Tuberculosis of the maxillary sinus masquerading as a facial abscess, a unique occurrence

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Abstract
The incidence of tuberculosis is a frequent finding especially in developing countries owing to a significant population of the people belonging to the lower socioeconomic strata with poor hygiene and nutrition. Tubercular involvement of the paranasal sinuses is usually asymptomatic until it reaches an advanced state and when it involves the maxillary sinus, this initial period of quiescence often mimics the clinical presentation of a chronic sinus infection, which often leads to a diagnostic dilemma. Symptoms commonly reported are chronic sinusitis and rhinorrhea, both of which being nonspecific in nature leading to a quandary. We herewith present a 50-year-old patient who presented with symptoms of an odontogenic infection involving the right maxillary molars. Primary management did not yield to the resolution of presenting symptoms. On biopsy, through an endoscopic approach and subsequent histopathological examination, the diagnosis of tuberculosis was arrived at. The patient responded well to antitubercular drug therapy.

Keywords: Chronic maxillary infection, tuberculosis, tuberculosis of maxillary sinus

INTRODUCTION
Tuberculosis is one of the chronic diseases affecting humans known from the age of Hippocrates.[1] Pulmonary tuberculosis is the most common presentation, and its prevalence is more widespread in third world countries as when compared to developed nations. Extrapulmonary tuberculosis especially that which involves the paranasal sinuses is rare in occurrence.[2] Tuberculosis involving the maxillary sinus secondary to pulmonary tuberculosis is not always the case. Infection of the Maxillary sinus is often caused due to odontogenic or nonodontogenic origin but rarely presents itself as a facial abscess. Chronic nonspecific suppuration of the maxillary sinus is common among maxillofacial surgical practice. In cases of chronic maxillary sinusitis, irrespective to conventional medical line of management, other sinus disorders such as those due to a fungal infection or a malignancy involving the sinus may be suspected; tuberculous sinusitis, however, is frequently not assumed.

The incidence of such an occurrence has been remarkably low with twenty cases reported in 1907[2] and forty cases being reported until 1977[3‑5] in the world literature. Chronic inflammatory disease of the maxillary sinus is quite common, and we herewith report a unique case of tuberculosis of the maxillary sinus that presented itself as an odontogenic infection.

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CASE REPORT

A 50-year-old patient reported to the hospital outpatient department with a complaint of swelling of the face and painful, mobile upper right posterior teeth for 3 weeks. The patient is from a lower socioeconomic background and works with the local law enforcement unit. He further gave a history of Type II Diabetes and in under medication. On examination, a diffuse swelling was present over the right peri-orbital area, infraorbital region extending up to the upper lip and right alar margin and posteriorly up to the right tragus of the ear [Figure 1]. The facial/extraoral tissues were indurated on palpation with fluctuation elicited in the right maxillary buccal sulcus in the region of the right maxillary molars. The right maxillary second and third molars were tender and intraoral periapical radiograph revealed destructive periodontitis with an abscess. A provisional diagnosis of the right buccal and canine space infection secondary to periodontitis/apical infection involving the maxillary molars was made. The patient had a history of Type II diabetes with fluctuating glycemic control in spite of medication. The patient was then advised admission, and routine hematological investigations were carried out, with the administration of empirical antibiotics. An incision and drainage through a buccal sulcus approach and extraction of the mobile maxillary second and third molars was planned and performed under local anesthesia. Scanty purulent pus was drained and sent for culture and sensitivity testing which yielded negative growth after 72 h.

The patient was discharged on the third postoperative day with relief from pain and mild resolution of the facial swelling and was advised to continue the course of antibiotics for 1 week. On follow-up after a week, the extraction and incision sites were healing well however, the extraoral facial swelling persisted, and the patient complained of postnasal discharge and blockade of the right nasal passage and pain in the Paranasal sinus on the right side. An orthopantomograph done at this time revealed a hazy right maxillary sinus suggestive of chronic inflammatory right maxillary sinusitis. Diagnostic magnetic resonance imaging (MRI) was performed to determine the source and extent of the persistent facial soft-tissue swelling, which revealed mucosal thickening with polyposis involving the right maxillary, frontal, ethmoidal and sphenoidal sinuses with destruction of anterior and posterior walls of the right maxillary sinus and the hard palate, with involvement of the right orbit, infratemporal fossa and superior orbital fissure [Figures 2-4].

A differential diagnosis of a fungal infection or malignancy involving the right maxillary sinus was made. A PPD Mantoux test was positive. Through a diagnostic transnasal endoscopic approach, the right maxillary sinus was viewed which revealed a brownish granular mass [Figure 5]. A biopsy specimen was obtained through the endoscopic approach and was sent for histopathological evaluation which revealed stroma containing numerous granulomas composed of epithelioid histiocytes and Langhan’s giant cells surrounded by lymphocytes and plasma cells with areas of caseation necrosis being seen, that confirmed the diagnosis of tubercular involvement of the right maxillary sinus. Further, Ziehl-Neelsen, AB-PAS and Grocott’s special staining were carried out to diagnose tuberculosis and rule out fungi infection [Figures 6 and 7]. A routine posterior-anterior view chest radiograph was taken which showed no evidence of pulmonary involvement leading to the inference that with the presenting features and histopathological examination, the Maxillary sinus could be the primary site of involvement.
The patient was then started on standard anti-tuberculosis treatment with drug combinations of rifampicin, pyrazinamide, ethambutol, isoniazid and streptomycin (adapted from the WHO regimes). The patient was reviewed after 1 month when there was the total resolution of the facial swelling, clearance of the nasal blockage and absence of any postnasal discharge.

**DISCUSSION**

Tuberculosis is an infectious disease caused by an intracellular acid-fast bacillus, demonstrated by the Ziehl-Neelsen stain. Extrapulmonary sites of tuberculosis represent just 15% of all sites. Most cases of tubercular involvement of the maxillary sinus are secondary to pulmonary tuberculosis. The clinical symptoms of tuberculosis may not manifest themselves until the disease is well on its way. Two types of tuberculous lesions affecting the maxillary antrum have been described, one where there is infection of the mucosa where the antrum is filled with polypoidal thickened mucosa which presents as boggy and pale in appearance and the other type has a tendency to spread showing bony erosion, caseation and at times fistula formation. Prognosis usually depends on the extent of involvement of the lesion, and it is response to the proper treatment initiated at the right time. Either of these types have a propensity to be symptom-free until the lesion has reached an advanced stage.

Inoculation of tuberculosis involving the maxillary sinus usually occurs directly through infected microdroplets or more rarely from a primary tubercular lesion at another site. The contagious nature of tuberculosis of the Paranasal sinuses, specifically of the maxillary sinus is the same as that of primary tuberculosis. Common symptoms that the patient often presents with are nasal obstruction and rhinorrhea; however, these symptoms are nonspecific, hence do not lead to a suspicion of
sinus tuberculosis. In such suspected cases of chronic maxillary sinus infection that presents as a odontogenic infection nonresponsive to treatment, diagnosis can be best made using a standard Mantoux test for tuberculosis and also histopathological examination that can reveal epithelioid and giant cells suggestive of tuberculosis [Figures 8 and 9]. Further, the presence of caseation necrosis is pathognomonic of tuberculosis and rules out other differential diagnoses of Wegener's granulomatosis or sarcoidosis.

Treatment is medical in nature, with Antitubercular treatment regimes, combinations that include rifampicin (450 mg od), ethambutol (800 mg bd), isoniazid (300 mg bd) and pyrazinamide (750 mg bd). Surgical treatment of tuberculosis of the maxillary sinus is not warranted, as the medical line of management using anti-tubercular treatment is generally favorable.

CONCLUSION

Ours is a unique case of tuberculosis of the maxillary sinus that mimicked an odontogenic infection in its clinical presentation. The clinical presentations of the patient lead to a diagnosis of an odontogenic infection arising from the right maxillary second and third molars. Conventional imaging studies revealed haziness in the right maxillary sinus, prompting us to further investigate with an MRI which suggested fungal sinusitis involving the right maxillary, ethmoidal and sphenoidal sinuses with the destruction of the walls of the right maxillary sinus, superior orbital fissure and the hard palate. Biopsy of the lesion was done under general anesthesia by functional endoscopic sinus surgery. Histopathological examination confirmed the diagnosis of tuberculosis. There was no evidence of pulmonary tuberculosis on further work up. Hence, this was the primary tuberculosis of the right maxillary, ethmoid and sphenoidal sinuses that was successfully managed by Anti-tubercular therapy.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.
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Conflicts of interest
There are no conflicts of interest.

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