

## Rhino- Orbito Cerebral Mucormycosis – Uncontrolled, Untimely and Unsaved

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### Abstract

Mucormycosis is an opportunistic fungal infection primarily caused by fungi belongs to class Zygomycetes, order Mucorales and family Mucoraceae. It is common in patient with diabetes mellitus (DM), systemic immunocompromise and iron overload. Here by we present a case report of Rhino- Orbito Cerebral Mucormycosis which is fatal if undiagnosed and untreated in correct time and way.

**Keywords:** Mucormycosis, Cerebral, Maxillofacial.

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### INTRODUCTION

Mucormycosis is an opportunistic fungal infection primarily caused by fungi belongs to class Zygomycetes, order Mucorales and family Mucoraceae [1]. It is common in patient with diabetes mellitus (DM), systemic immunocompromise and iron overload [2]. Invasion of these fungi in deep tissue can be either inhalation, percutaneous inoculation or injection. The most common form of mucormycosis is Rhinocerebral which involves nose, paranasal sinuses, orbits and CNS [3]. Early diagnosis and prompt treatment plan with medical and surgical intervention will improve outcomes and reduce mortality rate. We report a case of mucormycosis in patient with DM and chronic renal failure (CRF) secondary to tooth extraction which ends in mortality.

### CASE REPORT

A 62 year old male patient came to outpatient department with a chief complaint of pain and swelling in the right side of face since one week. Patient gives medical history of known chronic renal failure and diabetes mellitus since years and he was under medication. He also gives previous history of dental extraction (15) in a private dental clinic, 1 week back for tooth ache since 1 month. Following extraction,

there was increase in pain for which zinc oxide eugenol pack was given.

On extra oral examination, there was diffuse swelling in the right middle one third of the face extending mediolaterally from right ala of nose to the outer canthal line and superoinferiorly from infraorbital rim to corner of the mouth. The skin over the swelling is slightly stretched, shiny and tender on palpation. There was periorbital edema, proptosis, ophthalmoplegia, ptosis, non -reactive to light with dilated pupils and poor visual acuity of right eye. Left eye movement, reactive to light, vision is apparently normal. Intra oral examination shows sutures in extracted site, obliteration of right upper vestibule and blanched palatal mucosa over the 15, 16 and 17 region (Figure-1). Patient had foul smelling of oral cavity and tender on palpation in vestibule and extraction socket.

Panoramic radiograph shows presence of radio opaque substance (zinc oxide eugenol dressing) in the extraction socket of 15. CT scan shows opacification of right maxillary sinus and nasal cavity with bilateral ethmoidal opacity (Figure-2). Patient was anxious with BP – 160/96 mmHg, temperature - 100° F, RBS – 550mg/dl, blood urea – 150mg/dl, creatinine – 6.1 mg/dl and total count of 37910 cells/ cu. mm. Correlating the clinical and radiological findings, we

came to provisional diagnosis of mucormycosis of maxilla with differential diagnosis of osteonecrosis of maxilla, right pansinusistis, cavernous sinus thrombosis, orbital cellulitis.

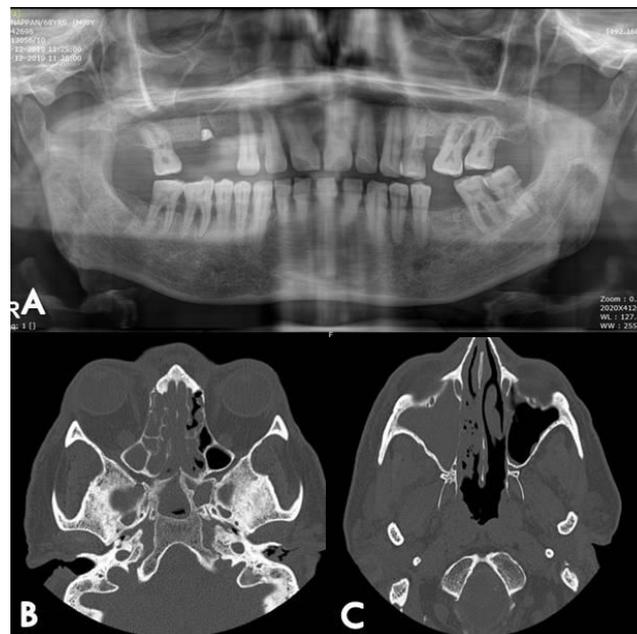
A written informed consent taken from the patient for high risk. Removal of Zn<sub>2</sub>O eugenol pack and draining the pus by raising the buccal flap with blunt dissection. Pus was sent for culture and sensitivity. Pus for potassium hydroxide (KOH) shows

budding yeast like cells and came to final diagnosis of Mucormycosis secondary to tooth extraction.

Patient was put under intravenous antibiotics (Amphotericin B), Insulin therapy and renal dialysis due to CRF, increased creatinine (10mg/dl) and increased blood urea (150mg/dl). Because of poor control of diabetes, systemic condition (CRF) and delayed treatment (patient delayed visit to hospital after increase of all signs and symptoms), we lost the patient.



**Fig-1-** Patient with rhino- orbito cerebral mucormycosis shows (A) ptosis, mild periorbital edema, malar swelling in right side (B) dilatation of pupil (C) extraction socket of 15with blanching of palatal mucosa



**Fig-2:** (A) orthopantomogram shows recent extraction socket of 15 with Zn<sub>2</sub>O eugenol pack and Axial CT slice shows (B) bilateral ethmoidal opacity (C) right maxillary sinus opacity with obliteration of nasal cavity

## DISCUSSION

Mucormycosis (Zygomycosis, Phycomycosis), the third common invasive fungal infection next to candidiasis and aspergillosis, is caused by several species of different genera. It was first reported in humans by Paultaufin in 1885. Invasion of these fungi in deep tissue can be either inhalation of the spores, rupture of barriers through surgery, trauma, burns,

catheter insertion sites or through insect bite, adhesive/contaminated dressing and intramuscular injections [1]. Depending on the various site of occurrence, it is classified as rhino-orbito-cerebral, pulmonary, widely disseminated, gastrointestinal, cutaneous and miscellaneous [4]. Major risk factors of mucormycosis include uncontrolled diabetes mellitus, hematological disorders, compromised immune system

like AIDS, malnutrition, organ transplantation, immune suppression therapy and iron overload [5].

Rhino-orbitocerebral mucormycosis is most common type of mucormycosis. It is more common in patients with poor diabetic control (70%) [6], where immunological response to infections will be reduced. In literature, there were total of 16 cases of mucormycosis reported secondary to extraction of tooth. It shows extraction paves path for entry of fungi (microbes). It usually begins in nasal mucosa or palate and extends to the paranasal sinuses, spreading via the angular, lacrimal, and ethmoid vessels as well as by direct extension from the sinuses into the retro-orbital region and then brain [7]. Once fungus enters the blood stream they can disseminate to other organs such as cerebrum or lungs which can be fatal for the patient. Mucor hyphae have the capability to form thrombi within the blood vessels which reduce vascularity to the tissues and cause necrosis. These patients will have whitish patches or lesion which shows fungal infection, blanching or necrotized tissues, signs and symptoms of sinus pathology, ocular symptoms like periorbital edema/ cellulitis, poor visual sight, ptosis of upper eyelid, proptosis, ophthalmoplegia, dilatation of pupils and impairment of cranial nerves II, III, IV and VI. Other clinical presentations include facial pain and swelling, discharge from the extraction socket, nose and eye.

To diagnose, material from areas suspected of harboring the organisms should be obtained for direct microscopic examination using potassium hydroxide, for culture (sample from involved area, blood, spinal fluid), and for histopathologic examination [8]. Facial X-rays (Orthopantomograph, PA skull) and cerebral CT scan is essential examination of rhino-orbitocerebral mucormycosis which gives most frequent radiological signs of osteolysis, nodular thickening of sinus mucosa, absence of sinus fluid level, extension of lesion towards orbit and brain. MRI is more efficient scan in diagnosing vascular involvement and cerebral invasion which helps in early diagnosis of cerebral involvement before onset of clinical sign [9].

Management involves early diagnosis, systemic antifungal administration (Amphotericin B, posaconazole, caspofungin), aggressive surgical debridement with removal of necrotized structures (skin, mucosa, muscles, fats, bone, exenteration, etc), functional endoscopic sinus surgery, adjunct hyperbaric oxygen therapy, control of systemic conditions (most importantly diabetes), withdrawal of immune suppression drugs, and removal of other predisposing factors. Survival rate is low in patients with renal failure patients and with added comorbidities [10].

## CONCLUSION

Mucormycosis is a fatal fungal infection, common in patients with susceptible host (DM, compromised immune). Negligence in oral hygiene maintenance, poor antibiotic coverage, systemic comorbidities, lack of good patient and doctors relationship after tooth extraction may cause increase the morbidity and mortality which is good for private practitioner. Multidisciplinary approach will provide good outcome and increase the survival rate of the patient.

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