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Case Report

Chronic Suppurative Osteomyelitis of Maxilla: A Case Report

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Abstract

Osteomyelitis of the jaws is inadequately treated true bony infection of the complex craniofacial anatomy and associated craniofacial skeletal. It is one of the most difficult infections to treat. It is a well documented fact that most of the cases of Maxillofacial Osteomyelitis occur in the mandibular region as compared to the maxilla. This case report highlights chronic osteomyelitis of the maxilla, with bony destruction and sequestra involving whole of the maxillary ridge. The clinical relevance with emphasis on radiographic interpretation in such cases is highlighted.

Keywords: *Osteomyelitis; Maxilla; Infection; Denuded bone*

Introduction

Osteomyelitis represents an inflammation of the medullary cavity, Haversian system and adjacent cortex of bone [1]. It was first described by the French surgeon, Edouard Chassaignac in 1852. But in 1764, John Hunter had coined the terms sequestra and involucrum for pockets of dead cortical bone with abscess and new bone formed in response to the sequestra respectively [2]. Osteomyelitis of maxilla was originally described by Rees in 1847. Osteomyelitis of the jaws was relatively common before the era of antibiotic therapy. Today osteomyelitis of facial bones is a rare condition. This case is presented since maxillary osteomyelitis is rare compared to mandibular osteomyelitis. This is because of the extensive blood supply & strut like structure of the bone of the maxilla which makes it less prone to chronic infection [3].

Case Report

A 45 year old female reported to the Department of Oral Medicine & Radiology with a chief complaint of a non-healing area in the upper front jaw since the last 4 months. The history dated back to 4 months when the patient had undergone extraction done in the upper jaw because of pain and pus discharge in the teeth. She was also having nasal regurgitation since 4 months while consuming liquids. She also complained of foul smell from the oral cavity, non-blood stained nasal discharge along with the pain and discomfort upon chewing food. There was no significant medical history. But the patient was a chronic smoker since the last 30 years and had poor oral hygiene maintenance measures.

There were no significant findings upon general physical examination and extra oral examination of the patient. On intraoral examination, bilateral denuded bone was seen on the right and left maxillary alveolar ridge measuring 2x3 cm in size and extending from 12,13,14,15, 16 & crossing the midline involving 22 to 27 tooth region (Figure 1). There were also bilateral fistulous tracts about 0.5 cm x 0.5 cm present on the posterior aspect of the maxillary alveolar ridge, suggestive of oro-antral fistulae.

Figure 1: *Intraoral denudation at the maxillary vestibular region with bilateral sinus openings.*

Radiographic investigations were then carried out. Intra Oral Periapical and Panoramic Radiograph (Figure 2) revealed moth eaten appearance of the maxillary bone, involving the entire maxilla. Computed Tomography Scan (Figure 3,4) was also done, which showed moth eaten type of destruction of the maxilla in the anterior region involving the entire arch. There was also destruction of the antero-inferior wall bilaterally of the maxilla. There was also the expansion of the zygomatic arches bilaterally. Small hyper-dense bony fragments were seen in the medullary cavity suggestive of sequestrum. There was associated periosteal reaction with cortical thickening and full thickness defects in the cortex at places suggestive of cloacae.

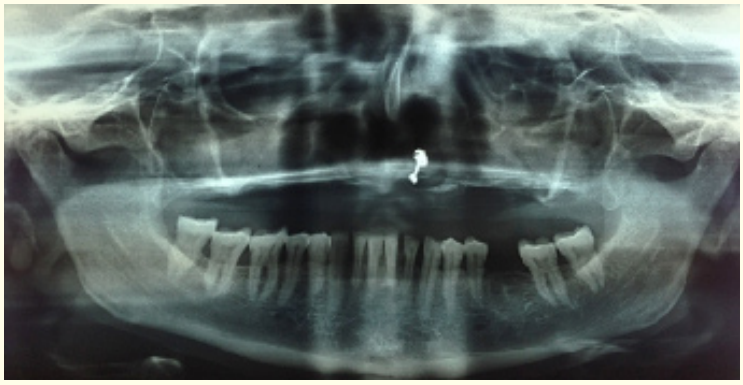

Figure 2: *Orthopentomograph revealing moth eaten appearance of the maxillary alveolar bone.*

Lab investigations were carried out and all the values were under normal range. Biopsy was then performed. Histopathologically there was hyperplasic epithelium with spongiosis. The connective tissue stroma contained irregular, thick interlacing bundles of collagen fibres and chronic infiltrative cells predominantly lymphocytes and plasma cells (Figure 5). There were also bony spicules containing osteocytes within the lacunae. The hard tissue specimen sequestra show bone devoid of osteocytes and this correlated well with the clinical findings. Thus a diagnosis as chronic suppurative osteomyelitis was confirmed.

Figure 3: *Coronal CT section revealing destruction of the maxillary alveolar bone in the anterior region involving the entire arch along with destruction of the antero-inferior wall of the maxillary sinus bilaterally.*

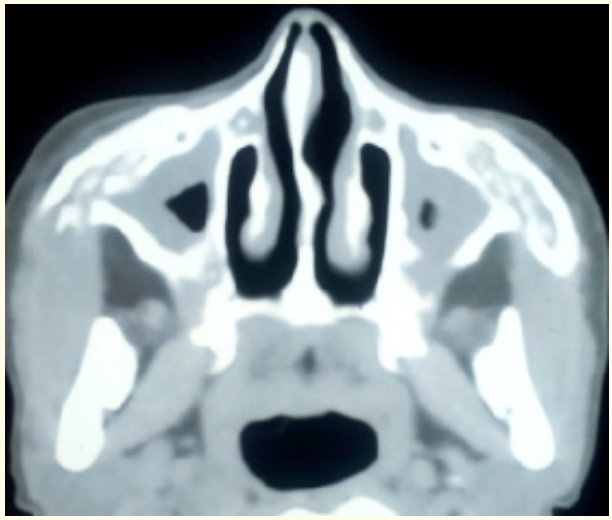

Figure 4: *Axial CT section reveals expansion of the zygomatic arches bilaterally with sequestration in the medullary cavity and associated periosteal reaction with cortical thickening.*

Our patient has crossed the non-invasive approach hence radical resection of the necrotic maxilla and the tissue was performed. Patient had undergone healing and no reoccurrence was there after six months. Administration of amoxiclav 600 mg and metronidazole 250 mg intravenously in every 12 hours were continued for one week postoperatively prior to the patient being discharged from the ward. The patient was reviewed regularly during periodic follow-up visits.

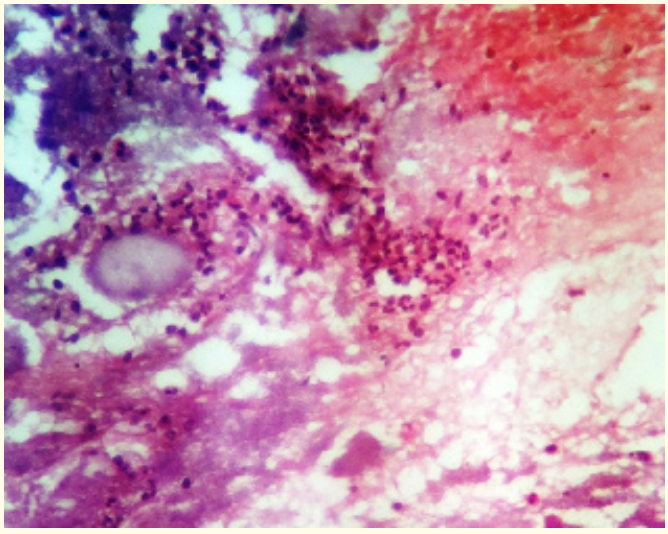

Figure 5: *Histopathology revealing hyperplasic epithelium with spongiosis. The connective tissue stroma contained irregular, thick interlacing bundles of collagen fibres and chronic infiltrative cells predominantly lymphocytes and plasma cells.*

Discussion

Osteomyelitis is an opportunistic infection that is usually a complication of some other condition rendering the host susceptible to disease. In tooth bearing bone, osteomyelitis is usually caused by polymicrobial odontogenic bacteria. The treatment of osteomyelitis varies from a range of simple non-invasive approach to more invasive radical treatment. Treatment can be conservative resection of the diseased bone with adequate clearance in all cases except in cases of osteomyelitis due to osteoradionecrosis (ORN) where resection has to be more radical [1].

In both acute and chronic forms, the mandible is most commonly involved, especially the posterior parts [3]. A study by Taher., *et al*. comprising of 88 cases of osteomyelitis of the mandible found trauma to be the most common predisposing cause for osteomyelitis, attributing it to the geo-political difficulties. Histopathological examination of the surgical specimens or granulation tissues can help in more accurate diagnosis of the predisposing factors such as malignancy, tuberculosis or other granulomatous conditions [4,5]. The treatment protocol consists of a combination of surgery and antimicrobial treatment.

In this present case, with the clinical features and history, chronic suppurative osteomyelitis of the maxilla was provisionally arrived at. But the dilemma was regarding the aetiology of osteomyelitis. The case presented here represents osteomyelitis following odontogenic infection. This is because necrotic bone, pus discharge and foul odour following dental extraction as present in this case are typical features of bacterial infection.

Various radiographic as well as imaging modalities aid in defining the exact extent of the osteomyelitic lesion. Radiographs may include an orthopentomograph as done in this case. Imaging modalities may include a CT scan or an MRI. In most of the cases CT scans are used to define the exact areas involved [5-7].

Chronic osteomyelitis is a very serious condition requiring immediate hospitalization followed by aggressive surgical and antibiotic therapy. In this disease, the blood supply to the infected area is usually severely compromised. At the time of surgery, culture material should be obtained so that appropriate antibiotics can be chosen for treatment of the infection. Most authors agree that antibiotics should be continued much longer than usual for odontogenic infections [7]. For chronic osteomyelitis, antibiotic treatment may be

continued for up to 6 months. The treatment goal is directed to resolution of the infection while maximizing patient function. Celsius, in the 1st century AD, described scraping away or debridement of the dead bone until it bleeds. Only in the past 25 years has the treatment of chronic osteomyelitis progressed to include use of muscle flaps and vascularised bone grafts to manage large open defects. New management techniques such as antibiotic beads are used to manage dead space in staged reconstructions [8].

Osteomyelitis of the craniofacial skeleton is a complex problem requiring rapid and thorough diagnosis and treatment [9-11]. Failure to do so can result in a host of complications and consequences. The cause of this disease is multi-factorial and its presentation varies. Whatever the cause may be, complete resolution of the infection must be obtained to decrease the morbidity and mortality of the patient [10,11].

Literature has been flooded with articles highlighting the treatment of Osteomyelitis which ranges from simple non-invasive to surgical treatment [5,10-14]. Antibiotics are considered to be the treatment of choice in the initial stages. Antibiotics can also be placed in high concentration in direct contact with the bone manually or with an implantable pump [6]. As suggested in literature, the duration of the process, the formation of granulation tissue and the presence of sequestra in almost all cases make surgery mandatory with simultaneous antimicrobial therapy in the management of osteomyelitis. Our patient has crossed the non-invasive approach hence radical resection of the necrotic maxilla and the tissue was performed.

As this case is not medicine related osteonecrosis (MRONJ) of the jaw. There was no Current or previous treatment with anti-resorptive or anti-angiogenic agents. Moreover MRONJ is painful and difficult to treat. Osteonecrosis of the jaw has been recognized by dental and medical practitioners for many years and bisphosphonates as a contributory factor to this condition.

Similar cases must be differentiated from osteonecrosis. Osteonecrosis of the jaw could be viewed as an alteration of normal wound healing in which "delayed" epithelial closure of an opening in the oral mucosa leads to an infection and subsequent necrosis of the bone. Multiple factors, including the patient's immunocompetence and the use of drugs (bisphosphonates, steroids) which impair wound closure may contribute to the pathogenesis.

Conclusion

Osteomyelitis of the maxilla is rare in the modern antibiotic era. However it should still be suspected especially in a patient with diabetes and associated focus of infection such as carious teeth. Adult Osteomyelitis remains one of the most difficult-to-treat infectious diseases, with considerable morbidity and costs to the health care system. Although osteomyelitis involving the alveolar process of maxilla is common due to dental causes, osteomyelitis involving the entire maxilla is very rare and must be supported by advanced maxillofacial imaging modalities like CT scan for treatment.

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