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Beyond Odontogenic Infection: Tuberculous Osteomyelitis of the Mandible as A Rare Pediatric Mimic

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Abstract **Case Report**

Tuberculosis, caused by Mycobacterium tuberculosis, primarily manifests as pulmonary disease but can involve extrapulmonary sites in approximately 15–20% of cases. Osteoarticular tuberculosis is rare, and mandibular involvement remains an exceptional clinical finding that frequently mimics odontogenic infections or malignancies. This report describes an 11-year-old female presenting with a painful, right-sided mandibular swelling evolving over five months, associated with cutaneous fistulization and purulent discharge. Clinical and radiographic evaluations revealed aggressive, diffuse bone lysis initially suggestive of a tumor. Following negative sputum and chest radiographs, a diagnosis of tuberculous osteomyelitis was confirmed via histopathology and molecular testing (CBNAAT). The patient showed a remarkable recovery following a standard antituberculous regimen. This case underscores that tuberculous osteomyelitis should be considered in the differential diagnosis of chronic mandibular swellings resistant to conventional antibiotics. Early diagnosis through a multidisciplinary approach including molecular tests like Xpert MTB/RIF is essential to avoid unnecessary surgical morbidity and initiate life-saving therapy.

Keywords: Tuberculosis; osteomyelitis; mandible; extrapulmonary tuberculosis; CBNAAT.

INTRODUCTION

Tuberculosis (TB) remains a dominant global public health challenge, particularly in developing nations, with millions of new cases reported annually [1]. While pulmonary involvement is most common, extrapulmonary tuberculosis (EPTB) accounts for 15–20% of cases in immunocompetent individuals [2]. Osteoarticular TB represents approximately 1–3% of all cases, typically resulting from hematogenous dissemination [3]. Involvement of the jaws is exceedingly rare; however, when present, the mandible is more frequently affected than the maxilla due to its richer vascularity and medullary bone volume [4]. Mandibular TB often mimics common pathologies such as dentoalveolar abscesses, presenting with pain, swelling, and fistulas, which can lead to significant diagnostic delays. Modern nucleic acid amplification tests, specifically Xpert MTB/RIF, have revolutionized the rapid detection of paucibacillary extrapulmonary forms [5]. We report a rare case of primary tuberculous osteomyelitis of the mandible in a pediatric patient.

CASE REPORT

An 11-year-old female with no significant medical history presented with a five-month history of progressive painful swelling of the right face and a one-month history of cutaneous purulent discharge. Physical examination revealed a firm, tender 3.5 cm × 2.5 cm mass in the right mandibular region with active fistulous tracts extruding thick yellowish pus. Intraoral examination identified an obliterated buccal vestibule in the region of teeth 46, 47, and 48, accompanied by dental mobility. Cervical palpation confirmed soft, mobile, and tender right submandibular and laterocervical lymphadenopathy (Figure 1).

Figure 1: Initial clinical presentation

Orthopantomography (OPG) and CT scan revealed aggressive, diffuse bone lysis involving the horizontal ramus, angle, and ascending ramus up to the condyle, with significant irregularity of the inferior border (Figure 2).

Figure 2: 3D CT reconstruction showing an aggressive, diffuse bone lysis of the mandible

Cytological smears of the pus showed giant cells suggestive of granulomatous formation and tested positive for acid-fast bacilli (AFB). Interestingly, the Mantoux test, sputum cultures, and chest radiography were all negative. A provisional diagnosis of tuberculous osteomyelitis was made, and the patient underwent surgical curettage under general anesthesia. Samples were sent for Cartridge-Based Nucleic Acid Amplification Testing (CBNAAT) and histopathology, both of which confirmed Mycobacterium tuberculosis.

The patient was started on a daily fixed-dose combination of Isoniazid (300 mg), Rifampicin (450 mg), Pyrazinamide (750 mg), and Ethambutol (100 mg). One month after initiating therapy, the fistulous tracts had completely healed, and a 3-month follow-up radiograph showed significant new bone formation. Written informed consent was obtained from the patient's guardian.

DISCUSSION

Orofacial tuberculosis may occur as a primary infection or secondary to a pulmonary focus, with the latter being more common due to hematogenous spread or infected sputum inoculation [6]. Tuberculous osteomyelitis of the jaws is a rare entity, representing less than 2% of skeletal TB cases. The mandible's predilection in these cases is attributed to its medullary bone compartment, which provides a niche for bacterial dissemination [7]. Clinically, the presentation is deceptive; it often mimics chronic suppurative osteomyelitis or aggressive malignancies like Ewing's sarcoma, especially in pediatric patients [8].

The paucibacillary nature of these lesions makes traditional Ziehl–Neelsen staining and cultures poorly sensitive [9]. Consequently, histopathology remains the gold standard, though modern molecular techniques like CBNAAT (Xpert MTB/RIF) offer a rapid, highly sensitive alternative for detecting DNA and rifampicin resistance [10]. Treatment duration typically

ranges from 6 to 12 months, and as seen in this case, early pharmacological intervention usually results in excellent bone regeneration [5].

CONCLUSION

Tuberculous osteomyelitis of the mandible must be included in the differential diagnosis of chronic mandibular lesions with fistulization. This case highlights that a negative chest X-ray or Mantoux test does not rule out TB. Clinicians should utilize histopathology and molecular testing early to ensure prompt initiation of therapy.

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