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Mandibular tuberculosis presenting as a squamous cell carcinoma

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1. Background

Tuberculosis (TB) is a chronic infectious granulomatous disease caused by the air-borne bacillus *Mycobacterium tuberculosis (M. tuberculosis, M.Tb)*, and less frequently by other bacterium in the M. tuberculosis complex *(M. bovis, M. africanum)*. [1,2] It is an uncommon clinical entity in high-income countries, however, co-infection with the human immunodeficiency virus (HIV) has resulted in a resurgence of the disease [3].

The World Health Organisation (WHO) estimates the TB epidemic to be larger than previously estimated reflecting on new surveillance and survey data from India. It is now considered to be within the top ten causes of deaths worldwide. In 2015, there was an estimated 10.4 million new incidence of TB cases worldwide, of which 5.9 million (56%) were among men, 3.5 million (34%) among women and 1 million (10%) among children. People living with HIV accounted for 1.2 million (11%) of all new TB cases [4].

Orofacial TB occurs in both primary and secondary forms. The lesions of primary orofacial TB are uncommon, and generally arise in young individuals [5], presenting as a single painless ulcer with regional lymph node enlargement. It is reported that 60% of all cases of TB of the jaw occur in children below the age of 16 years [6].

The secondary form of TB is more common, and associated with pulmonary disease, where the bacilli present in the patient's own expectorated sputum is seen more in adults or geriatric cases. In both cases, occurrence of orofacial TB in the cranio-facial bones is relatively rare. Mandibular tuberculosis has been reported, but is extremely rare [1,7,8].

We report a case mimicking a squamous cell carcinoma (SCC), clinically and radiologically and, unusually, without the expected systemic signs and symptoms of the malignant condition. The authors wish to highlight the suspicion of mycobacterial infection when clinicians are presented with a cranio-orofacial lesion that appears to be clinically in keeping with a malignancy, given the knowledge of TB resurgence in the developed world.

2. Case report

A forty-six-year-old Bengali male presented with a history of a large non-healing ulcer of the lower left alveolar region of the mandible. He denied any relevant systemic medical condition but appeared malnourished. Socially, he disclosed a historic smoking habit, stopping 10 years previously, and a decrease of alcoholic intake from over 30 units/week to 10 units/week.

- **Clinical presentation**

Extra-orally, he presented with palpable level Ib, II and V lymph nodes. Intra-oral examination revealed an approximately 2 cm × 1 cm ulcerated mass with rolled edges of the alveolar region of his left mandible and associated neurosensory disturbance of the mandibular branch of the trigeminal nerve causing lower lip paraesthesia. He also presented with a neglected dentition, and severe generalised periodontitis, Fig. 1.

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- **Investigations**

Radiology: A dental panoramic tomography (DPT) image demonstrated an osteolytic lesion of the left body of the mandible measuring approximately 2cm. Cone beam computed tomography (CBCT) confirmed focal destruction extending from the lower left incisor to the lower left molar region with destruction of the lamina dura and part of the inferior alveolar nerve canal wall, as well as extensive destruction of the buccal cortex and erosion through the lingual cortex of the mandible, Fig. 2.

Given the initial clinical picture and the baseline DPT, a working diagnosis of SCC was presumed, and therefore further investigations initiated to aid surgical planning and staging. Computed tomography (CT) of the chest excluded metastasis. Magnetic resonance imaging (MRI) demonstrated the soft tissue extension, thus providing a working diagnosis of left mandibular SCC with bony destruction and necrotic lymphadenopathy along the ipsilateral level I and II neck nodes.

Histopathology: An urgent incisional biopsy under local anaesthetic revealed necrotising granulomatous inflammation. Although acid-fast bacilli were not identified on the Ziehl-Neelsen stain, the modified Ziehl-Neelsen stain (Wade-Fite) confirmed diagnosis to be consistent with tuberculosis. The patient was then urgently referred to the respiratory physicians for further investigations.

Microbiology: Mantoux skin test and Quantiferon-TB gold assay sputum were performed by the specialist TB team. Quantiferon-TB gold enzyme-linked immunosorbent assay (ELISA) was approved by the Food and Drug Administration (FDA) in 2001 to aid the detection of the M. tuberculosis complex [9]. Neither test provided evidence of active TB in this patient.

Virology tests including potential co-infection of HIV were negative. Routine biochemistry and haematological investigations did not reveal an underlying systemic cause. This unusual case was then discussed by the head and neck cancer multidisciplinary team (MDT), following which a consensus diagnosis of TB was reached.

- **Treatment**

His treatment involved local surgical debridement without grafting under local anaesthetic, as well as anti-tubercular therapy. He commenced a six-month course, comprising two months intensive therapy with Isoniazid, Rifampicin and Pyrazinamide and maintenance therapy of four months with Rifampicin and Isoniazid.

- **Follow-up**

The patient was reviewed six months following his anti-tubercular therapy. Evidence of radiographic bony infill and healing of the osteolytic lesion was documented, Fig. 3. Improvements of his lower left lip paraesthesia was reported subjectively by the patient and confirmed on clinical examination.

3. Discussion

Global epidemiology of TB is reflected by ethnicity with six countries accounting for 60% of the new cases; India, Indonesia, China, Nigeria, Pakistan and South Africa [4]. This prevalence has resulted from a range of factors including rapidly increasing population, poor socioeconomic conditions, increasing HIV infection rates and development of multidrug-resistant bacterial strains.

In the UK, TB is a notifiable disease, a system implemented in 1913. Clinicians have a statutory duty to notify Local Authorities or a local Public Health England Centre of suspected cases. Suspected and confirmed diseases must be notified within three working days [2, 10]. Through this system it is reported that the risk of TB is significantly higher in people from minority ethnic groups and in people born outside of the UK, with most new cases occurring in cities [2].

The prevalence of oral manifestations in patients with TB ranges from 0.8% to 3.5% [5,11]. Orofacial lesions reported to date include

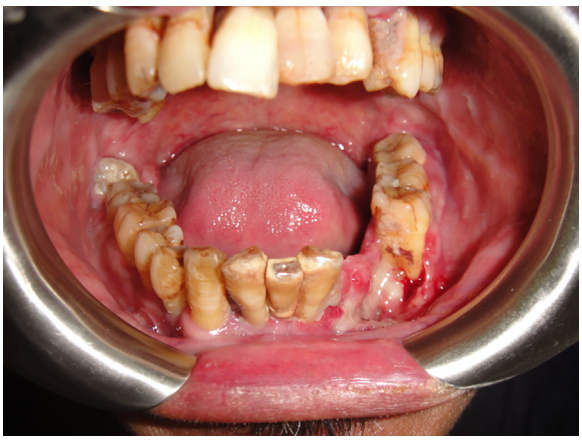

Fig. 1. Ulcerated mass of the alveoar ridge of the left mandible.