



# ORIGINAL RESEARCH PAPER

# Dentistry

## MUCORMYCOSIS- A CHALLENGE TO DIAGNOSE

**KEY WORDS:** Mucormycosis, Rhinocerebral, Diagnosis, Treatment

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## ABSTRACT

Mucormycosis, an angioinvasive fungal infection of the order Mucorales became very common due to COVID-19 pandemic situation in maxillofacial clinic still remained much undiagnosed disease due to patient's other complaints and lack of history given. We shall be discussing about such case in this paper.

## INTRODUCTION

Mucormycosis is an invasive fungal infection first described by Paulltauf in 1885.<sup>1</sup> Depending on the clinical presentation it is classified as rhinocerebral, pulmonary, cutaneous, gastrointestinal, disseminated or other including uncommon rare forms, such as endocarditis, osteomyelitis, peritonitis, renal, etc. The causative agents of mucormycosis are the filamentous fungi of the Mucoraceae family of the order Mucorales, subphylum Mucormycotina. The most frequently isolated species is *Rhizopus oryzae* followed by *Rhizopus microsporus*, and *Absidia corymbifera*.<sup>2</sup> Infection is acquired through aero-digestive tract with apparently human to human contact spread.<sup>3</sup>

The rhinocerebral form of the disease has been found for 30% to 50% of all cases of mucormycosis.<sup>4</sup> And has been mostly associated with poorly controlled diabetes mellitus and diabetic ketoacidosis,<sup>5</sup> other factors include immunocompromised state due to organ transplantation, hematologic malignancies, prolonged corticosteroid treatment etc.<sup>6</sup>. In this COVID-19 era, rhinocerebral form has increased in number remarkably and often goes undiagnosed as patient's chief complaint differs. In this paper, such case will be discussed.

## CASE REPORT

A 46 year old woman came to our OPD with a chief complaint of pus discharge from upper right posterior teeth region since last 2-3 weeks. Patient also gave history of dull, throbbing and radiating pain over tight maxillary sinus region.

Asking regarding her medical status, she revealed her COVID-19 affected period 2 months back and diabetic period for last two years (under medication) from visiting our outpatient department.

On general examination, facial asymmetry is found and right level IIB lymphadenopathy (Approximately 0.3 mm in diameter) were noted.

While examination intraorally, multiple draining sinuses were found in relation to 16 and 13 region. Segmental mobility noted in relation to 13-16. Correlating both patient's history and clinical viewpoint, a provisional diagnosis of "Mucormycosis involving right maxillary sinus" was given and patient was advised for Orthopantomogram and Paranasal air sinus view for initial diagnosis.

Orthopantomogram showed bony destruction regarding mobile teeth (13-16) and paranasal sinus view surprisingly showed clouding of right maxillary sinus. Histopathological evaluation and contrast enhanced CT scan were advised immediately after routine blood investigations.

On histopathological evaluation and fungal culture- both reports were indicative towards "Mucormycosis" as histopathologically appearance of right-branching aseptate hyphae, which are considered typical of mucor species, along with evidence of angioinvasion and tissue necrosis was noted and presence of non-specific fungus was also found in fungal culture.

Contrast enhanced CT scan showed mucosal thickening of right maxillary sinus, involvement of middle and inferior meatus along with alveolar bone destruction in relation to 13-16 region.

Final diagnosis of "Rhinocerebral mucormycosis involving right maxillary sinus, middle and inferior meatus" was applied.

Initial medications like tablet posaconazole 100mg was given in proper dosage and planned for subtotal maxillectomy and reconstruction with scapula/iliac crest non-vascularised graft in second surgery.

Unfortunately, patient didn't turn up for further treatment.



**Figure 1- Profile photograph**



**Figure 2- Intraoral photograph**



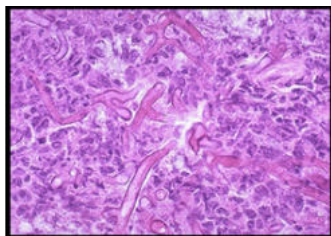
**Figure 3- Contrast enhanced CT scan, bony window, axial section shows space occupying lesion involving right maxillary sinus**



**Figure 4- Exposure of site for biopsy**



**Figure 5- Incisional biopsy taken from site**



**Figure 6- Histopathological view**

## DISCUSSION

Early diagnosis of rhinocerebral mucormycosis is the ultimate challenge regarding prognosis and treatment. If diagnosed early, morbidity can be significantly reduced.

An affected person with diabetes and sinusitis need to be very well tested for feasible mucormycosis. Corzo-Leon et al<sup>7</sup> proposed a set of rules for the diagnosis and treatment of rhino-orbito-cerebral mucormycosis in sufferers with diabetes mellitus. The "warning signs and symptoms" in this algorithm are cranial nerve palsy, diplopia, sinus ache, proptosis, periorbital swelling, orbital apex syndrome or a palatine ulcer. The finding of any of these signs ought to spark off instantaneous further trying out, together with blood assessments, imaging, ocular and/ or sinus surgical procedure or endoscopic revision and initiation of antifungal remedy.

## Treatment modalities-

Although amphotericin B deoxycholate (AMP) stays the best

licensed antifungal agent for mucormycosis, lipid formulations of amphotericin B are taken into consideration a safe and efficient alternative. Liposomal amphotericin B (LAMP) especially has been proved superior to AMP in a retrospective study while amphotericin B lipid complicated (ABLC) has been suggested to be effective as component of a combination treatment with caspofungin.<sup>8,9</sup>

Surgical intervention has been related in big collection with favorable outcome. However, no formal recommendations have been formulated as to the timing and volume of appropriate surgical management.<sup>10</sup> Reed et al<sup>8</sup> advice an "aggressive-conservative" technique with frozen phase guided surgical exploration, sparing uninvolved orbital structures while Nithyanandam et al<sup>8</sup> assist an extra competitive technique with early excision of inflamed structures.

Iron chelation therapy, granulocyte stimulating factor usage or hyperbaric oxygen therapy also shown great influence in the treatment of mucormycosis and still a lot of researches are ongoing.

## CONCLUSION

Rhinocerebral mucormycosis remains nonetheless a poorly understood disease with high mortality charge. Currently, clinician's recognition, prompt initiation of treatment and well-timed surgical intervention constitute the modus operandi against the ailment. Continued research into the pathology and massive scale evaluation of remedy options are future directions in the treatment of rhinocerebral mucormycosis.

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