



ISSN Print: 2394-7489
ISSN Online: 2394-7497
IJADS 2023; 9(1): 116-118
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www.oraljournal.com
Received: 02-10-2022
Accepted: 09-12-2022

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Post COVID-19 osteomyelitis in maxillofacial region: A report of 3 treated cases

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DOI: <https://doi.org/10.22271/oral.2023.v9.i1b.1670>

Abstract

Oral health care professionals have reported about post COVID-19 patients presenting signs of uncommon bacterial diseases such as Osteomyelitis of the maxillofacial region. The hosts at substantial risk of developing these fungal infections were diabetics, immune compromised individuals, patients on corticosteroids, and those with hematologic insufficiencies.

Here we report 3 cases that developed osteomyelitis post COVID-19. They were diagnosed and surgically intervened in our department during the peak of COVID-19 pandemic and were kept on long term follow up.

Post pandemic the challenge lies with the oral health professionals to diagnose it at an early so as to minimise the disease progression and improve the surgical outcome.

Keywords: Post COVID osteomyelitis, maxillofacial osteomyelitis, COVID infection, jaw osteomyelitis

Introduction

At the onset of Coronavirus outbreak in January 2020 the symptoms reported were limited to anosmia, Dysgeusia, cough, fever, rashes, generalized body weakness and death in cases of severe acute respiratory syndrome. As more clinicians came across this disease, it was concluded that COVID-19 is a systemic disease that can move beyond the lungs and disseminate to affect multiple organs and have severe ramifications. Healthcare providers saw an increase in patients developing fungal and bacterial osteomyelitis infections of the maxillofacial region during the course and also in later stages of this disease ^[1].

Osteomyelitis is defined as inflammation of the medullary cavities, Haversian system, and adjacent cortex of bone. Usually begins as an infection of the medullary cavity, rapidly involving haversian systems, and quickly extends to the periosteum of the area ^[2].

It commonly occurs as a complication of odontogenic infections in immune compromised individuals. Other predisposing factors include malnutrition, diabetes mellitus, leukemia, anemia, agranulocytosis, chemotherapy, and radiotherapy ^[3].

The most common site is mandible due to nonanastomoses of the inferior alveolar artery and dense cortical plates that prevent discharge of pus through sinus formation and thereby accumulation of infection ^[4].

The frequency of occurrence of maxillary osteomyelitis is less owing to the extensive blood supply, presence of thin cortical plates, and scantiness of medullary tissues impeding the limitation of infections within the bone ^[5].

It presents with clinical manifestations of purulent discharge from tooth bearing areas, pain and mobility of teeth, paraesthesia and exposure of bone ^[2].

Here we present 3 cases of post COVID-19 related osteomyelitis with no fungal element that were treated in our department.

Case presentation

Case No.1

A 37 years old male patient with chief complaint of pain in the upper left back tooth region since 2 months. Patient gave a history of COVID-19 infection 2 months back for which he received treatment.

He gave a history of extraction of the upper left back tooth. Intraoral examinations revealed exposed necrotic bone in maxillary left second premolar and first molar region with pus discharge (Figure 1). Grade I mobility was noticed with 27 and 28. CBCT showed destruction of buccal and palatal cortex on the left side maxilla. There was soft tissue enhancement in the entire left maxillary sinus along with thickening of left ethmoidal sinus lining and right maxillary sinus lining. Blood investigations revealed lymphocytosis and increased HbA1c. KOH mount was negative for fungal hyphae. Functional Endoscopic Sinus Surgery was carried out for sinus debridement. Surgical debridement of necrotic bone and surrounding bone and tissue was done (Figure 2). Actinomycotic osteomyelitis of maxilla was confirmed by histopathology.



Fig 1: Intraoral examination revealing exposed necrotic bone in maxillary left second premolar and first molar region with pus discharge

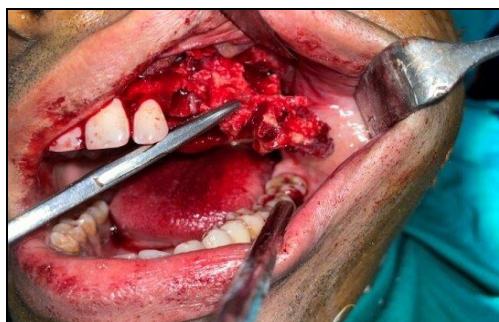


Fig 2: Necrotic bone removed with debridement of surrounding bone and tissue and extraction done from 21 to 28

Case No. 2

A 50 years old male patient reported with chief complaint of pain and mobility in the upper front region and back teeth region on both right and left side since 1 month. He had a history of tooth extraction of upper left 2nd premolar tooth 3 months back. Patient had a history of hypertension since 10 years & type II diabetes mellitus since 8 years. He gave history of COVID-19 infection 3 months back for which he was hospitalised for 2 weeks and had received antiviral and steroidal therapy. Intraorally, there was pus discharge present in the extraction socket of maxillary left premolar region. Cone beam computed tomography (CBCT) showed poorly defined osteolytic radiolucency with altered trabecular patterns extending from maxillary right first premolar to left first molar and hyperdense sclerotic bony islands surrounded by the hypodense island in the alveolar region. Partially isodense right and left maxillary sinus were also noted. Blood investigations showed elevation in ESR and postprandial blood sugar. Potassium hydroxide (KOH) mount revealed no fungal growth. All our findings were suggestive of chronic

osteomyelitis of maxilla. Under antibiotic coverage and regional anesthesia, crevicular incision given from maxillary right first molar to contralateral first molar. Full thickness mucoperiosteal flap was reflected. Sequestrectomy and saucerization was carried out along with extraction of upper right lateral incisor to first molar on left side. KOH mount of the sequestrum did not show any fungal growth. The histopathology report gave the diagnosis of chronic osteomyelitis. The patient underwent 5 sessions of HBO therapy. An acrylic splint was given and a long term follow up was done for 8 months (Figure 3).



Fig 3: Eight month follow up after sequestrectomy

Case No. 3

A 31 years old male patient reported with chief complaint of pus discharge from the lower left jaw since 5 days. Patient gave history of COVID 19 infection 4 months back for which he was hospitalized. Patient also had history of IgA nephropathy with Diabetes mellitus since 10 months. On examination, both side submandibular and submental lymph nodes were palpable and tender. Intraorally multiple, nodular swelling of 2mm diameter along with draining sinuses were present in anterior mandibular region. Grade I mobility was noticed with 37 and 38 and remaining all mandibular teeth were missing due to previous extraction. Computed tomography (CT) showed lytic areas with cortical irregularity in the left mandible. KOH mount was negative for fungal hyphae. Following all aseptic precautions, under antibiotic coverage and regional anesthesia crestal incision was given from 33-38. Full thickness mucoperiosteal flap was reflected and extraction of 37 and 38 was done. Sequestrectomy and saucerization were carried out. Histopathology gave the diagnosis of chronic osteomyelitis of mandible.

Discussion

The associated bacterial or fungal infections in COVID-19 patients is an concern, because of their complex diagnosis, severity, and increased mortality [6]. This development is mainly attributed to the interaction of a wide range of drugs used in the treatment specially corticosteroids and the immunocompromised state of the patient [7]. Uncontrolled systemic illness like diabetes compromises the vascularity due to arteritis of the smaller vessels and hypercoaguable state in COVID-19 infection synergize this condition [8]. Wannfors and Gazelius described the correlation of decrease in blood flow in diabetic patients [9].

All 3 cases of post COVID-19 osteomyelitis presented with diabetes and with a history of hospitalisation. During the 1st and 2nd wave of COVID-19 corticosteroids were inadvertently used to avoid any emergency situation. Our patients also gave history of extraction which must have increased the risk of infection as surgical trauma compromise the local vascularity and provide the portal of entry to microorganism.

Conclusion

Osteomyelitis of maxillofacial region have adverse surgical outcome, leaving patients with small to large maxillofacial defects. In this era of post pandemic the duty lies with every dental practitioner to be able to diagnose the disease at an early stage. Thorough history and careful clinical examination supported by radiographs are of utmost importance. Dental procedures like scaling, root canal treatment and extraction should be carried out only after ruling out causes other than dental for infection. All procedures must be done cautiously in aseptic condition and under strict antibiotic cover.

Acknowledgment

We acknowledge Government Dental College and Hospital Mumbai for material support

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How to Cite This Article

Wadde K, Kri M, Yen CCA. Post COVID-19 osteomyelitis in maxillofacial region: A report of 3 treated cases. *International Journal of Applied Dental Sciences.* 2023;9(1):116-118.

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