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Case Report

Post Covid Rhinomaxillary Mucormycosis: An Atypical Oral Presentation

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ABSTRACT:
COVID-19 disease, the ongoing global pandemic caused by the severe acute respiratory syndrome coronavirus 2 (SARS CoV- 2) has a varying clinical picture from very mild/asymptomatic to life-threatening pneumonia accompanied by bacterial or fungal co-infections. These secondary infections are especially common in patients with other comorbidities. Mucormycosis is one of the deep fungal infections associated with it and primarily affects individuals with an immunocompromised state like diabetes mellitus, malignancies and patients under corticosteroid therapy. This article presents a case of Rhinomaxillary Mucormycosis with an atypical oral presentationin a 43-year-old female patient one month after recovering from COVID-19 infection.
Keywords: COVID-19; Immunosuppression; Mucormycosis

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INTRODUCTION

Mucormycosis is an opportunistic and frequently fulminating fungal infection caused by members of the family Mucoraceae, order Mucorales and class Zygomycetes. Asexual spores of the organism become airborne and when inhaled or ingested by humans,are killed by the host's first line of defence ;the phagocytes .It becomes pathogenic only under deranged host immune responses.[1]It is commonly reported in immunocompromised patients such as those with poorly controlled diabetes mellitus, haematological malignancies,neutropenia, iron overload, organ transplant, and immunosuppressive therapy.Understandably, it is the combination of COVID-19, with decreased immunity and added corticosteroid therapy which probably predispose the patients to Mucormycosis.[2]

CASE REPORT

A 43-year-old female patient reported to the outpatient department of Oral Medicine & Radiology with the chief complaint of pus discharge from gums in relation to upper right back teeth since one and half months. Patient gave history of hospital admission two months back due to respiratory distress where she was diagnosed with Covid-19 induced pneumonia and was under treatment with systemic corticosteroids. Her condition improved gradually and after two weeks she was discharged from hospital. Since then the patient noticed pus discharge from her upper right gums. She was treated with two courses of antibiotics but had no significant improvement. There was no associated pain or paraesthesia. Patient is on antihypertensive medication for past five years. Her family and personal histories were unremarkable.

On extra oral examination, a diffuse swelling was noted over the right middle third of face causing obliteration of nasolabial fold. Skin over the swelling appeared to be normal.

Intraorally, two pus draining sinus openings were observed over the buccal attached gingiva in relation to maxillary lateral incisor, canine and first premolar teeth (**Figure 1**).

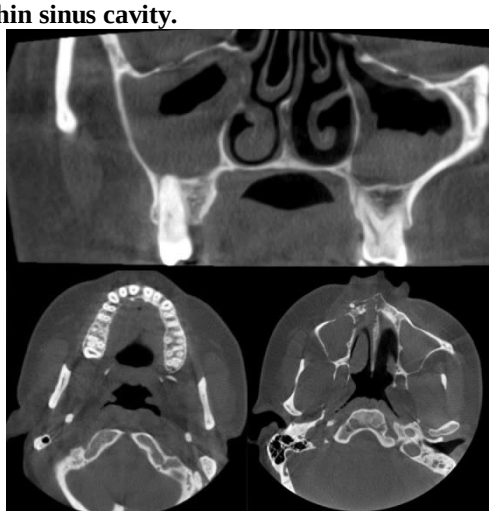
Figure1. Intraoral photograph showing pus draining sinuses

Grade two mobility in relation to central incisor and canine, Grade three mobility in relation to lateral incisor were noted. Palatal mucosa appeared to be normal.A provisional diagnosis of periodontal abscess was given.But due to the prevailing Covid history, further investigations were advised.

Laboratory results showed elevated ESR level, and a normal fasting blood sugar value.

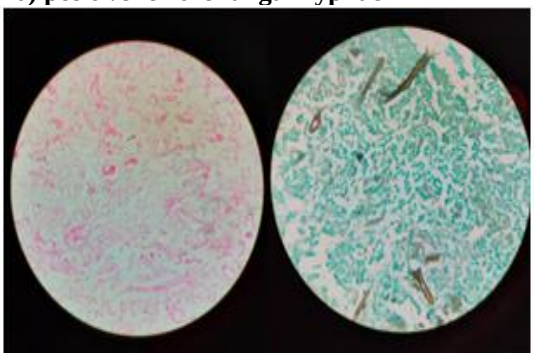
On radiographic evaluation, panoramic radiograph displayed haziness and discontinuity of floor of right maxillary sinus. Cone Beam CT (**Figure 2**) sections showed soft-tissue attenuation density within the lumen almost completely filling the right sinus and partially, the left maxillary sinus with focal areas of hypodensity and complete blockage of right sinus ostium.

Figure 2: Preoperative Cone beam CT
A. Coronal B & C. Axial Sections
showing bony erosions on right maxilla extending to labial and palatal cortical plates; medial, lateral, anterior, superior and floor of right maxillary sinus along with soft tissue density within sinus cavity.



Bony erosions of medial, lateral, anterior, superior and floor of right maxillary sinus were evident. Inferior conchae appear to be hypertrophied on the right side. Thinning of buccal and palatal cortical plate from right central incisor to second premolar was evident. The differential diagnosis considered included osteomyelitis of maxilla, fungal rhinosinusitis and deep fungal infections. MRI orbits and PNS with contrast was advised to evaluate the extent of soft tissue involvement and was suggestive of invasive fungal sinusitis .Patient was then posted for Functional Endoscopic Sinus Surgery and tissue from maxillary sinus was sent for histopathologic evaluation. Microscopic sections (**Figure 3**) showed fragments of necrotic tissue with suppuration and numerous aseptate, fungal hyphae, suggesting diagnosis of Mucormycosis.

Figure 3: Histologic section
A. H&E staining (×40) showing numerous broad aseptate fungal hyphae.
B. Grocott'smethenamine silver (GMS) staining (×40) positive for the fungal hyphae



Positive Grocott's Methenamine Silver stain further confirmed the diagnosis.The patient was then put on oral Posaconazole tablets 300mg for three weeks followed by aggressive surgical debridement and partial maxillectomy.

DISCUSSION

Mucormycosis (also called zygomycosis) was first reported in humans by Paultaufin in 1885. The predominant genera that cause Mucormycosis, is Rhizopus followed by Mucor and Lichtheimia. The fungi begin by invading the blood vessels, resulting in thrombosis and infarction of tissue. When the spores of the fungus, comes in contact with the endothelial cells, angioinvasion occurs. More interaction with the receptors of these cells results in cell damage and fungal spread.[3, 4]

The most common form of this disease in maxillofacial region is rhinocerebralmucormycosis presenting with facial pain and paresthesia, headache, periorbital and nasal swelling, inflammation, eyelid drooping, proptosis, external and internal ophthalmoplegia, vision loss, and blackish necrosis of palate and nasal mucosa. The disease usually initiates on the nasal and oral mucosa and spreads to paranasal sinuses.[5]In our case, no such typical clinical signs and symptoms were reported by the patient.An early intervention could reduce the orbit and skull involvement in our case thus reducing the morbidity. A radiographic evaluation is mandatory to detect bony erosions, sinus opacifications, as well as presence of orbital infiltrations and intracranial involvement.[1]Diagnosis is confirmed by

histopathological demonstration of the organism in the affected tissue. On hematoxylin and eosin stain, fungal elements are easily visible. Gomori's silver staining used to illuminate fungal hyphae, allows for a more detailed analysis of anatomy.[6]

Considering the clinical course, disease progression and severity of COVID-19, most of patients with critically ill conditions inevitably experience at least one of following risk factors, including lymphocytopenia, ICU admission, invasive or non-invasive ventilation, corticosteroid and broad-spectrum antibiotic usage or other immune compromised conditions which predispose them to a significantly increased risk of development of opportunistic fungal infections.[7,8]

Early diagnosis and treatment of Mucormycosisis important due to the aggressive course of disease. First-line treatment with high-dose liposomal amphotericin B is strongly recommended, while intravenous Isavuconazole and intravenous or delayed release tablet Posaconazole are recommended with moderate strength. Both triazoles are strongly recommended salvage treatments. Amphotericin B deoxycholate is less recommended, because of substantial toxicity, but may be the only option in resource limited settings.[9] Surgery is indicated when there is rhinocerebral and skin/soft tissue involvement .Surgical débridement is done until one encounters a normal bleeding tissue.[10]The duration of therapy necessary to treat mucormycosis is unknown. In general, weeks to months of therapy are given. If immune defect is resolved—eg diabetes is controlled, neutropenia definitively resolved, immunosuppression can be tapered or stopped, therapy can be continued until resolution of signs and symptoms of infection, and substantial radiographical improvement.[9]

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CONCLUSION

As majority of Rhinocerebral Mucormycosis cases occurring in post Covid-19 patients have oral manifestations, dentists plays a very crucial role in identifying the warning signs and initiating treatment at the earliest.As it shows varied clinical presentations,performing a radiographic evaluation is mandatory in case of any suspicion to minimisem orbidity and mortality

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