of a case, which is a classical presentation of tuberculous osteomyelitis of mandible.

Keywords: Mandible, Osteomyelitis, Tuberculosis.

INTRODUCTION

Tubercular osteomyelitis of mandible is extremely a rare entity. Tuberculosis remains a major problem despite advances in diagnosis and anti-tubercular therapy. Approximately one-third of the world's population is affected every year. There are about 20 million prevalent cases and 8 million new cases¹³. Some developed countries have recorded resurgence in the incidence of tuberculosis, attributed, particularly in the USA, to a rise in the number of people with reduced immunity, the development of drug-resistant strains of Mycobacterium, an ageing population, and an increase in the number of health-care workers exposed to the disease. The word "osteomyelitis" originates from the ancient Greek words osteon

(bone) and muelinos (marrow) and means infection of medullary portion of the bone.

One of the first widely accepted staging systems for osteomyelitis in long bones was first described by Waldvogel and Medoff (1970) and Waldvogel et al. (1970). The authors distinguished three categories of Osteomyelitis: from hematogenous spread; from a contagious focus; and due to vascular insufficiency. The classification is primarily based on etiology and pathogenesis of infection and does not readily lend itself to guiding therapeutic strategies such as surgery and antibiotic therapy^{1,2,6,19}.

Classification systems described in the literature for osteomyelitis of the jaws¹⁹.

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Marx RE: Chronic Osteomyelitis of the Jaws <i>Oral and Maxillofacial Surgery Clinics of North America, Vol 3, No 2, May 91, 367-81</i>	I. Acute osteomyelitis	Classification based on clinical picture and radiology, etiology, and pathophysiology. Classification of acute osteomyelitis by Mercuri, classification of chronic osteomyelitis by Marx. The arbitrary time limit of one month is used to differ acute from chronic osteomyelitis * From Waldvogel and Medoff 1970.
	1. Associated with Haematogenous spread.	
	2. Associated with intrinsic bone pathology or peripheral vascular disease.	
	3. Associated with odontogenic and nonodontogenic local processes.	
	II. Chronic osteomyelitis	
	1. Chronic recurrent multifocal	
	Osteomyelitis of children.	
	2. Garrè's osteomyelitis	
	3. Chronic suppurative osteomyelitis	
	a. Foreign body related	
	b. Systemic disease related	
	c. Related to persistent or resistant organisms.	
	4. True chronic diffuse sclerosing osteomyelitis	

conventional radiographs, osteomyelitis appears as an osteolytic or osteosclerotic lesion with various amounts of periosteal reaction, occurring more often in young individuals and usually in late stages of the disease. The other sites of predilection are dorsal and lumbar vertebrae and epiphysis and diaphysis of long bones⁷, Osteoarticular tuberculosis accounts for 1–2% of all the types of bone tuberculosis^{8,16}. Depending on the organ system involved, tuberculosis is classified clinically as commonly pulmonary and uncommon in extra-pulmonary (i.e., spine)¹⁵. Due to the rarity of tuberculosis of mandible, it seldom arouses clinical suspicion, especially when a positive history of a systemic infection or therapy is denied. The diagnosis, therefore, is variable and established after biopsy¹¹. With increasing incidence of TB and HIV co-infection with emergence of drug resistance pose a major challenge for developing countries. Presentation of skeletal tuberculosis in an immune-compromised patient may be atypical and reach an advanced stage by the time of diagnosis. Early diagnosis and prompt initiation of treatment is the only means to decrease the morbidity due to the disease¹⁴. We present our case report in SCARE Guideline, consisting of a 14-item checklist to improve the quality of surgical case report. The SCARE Statement is a consensus-based guideline following two Delphi rounds among a multidisciplinary and expert group in the area of surgery and case reports¹⁸.

CASE REPORT

A 17 year old male patient reported to the department of oral and maxillofacial surgery to our Institute with chief complaint of pain and swelling in left lower back tooth region of jaw for the past 6 months, for which lower 3rd molar was extracted by local practitioner thinking it to be the cause. Subsequently the swelling recurred one month later and was associated with fever, chills, evening rise of temperature, difficulty in mouth opening and difficulty in chewing. No relevant past medical and surgical history, II-visits of past dental history was given and family history revealed that his younger brother has been succumbed to tuberculous meningitis. No history of smoking status and alcohol intake.

Radiological examinations are required for diagnosis and evaluation of mandibular osteomyelitis and its response to treatment. On



Fig 1a & 1b: Pre-op frontal & left lateral view of patient.



Fig 2: Intra-oral swelling with sinus opening.



Fig 3: Pre-op OPG.



Fig 4a & 4b: Pre-op normal CT-Scan along with 3D CT.

On extra oral inspection, a diffuse swelling of size 5 x 6 cm seen on left lower third of the face with extra oral draining sinus seen on the left side of lower border of mandible (Fig.1a,1b) The swelling extended anteriorly from left corner of mouth to angle of mandible posteriorly, superoinferiorly

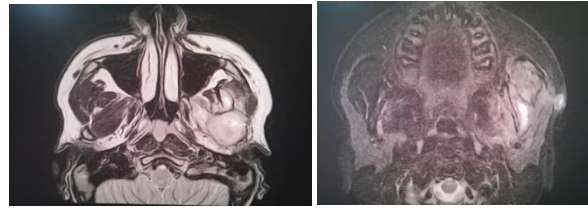


Fig 5a & 5b: Pre-op MRI scan images.



Fig 6: Post-op left lateral view of patient.



Fig 7: Post-op 3D CT scan showing new bone formation.

extending below the ala-tragus line to the left lower border of mandible. Skin over the swelling is normal. On palpation, all inspectory findings are confirmed, a thick white discharge from the sinus opening was seen, and there was no local rise in temperature. On intra oral examination, a swelling of size 3x2 cm was seen extending anteriorly from mesial aspect of 36 to retromolar trigone posteriorly, superiorly from marginal gingiva extending up to mucobuccal fold with vestibular

obliteration and sinus opening noticed at ascending ramus of mandible. (Fig.2).

The patient was advised for Orthopantomogram which revealed illdefined radiolucent lesion in relation to 38 that could be traced to the lower border of the mandible and also shows retained deciduous canines of 53, 63 & 73 with impacted permanent canines 13, 23 and 33 (Fig.3).

CT scan along with 3D reconstruction was done and it revealed buccal cortical plate perforation in (Fig.4a, 4b). MRI scan of neck revealed localized collection seen around the mandible on lateral side measuring about 53 X 23 X 9mm suggestive of abscess. This abscess is epicentered at masseter muscle extending to left TMJ. Extensive, inflammatory changes noted in muscles of mastication (Fig.5a, 5b).

On assessment, his vitals and physical examination were unremarkable. Routine haematology showed Hb% -11.2 gm%, Total WBC count - 6600 cells /cumm, Differential leucocyte count: Neutrophils- 65%, Lymphocytes- 30%, Eosinophils- 4%, Monocytes- 1%, Basophils- 0%, Platelet count - 4.7 lakhs/ cumm, Packed cell volume- 33.9%, ESR- 100mm/ 1st hour, HIV- non reactive, HBsAg- non reactive, HCV- non reactive, Chest PA- normal. Diagnostic tests were performed.

Mantoux test was done and it showed positive report with 10mm induration. Mycobacterium tuberculosis interferon gamma release assay was also done for the patient and was diagnosed positive for M. tuberculosis. A medicine consultation was given and he was started on anti-tubercular therapy. With the ongoing treatment, the patient has exhibited a complete resolution which appears normal healthy skin in left lower border of mandible and new bone formation seen in 3D CT (Fig.6) & (Fig.7). Post-treatment instructions & follow-up done up to 10 months.

DISCUSSION

Differential diagnosis for this patient would include Chronic suppurative osteomyelitis & Intra-alveolar carcinoma. But, the patient never had any symptoms that could lead to a differential diagnosis of tubercular osteomyelitis. Suspicion of tuberculosis has begun with swelling which was not

responding to conventional treatment modalities and also that his sibling died due to tuberculous meningitis. Mantoux test and mycobacterium tuberculosis interferon gamma release assay showed positive results for mycobacteria.

TB is a chronic granulomatous disease that can affect various systems of the body. In humans Mycobacterium tuberculosis, Mycobacterium bovis and atypical mycobacteria cause the disease¹². The Oral lesions of the disease, although not common, occur in various forms. The tongue is the most commonly affected site. Lesions of the floor of the mouth, gingiva, palate, and lips have also been reported. Orofacial presentation of tubercular disease includes swelling, pain, loosening of teeth and even the displacement of tooth buds. The involvement of the mandible by tuberculous infection is extremely rare as it contains less cancellous bone⁵. Sixty % of all cases of tuberculosis of jaw occur in children below the age of 16 years. The mandibular involvement is more frequent than maxilla and the alveolar and angle regions have greater affinity.

The infection may extend to the mandible by the following:

Direct transfer from infected sputum or infected raw cow's milk via

- (a) Open pulp in a carious tooth,
- (b) An extraction socket wound or
- (c) Gingival margin or perforation of an erupting tooth

- Regional extension of a soft tissue lesion to involve the underlying bone
- Haematogenous route.

Usually, based on ethnicity epidemiology of tuberculosis varies considerably. Though there are dramatic improvements in public health measures associated with M. tuberculosis infection and disease, such as living conditions, nutrition, Bacille Calmette Guerin vaccination programs, and antimicrobial chemotherapy, the incidence of tuberculosis in many countries during the past century has not declined^{3,10}. Now-a-days tuberculosis is increasing rapidly as a co-infection with HIV, which decreases cell mediated immunity

as this is the prime defence mechanism against the tubercle bacillus¹⁴.

Clinical history which prompts suspicion of active tuberculosis includes a productive cough (3 weeks) with other signs and symptoms of fever, chills, night sweats, and fatigue. 40% to 75 % of patients with tuberculosis and HIV infection have extra pulmonary tuberculosis⁹.

older age groups compared to younger group.

In most of the cases tuberculosis usually occurs secondary to pulmonary tuberculosis. In this case there is no pulmonary involvement. Traditionally, the diagnosis of tuberculosis has been made on the basis of clinical findings and radiographs and confirmed by sputum or tissue smears that show the bacilli¹⁷. But now a days DNA probes, polymerase chain reaction assays, and liquid media now allow more sensitive and rapid diagnosis. Skin testing should be used in conjunction with other clinical findings to establish tubercular infection in children. Computed tomography is more sensitive and shows high resolution images when compared to plain radiographs for diagnostic purpose in assessing abscesses pathologies and extent of disease.

Treatment of bisphosphonate associated jawbone osteomyelitis represents an emerging challenge in our practice. Although use of antibiotic treatment, chlorhexidine mouth rinses and bone debridement have been suggested, results are disappointing and frequently fail with disease progression. Based on the clinical, radiological and histological features of the disease, we developed a anti-tubercular therapy protocol⁴.

CONCLUSION

Tuberculous osteomyelitis is a rare entity in oral and maxillofacial infections. But in recent times its incidence has increased and if not diagnosed at right time it can lead to serious life threatening complications like tuberculous meningitis. That is why early diagnosis of tuberculous osteomyelitis will certainly reduce the morbidity of this disease condition.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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