

PRIMARY TUBERCULOUS OSTEOMYELITIS OF MANDIBLE- A DIAGNOSTIC CHALLENGE

***A.I. Samu Fathima and G.V. Murali Gopika Manoharan**

*Department of Oral Medicine and Radiology,
Tamilnadu Government Dental College & Hospital
Author for Correspondence: drfathimafayaz@gmail.com

ABSTRACT

Orofacial Tuberculosis, though a rare entity can be included in the differential diagnosis of a suspicious swelling of jaws involving the bone when it presents in young patients without any obvious dental septic foci upon presentation. Our duty as a diagnostician is to elicit and collect the data from the successive diagnostic tests and arrive at a final diagnosis instead of jumping into hasty conclusions and unwarranted treatment methods. In this era even with the availability of various diagnostic tests for early detection and management, some cases might pose diagnostic challenge and we here are going to discuss the case of a 15 year old boy who presented to our department with a swelling history of 3 months duration in the right side face region.

Keywords: TB (Tuberculosis), Xpert (Cartridge Based Nucleic Acid Amplification Test RT-PCR), TruNAT (Chip based RT-PCR)

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INTRODUCTION

According to WHO worldwide, TB is the 13th leading cause of death and the second leading infectious killer after COVID-19 (above HIV/AIDS). In 2020, an estimated 10 million people fell ill with tuberculosis (TB) worldwide out of which 5.6 million were men, 3.3 million happened to be women and 1.1 million children. TB is present in all countries and age groups and is curable. In 2020, the 30 high TB burden countries accounted for 86% of new TB cases. Eight countries account for the total two third worldwide cases, of which India ranks first.

Orofacial TB accounts for only 0.5-1% among all other sites and the primary TB is common in children whereas in adults it is the secondary form that is more prevalent. Orofacial TB can involve any site of the oral cavity and associated structures such as tongue, palate, lips, oral mucosa, jaw bones, sinuses, temporomandibular joint (TMJ), etc (Bansal *et al.*, 2015). Dentists must have knowledge of the Andrade's classification of orofacial TB (Andrade and Mhatre, 2012) (Table 1) so as to be aware when diagnostic suspicion for TB arises in a given case.

Table 1

Type 1	Patient presents with extra oral swelling with or without any intraoral or extraoral draining sinuses; the focus of infection involves the mandible or maxilla; in general, the patient's oral hygiene is good
Type 2	Patient reports with a history of extraction with non-healing extraction sockets with or without any intraoral or extraoral draining sinus/ sinuses
Type 3	Patient reports no history of extraction with intraoral or extraoral draining sinus/sinuses in the orofacial region and an osteomyelitic bony lesion

Type 4	Tuberculous lymphadenitis of head face neck region without any features of type 1,2,3 or 5
Type 5	Lesion of other sites in and around the oral cavity eg.,maxillary antrum, salivary glands, orofacial muscles, gingiva, tongue etc

CASE

A 10 year old male patient reported to our department of Oral Medicine and Radiology, with a chief complaint of swelling over his right side face near the ear with associated pain region for past 3 months (Fig 1) with a history of intermittent fever and no relevant history of trauma. The patient had constant pain with no major relief even upon intake of NSAID's prescribed by a dentist whom the patient has seen earlier. Aspiration & drainage of the collected pus was done by the previous dentist and the cytology results were inconclusive and hence patient was referred to a tertiary centre for further management.



Figure 1(a) & (b): Pre and post operative images respectively

The Patient had other medical conditions like Global developmental delay with an IQ=55 and was also an epileptic under active management therapy with a history of recent episode 2 weeks back. Non-consanguineous marital history of the parents with no relevant family history was also elicited. The patient was able to accommodate simple instructions but effective communication was achieved with the parental guidance. History did not reveal any evening raise of temperature/cough/ hemoptysis/ weight loss. On general examination, the child was afebrile and moderately built and there were no other obvious signs of systemic illness. On lymph node examination, bilateral submandibular nodes were palpable and non-tender. On local Extra oral examination, inspection revealed a solitary swelling in the right parotid region; oval in shape, measuring around 5 X 6 cm with elevation of the ear lobe. The extent was in the parotid-masseteric region. The surface of the swelling was smooth with diffuse margins and evidence of extra-oral sinus was present (related to the previous intervention done by the patient's dentist). On palpation, the swelling was warm, tender and soft in consistency with mild fluctuation. On intra-oral examination all the teeth were present with no evident intra oral source of sepsis or any intra-oral swelling as well. The patient had CT & MRI of head and neck of which CT revealed erosive changes of the right condyle (Fig 2) and MRI showed soft tissue hyperintensity with enhancement in T₁ and T₂ weighted images [Fig 3(a) and 3 (b)] in the right side condyle region with the evidence of erosive condylar changes. Benign parotid hypertrophy was present on the affected side with no evidence of pathology in the parotid glands (Fig 3a).

Based on the clinical and radiological findings, a provisional diagnosis of osteomyelitis of right condyle was given. Since the patient was of young age, TB has to be ruled and hence FNAC was done and specimen taken from the lesion site was submitted RT-PCR (Xpert) from the department of Oral and Maxillofacial surgery in our institution, the results were negative and surgery was performed thereafter and the histopathology findings revealed the presence of necrotic bone with multinucleated giant cells



Figure 2: CT scan showing erosive condylar changes (marked with arrow point)

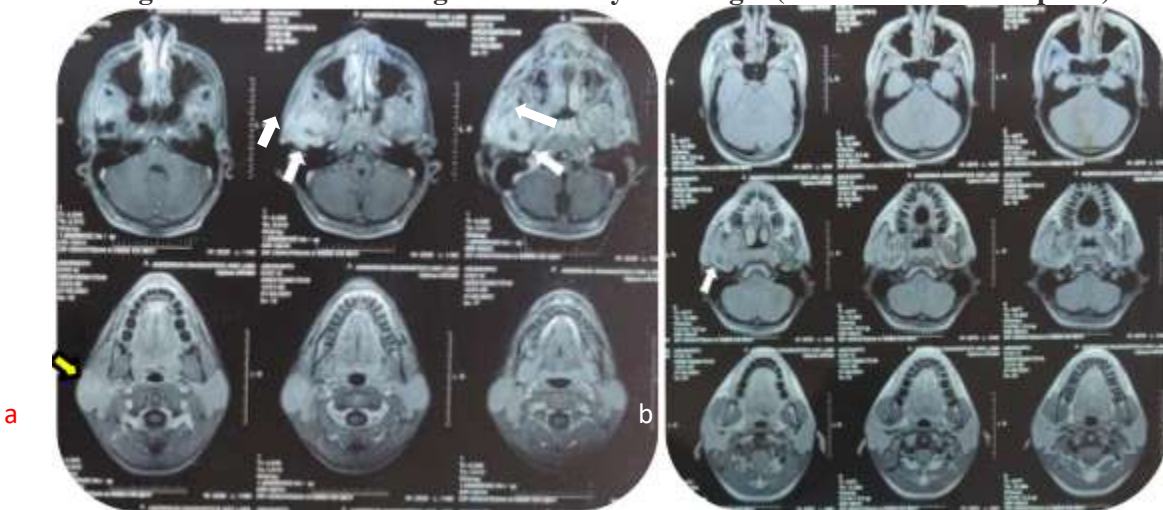


Figure 3(a) and 3(b): T₁ and T₂ weighted images respectively showing the erosive condylar changes (white arrows) and benign parotid hypertrophy of right side parotid gland (yellow arrow).

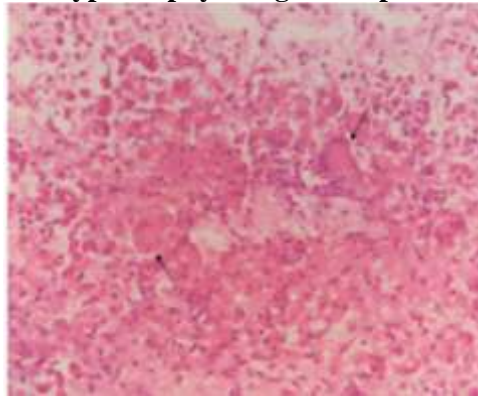


Figure 4: Histopathologic image having multinucleated giant cells (black arrows)

(Fig 4) suggestive of TB osteomyelitis and hence the excisional biopsy specimen was then submitted for TruNAT (chip based molecular diagnosis of infectious diseases using RT-PCR) in which the results were positive for TB and hence the case as suspected turned out to be tuberculous osteomyelitis of right condyle. The patient was then referred for ruling out foci of TB elsewhere in the body and there were no foci in any other body sites including the lungs. The final diagnosis of the case was hence declared to be primary tuberculous osteomyelitis of condyle.

Case Report (Open Access)

DISCUSSION

The possible differential diagnosis in this case based on the clinical and radiographic findings are Osteochondroma, Osteomyelitis (due to septic arthritis). Possible foci of origin for osteomyelitis of dental and adjacent structures (parotid, ear, mastoid) got excluded in this case with the MRI and the last suspect was tuberculosis.

World Health Organization (WHO) endorses rapid molecular Truenat™ assays as initial tests to identify tuberculosis and detect rifampicin resistance in updated policy guidelines, 2020. Truenat is a novel molecular assay that rapidly detects tuberculosis (TB) and rifampicin-resistance. Due to the portability of its battery-powered testing platform, it may be valuable in peripheral healthcare settings in India as confirmed by Lee and Kumarasamy *et al.*, (2019) which is a major advantage for TB diagnosis as well management.

Sensitivity and specificity of smear microscopy for two sputum samples were 64% and 98% compared to culture according to the study of Stengart *et al.*, (2014). Sensitivity and specificity of Xpert were 89% and 99% compared to culture, per the results of a meta-analysis (Davis *et al.*, 2013). Truenat's sensitivity for TB detection is 96% compared to Xpert in a study done by Nikam *et al.*, (2014). To compare Truenat to culture, we multiplied 96% (Truenat's sensitivity against Xpert) by 89% (Xpert's sensitivity against culture). Therefore, the sensitivity of Truenat was 86% compared to culture. The advantage of TruNAT is that it's cost effective and appropriate for peripheral healthcare settings.

CONCLUSION

Tuberculosis, being a treatable disease accounts for massive death rate of the developing countries due to the delay in diagnosis and treatment. With the help of this newer diagnostic techniques like Xpert and TruNAT for TB, disease identification and management can be achieved at even smaller healthcare settings providing a major breakthrough in the control of this deadly disease and hence is endorsed by the WHO as the initial diagnostic test for TB and also is accredited by the Indian Council of Medical Research as well.

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