

Tuberculous osteomyelitis of the mandibular condyle: A rare case report and review of the literature

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ABSTRACT

Tuberculosis (TB) is a chronic infectious granulomatous disease caused by the air-borne bacillus *Mycobacterium tuberculosis* and less frequently by other bacteria in *M. tuberculosis* complex (*Mycobacterium bovis* and *Mycobacterium africanum*). Tuberculous osteomyelitis of the condyle may present atypical clinical findings akin to temporomandibular joint arthritis or middle ear infections. A detailed clinical and radiographic examination aided by a histopathological and a microbiological diagnostic workup is the key to timely detection and administration of appropriate therapeutic regimens. A high degree of clinical suspicion is thus advocated in patients with such atypical presentations. We, hereby, are presenting a rare case of tuberculous osteomyelitis in a 15-year-old female child.

Keywords: Tuberculosis, Tuberculous osteomyelitis, Temporomandibular joint, Osteomyelitis

Tuberculosis (TB) is the ancient known microbial infectious disease that has imposed a continued burden onto the health-care system of nations worldwide. TB is uncommon in the developed countries as compared to developing countries [1]. According to the World Health Organization (WHO) report 2019, a total of 1.4 million people died of TB (including 208,000 people with HIV). The 30 high TB burden countries accounted for 87% of new TB cases. Eight countries account for two-thirds of the total, with India leading the count, followed by Indonesia, China, the Philippines, Pakistan, Nigeria, Bangladesh, and South Africa [2]. No doubt primary lesion occurs as pulmonary infection, but over the past few years, the extrapulmonary infections have also shown an increase in number [3]. Secondary oral manifestations associated with pulmonary infection are rarely seen and if present, lesions usually appear on the gingiva, palate, lips, tongue, buccal mucosa, frenulum, and jawbones [4]. Osteoarticular TB accounts for 1.2% of all types of bone TB. Bone TB forms about 10% of extrapulmonary TB of which 50% occur in the spine. TB of the flat bones of the skull is not known and that of the mandible is very rare due to the paucity of cancellous bone [5]. Primary TB of the temporomandibular joint (TMJ)/condyle is rare. Such presentation sometimes can be a diagnostic dilemma and can mislead the dentist or the clinician and further delaying the effective treatment [3].

CASE REPORT


A 15-year-old female patient reported with the chief complaint of swelling on the right side of the face in the preauricular region with reduced mouth opening for 6 months. The patient was apparently asymptomatic 6 months back when she developed firm swelling in the right preauricular region (Fig. 1) which was associated with dull pain and reduced mouth opening. There was no sign of pus discharge from the ears at the respective site. Furthermore, the overlying skin was normal in color and afebrile. There was no sign of lymphadenopathy.

General examination showed no significant abnormalities and vitals were in normal limits. Antibiotics and analgesics were prescribed by the general physicians but there was no improvement in the condition. On detailed clinical examination, there was no obvious odontogenic infection. Tenderness was elicited in the right TMJ area. Based on the clinical examination, a provisional diagnosis of capsulitis/synovitis was considered.

Orthopantomogram (OPG) revealed osteolytic changes involving the right ramus and condyle. There was a loss of cortication in the articulating surface of the articular eminence (Fig. 2). Hence, based on the findings, a radiographical diagnosis of osteomyelitis (tuberculous), juvenile idiopathic arthritis, juvenile rheumatoid arthritis, and septic arthritis was considered. To rule out TB, the patient was subjected to a chest X-ray and

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Mantoux test. Chest X-ray could not reveal abnormal changes, whereas, the Mantoux test was positive. After the diagnosis for tuberculous osteomyelitis, the patient was referred to the tubercular center for further treatment.

The patient was kept on anti-tubercular drugs for 9 months. In between this period, the patient was regularly monitored every month. After 2 weeks of starting the treatment, the patients symptoms were alleviated. The swelling subsided and there was no tenderness in the pre-auricular area. After 2 months of treatment, OPG was done and it was noticed that process of bone reformation at the condylar region (right) was appreciated. The patient mouth opening was also improved. We further evaluated the patient for 6 months. There was no sign of swelling and there was a significant improvement in the condition of the patient. The bone reformation was significantly evident in the ramus and condylar head region (Fig. 3).

DISCUSSION

TB involving the orofacial region is a rare manifestation of extrapulmonary TB, seen in approximately 0.1–5% of all TB infections. It is of two types – primary and secondary. The primary form is rare and more commonly occurs in children and adolescents, whereas, the secondary form is most common and seen in middle-aged and elderly patients. As the incidence of orofacial TB is low, therefore, primary clinical presentation and



Figure 1: Extraoral swelling involving the right pre-auricular area



Figure 2: Osteolytic changes involving the right condyle and ramus region.

diagnosis of TB in the oral cavity are difficult. Till now, only a few cases have been reported in the literature (Table 1). Andrade *et al.* proposed a recent classification (Table 2), subclassifying the orofacial tubercular lesion into five types [7].

Orofacial TB can involve any region of the oral cavity and its associated structures such as oral mucosa, lips, tongue, palate, jawbones, TMJ, and sinuses [6]. Involvement can occur by hematogenous spread because of which the ramus of the mandible and the attached musculature are more affected [8].

The clinical presentation of TB of TMJ is non-specific and may represent arthritis, osteomyelitis, or chronic joint disease. Tubercular osteomyelitis of the mandible causes slow bone necrosis and sometimes involves the complete mandible. A small translucent area due to decalcification and blurring of trabecular details with irregular areas of radiolucency accounts for the first depictable change [9]. The bone is gradually replaced by soft tuberculous granulation tissue. After caseation, softening, and liquefaction, a subperiosteal abscess (lumpy jaw) forms which is present as a painless, soft swelling. This cold abscess may burst either intra or extraorally forming single or multiple sinuses. The lesion is seen to involve the outer cortical plates, whereas, the medullary bone is less affected. Furthermore, magnetic resonance imaging assessment improves the clinician's ability to make a differential diagnosis. If the condition is misdiagnosed as a common TMJ arthralgia or osteoarthritis, the joint destruction continues. The functional prognosis of the joint depends on the degree of destruction at the time of the correct diagnosis and start of treatment [10]. Table 3 describes various diagnostic tests for TB and their advantages [2].

This case deserves attention since tuberculous osteomyelitis is uncommon and accounts for <2% of skeletal TB. Only a handful of cases of tuberculous involvement of the condyle has been reported in the literature that emphasizes the rarity of this case [1]. In our case report, it is clear that the patient had involvement of the TMJ early in the course of his clinical infection, given the initial symptoms of pre-auricular pain and the extent of condylar destruction on the radiograph. This would imply that the infection may have been initiated in the condyle or joint space and infected the surrounding hard and soft tissues secondarily. Most of the time, swelling and pain are misdiagnosed as odontogenic infections and the patients are prescribed antibiotics. Therefore, benign and malignant neoplasms of the joint and infective processes such as



Figure 3: Post-treatment orthopantomogram showing complete formation of the condyle and ramus of the mandible

Table 1: Cases of tuberculous osteomyelitis involving mandible

| Author and year | Age/sex | Condyle/coronoid | Examination | Radiographic features | Investigation | Treatment | Prognosis |
|------------------------------|---------|--|--|--|--|--------------------------------------|--|
| Kumar <i>et al.</i> [1] | 34/m | Left condyle | Unilateral solitary swelling, firm, tender, and non-fluctuant Reduced mouth opening | OPG: Ill-defined radiolucency in the left condyle. CT: Erosion with the trabecular destruction of the left mandibular condyle. | ESR- 40 mm/h TLC- 1200/cumm FNAC | ATT and condylectomy | Regression of the swelling within 1 month |
| Sheikh <i>et al.</i> [4] | 20/m | Right condyle | Unilateral solitary swelling in the rt TMJ, firm, tender, and non-fluctuant Reduced mouth opening Localized raised in temperature | OPG: Ill-defined radiolucency in the right condyle CT: Erosion with the comminuted destruction of the right mandibular condyle. USG: Irregularity with erosion | Increased ESR (26 mm/h) and PMN USG-FNAC Chest X-ray Mantoux test- 9 mm AFB staining | ATT for 9 months | Regression of the swelling. |
| Karjodkar <i>et al.</i> [5] | 18/f | Condyle and ramus of the mandible (left) | Swelling in the left preauricular region. Lymph node palpable in left submandibular region. | OPG: Diffuse radiolucency in the ramus of the mandible. CBCT: Pronounced rarefaction and destruction of bone in the ramus. USG: 4X1 cm size hypoechoic collection with erosion of underlying mandible. | FNAC of left parotid region swelling | DOT, short course | Progressive bone healing in the ramus and increase in cortication of the left condylar head. |
| Koul <i>et al.</i> [9] | 16/f | Condyle and ramus of the mandible (left) | Left preauricular facial swelling | OPG: Diffuse radiolucency in the ramus of the mandible. CT: Pronounce rarefaction and destruction of bone. | Complete blood count ESR: 45 in 1 st h LDH: 320 U/L Mantoux test positive Trucut biopsy | Anti-tubercular therapy for 9 months | Marked reduction in the size of the lesion |
| Sreelatha <i>et al.</i> [13] | 22/f | Left condyle | Extraoral: Swelling measuring 3X2 cm causing deviation of the mandible to the left Intraoral: Swelling over the left lower border of the mandible, extending from 2 nd molar to the anterior border of the ramus | OPG: Radiolucency with absence of entire left condyle up to subcondylar region. | ESR – 50 mm/h Mantoux – induration of 30 mm Excisional biopsy | DOTs regimen Cat. 1 | Complete remission and no evidence of recurrence |

Table 2: Recent classification of tuberculous lesion proposed by Andrade *et al.*

| Types | Clinical features |
|----------|---|
| Type I | Consists of a lumpy jaw with an extraoral swelling without any intraoral or extraoral draining sinuses |
| Type II | History of extraction and non-healing extraction sockets with/without intraoral or extraoral draining sinus |
| Type III | The patient has no history of extraction and present with an intraoral or extraoral draining sinus in the orofacial region and an osteomyelitic bony lesion |
| Type IV | Tuberculous lymphadenitis of the head, face, and neck region without any features of types I, II, III, or V, and type V lesions are those of sites in and around the oral cavity, for example, orofacial muscles gingiva, tongue, maxillary antrum, salivary glands, etc. |

acute suppurative arthritis, osteomyelitis, and chronic tuberculous arthritis have to be considered in such cases [11].

The treatment of orofacial TB varies depending on its presentation. In the literature, cases of minimal destructive lesions only require the medical intervention of anti-tubercular therapy to achieve resolution, precluding the need for surgical treatment of the lesion. Moderately destructive lesions required decortication of bone as a result of medullary bone destruction and/or cortical bone perforation. The chemotherapeutic regimen for extrapulmonary TB is the same as that for pulmonary TB. The WHO guidelines for appropriate TB chemotherapy include long-term treatment with a multidrug regimen. Antitubercular therapy comprising isoniazid (10 mg/kg of body weight), rifampicin

Table 3: Diagnostic tests for tuberculosis

| S. No. | Diagnostic tool | Advantage |
|--------|------------------------|--|
| 1 | Heaf Test | Easy interpretation; less interobserver variability |
| 2 | Mantoux test | Screening test, diagnosis of active TB, more precise than radiograph |
| 3 | Radiograph | Easy to perform |
| 4 | Ziehl-Neelsen staining | Simple, non-invasive, economical |
| 5 | Auramine fluorescence | More sensitive, quick results, contrast enables better visualization |
| 6 | ELISA | More sensitive, faster |
| 7 | IJ medium culture | Less expensive than BACTEC |
| 8 | BACTEC | Differentiates <i>M. tuberculosis</i> from other species |
| 9. | PCR | Sensitive, quick results |

ELISA: Enzyme-linked immunosorbent assay, LJ: Lowenstein-Jensen, PCR: Polymerase chain reaction

(10–20 mg/kg of body weight), and pyrazinamide (10–20 mg/kg of body weight) for 2 months followed by isoniazid and rifampicin for the following 4 months is recommended as initial therapy for all forms of TB [12,13]

CONCLUSION

TB presents a different clinical picture as per individual immunity and response towards an infection. Although of rare occurrence, the differential diagnosis of tubercular osteomyelitis must always be kept in mind by clinicians, when routine therapy fails to bring about an improvement in the lesions of the mandible. Since the involvement of bone occurs in later stages of the disease, the prognosis is poor and death from the involvement of internal organs or from tubercular meningitis is common. However, if the lesion is primary and detected early, the disease is completely curable and can lead to the reversal of all destructive bony changes.

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