Atypical presentation of maxillary osteomyelitis in an immunocompromised patient

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Abstract

Maxillary osteomyelitis is a relatively rare presentation. This condition is more often associated with underlying immunocompromised systemic conditions. Thorough clinical examination coupled with meticulous investigative protocol is needed to prevent the dreaded complications associated with the disease. With the emergence of new antibiotics and the use of advanced imaging modalities, the management of such patients has been better over the recent years. Oral physicians play a major role by providing primary care in the early diagnosis of such lesions, especially in immunocompromised patients, thereby improving the patient’s quality of life. The present report highlights an atypical presentation of maxillary osteomyelitis in a newly diagnosed diabetic patient, with the importance of appropriate diagnostic workup, and prompt institution of treatment resulting in complete recovery.

Keywords: Diabetes, immunocompromised, maxillary osteomyelitis

Introduction

Osteomyelitis refers to an inflammatory condition involving the medullary cavity of the bone, extending into the Haversian system and the periosteum.[1] Among the maxillofacial skeleton, the occurrence of osteomyelitis in the maxilla is found to be rare, because of its rich blood supply, thin cortical plates, and insufficiency of medullary tissue.[2] The advent of antibiotics has led to reduced incidence of osteomyelitis and better treatment outcomes.[3,4] However, immunocompromised states such as diabetes, cancer chemotherapy, and malnutrition have been implicated to be the predisposing factor in the pathogenesis and determine the prognosis of osteomyelitis.[5,6] The spread of maxillary osteomyelitis into the cranium and its associated dreaded complications necessitates early diagnosis and prompt institution of the treatment by primary care physicians.[5]

We report a case of atypical presentation of maxillary osteomyelitis secondary to trauma in a newly diagnosed diabetic patient with the diagnostic workup and management.

Case Report

A 40-year-old male patient visited the Department of Oral Medicine and Radiology with chief complaints of pain in the right upper gums for the past 5 days accompanied with occasional discharge. The patient also gave a history of localized trauma 2 years back, which was uneventful, and a recent history of evening rise in temperature, night sweats, and weight loss of approximately 10 kg over the last 3 months.

Personal history revealed that the patient had a history of smoking (10 cigarettes/day) and alcohol consumption (twice a month) for the past 15 years and had recently quit the habit. Intraoral examination revealed evidence of swelling in the
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Mid-palate of size approximately 1.5 × 0.5 cm and evidence of another swelling posteriorly of size approximately 0.5 × 0.5 cm. On palpation, the swelling was soft in consistency, tender, and associated with pus discharge [Figure 1a]. There was also evidence of multiple diffuse swellings with pus discharge and grade II mobility of the associated teeth [Figure 1b].

Investigative workup was started with conventional radiographs, where intraoral periapical radiograph (IOPA) in relation to 14–17 revealed horizontal interdental bone loss [Figure 2a] and orthopantomogram revealed generalized interdental bone loss [Figure 2b].

Complete blood count was within normal limits, erythrocyte sedimentation rate (ESR) values were elevated (21 mm/hr), fasting blood glucose was 152 mg/dl, and postprandial blood glucose was 218 mg/dl. The patient was referred to a general physician in view of his diabetic status and was prescribed T. metformin. Exfoliative cytology revealed no evidence of dysplastic cells and fungal hyphae; subsequently, a biopsy was performed which revealed granulation tissue with plenty of inflammatory cells, chiefly neutrophils, suggestive of acute infection. The patient was advised T. amoxicillin and clavulanic acid 625 mg twice daily, T. metronidazole 400 mg thrice daily, and T. ibuprofen 400 mg thrice daily for 7 days.

At 1-week follow-up, there was a significant reduction in the swelling in the gingiva of 14–16; however, the palatal swelling still persisted. Antibiotic sensitivity test revealed the presence of pseudomonas aeruginosa and showed sensitivity to ciprofloxacin. Hence, the patient was advised to take T. ciprofloxacin 500 mg twice a day for 7 days. Mantoux test, chest X-ray, and AFB were negative for tuberculosis, and nasal endoscopy did not reveal any abnormal pathology.

Intraoral ultrasound of palatal swelling revealed a hypoechoic lesion with underlying bony erosion suggestive of osteomyelitic changes [Figure 3]. CT-PNS (computed tomography—paranasal sinus) with contrast revealed infiltrative process eroding hard palate and bilateral maxillary alveolar ridge with adjacent mid-palatal, nasal septum soft tissue thickening and pansinusitis, suggesting osteomyelitis of hard palate with pansinusitis [Figure 4a and 4b]. Pulp vitality test from 16 to 26 was conducted, revealing non-vital 11–15. Cone beam computed tomography (CBCT) revealed loss of buccal cortical bone and palatal bony erosion in relation to 14 and 15 [Figure 5]. The final diagnosis was non-vital 11, 12, 13, 14, and 15, leading to acute exacerbation of chronic suppurative osteomyelitis of the right maxilla.

Endodontic treatment of 11, 12, 13, 14, and 15 was performed followed by periodontal therapy of rounded photodynamic therapy with local drug delivery (LDD) with tetracycline. There was complete resolution after treatment and is currently disease-free at 1-year follow-up [Figure 6a and 6b].

Discussion

Maxillary osteomyelitis is a relatively rare condition, due to the rich vascular supply; however, in diabetes, the vascularity can be compromised due to the associated microvasculopathy.[4] In the present case, underlying diabetes and smoking could have contributed to ischemia, resulting in poor inadequate inflammatory response leading to necrosis. Odontogenic infections followed by trauma (10%) are the chief etiological factors in osteomyelitis.[6] The present case had a history of trauma to the right side of the face, which could be etiology associated with disease progression as discussed before in the literature.[7]

Clinical features of suppurative osteomyelitis include fever, purulent discharge, swelling, presence of necrotic bone, and sometimes paresthesia.[8] Our case had multiple periodontal abscesses, no evidence of sequestration, and a neural deficit. Imaging modalities like CT, magnetic resonance imaging (MRI), scintigraphy, and positron emission tomography (PET) are preferred for their better diagnostic accuracy compared to
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The treatment of chronic suppurative osteomyelitis includes antibiotics along with debridement and surgical intervention. Osteomyelitis is predominantly a mixed anaerobic infection along with staphylococcus and streptococcus species. The presence of facultative anaerobic or aerobic organisms, which favors osteolysis, is relatively less frequent as seen in our case. Metronidazole for its action against Fusobacterium, Porphyromonas, and Prevotella species and ciprofloxacin for pseudomonas along with surgical debridement favored healing within 2 weeks post-treatment. With the advent of newer antibiotics and sophisticated imaging modalities in treatment planning, the prognosis of maxillary osteomyelitis has been favorable as shown in the present case.

Thus, oral physicians or “Oral Health Primary Care Provider” (OP-PCP) play a substantial role as primary care providers by managing the diseases of the orofacial complex, for the betterment of overall health outcomes. Early identification, systematic investigative workup, judicious use of antibiotics, LDD, and photodynamic therapy, highlighted in the present case, resulted in better postoperative recovery, thereby reducing morbidity post-treatment.

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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