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## Case Report

# Mucormycosis- in a case of diabetes mellitus

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## ABSTRACT

Mucormycosis is a rare fungal infection seen in immunocompromised people especially with uncontrolled diabetes mellitus – in this case causing orbital cellulitis. Patient of diabetic ketoacidosis was investigated with CT PNS, MRI Brain and Final diagnosis was made after clinical examination, discussion with ENT specialist, ophthalmologist about the best diagnostic technique and an endoscopic nasal biopsy was done - which showed fungal hyphae.

**Keywords:** Diabetic ketoacidosis, Fungal hyphae, Mucormycosis

## INTRODUCTION

Mucormycosis refers to several different diseases caused by infection with fungi in the order of Mucorales.[1] *Rhizopus* species are the most common causative organisms. Most mucormycosis infections are life-threatening, and risk factors, such as diabetic ketoacidosis and neutropenia, are present in most cases. Severe infection of the facial sinuses, which may extend into the brain, is the most common presentation.

This disease is often characterized by hyphae growing in and around blood vessels. Mucormycosis and "zygomycosis" are sometimes used interchangeably.[2] Epidemiological studies of Mucormycosis shows that it is a very rare infection, most commonly found in rhinocerebral form, almost always with hyperglycemia and metabolic acidosis (e.g. DKA).[3] In most cases the patient is immunocompromised, these are usually due to a traumatic inoculation of fungal spores.

## CASE REPORT

48years old female resident of Navi-Mumbai came to D.Y. Patil Hospital, Nerul on 12th December 2016 with complaints of headache – restricted to the right side of the head for one week. (Continuous throbbing type). Also, swelling in the right eye which increased in 2 days. Complaints of 2 episodes of vomiting on presentation. No history of trauma to the eye, fever, cough, abdominal pain, giddiness. Comorbidity – known case of diabetes mellitus for 6 years. – on tablet glycomet 500 b.d.

**Figure 1: Right orbital swelling.**

No history of hypertension, ischemic heart disease, bronchial asthma, Koch's. Sleep reduced, appetite normal, bowel bladder functions normal, no history of

addictions. On presentation – pulse 102/min, bp- 160/90, respiratory rate – 24/min, SPO2 – 99% on room air. Chest clear, conscious oriented. On examining the right eye – extra ocular movements restricted. Pupils – dilated and fixed, non-reacting to light. Direct and consensual light reflex absent. Fundus was within normal limits. Bells phenomenon was absent. On examining in the left eye extra ocular movements was present. Pupils was reacting to light. Fundus was within normal limits. Bells phenomenon was present. Random Sugar was 295, Urine Sugar +2, urine ketones – large, Arterial blood gas – sign of metabolic acidosis.

***Diagnosis and treatment***

Patient was treated for diabetic keto acidosis and further evaluated for swelling in the right eye.

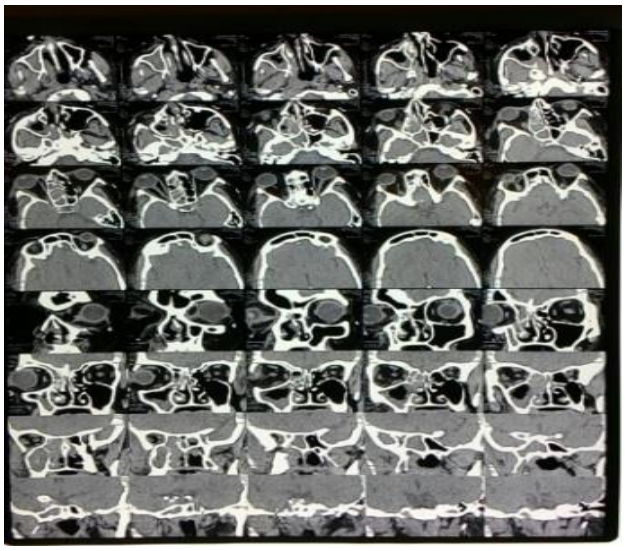

**Figure 2: CT Scan showing sign of sinusitis.**

Moderate polypoidal mucosal thickening involving the right maxillary, frontal, ethmoid, sphenoid sinuses, fronto- ethmoidal recess and right osteomeatal unit- sign of sinusitis.

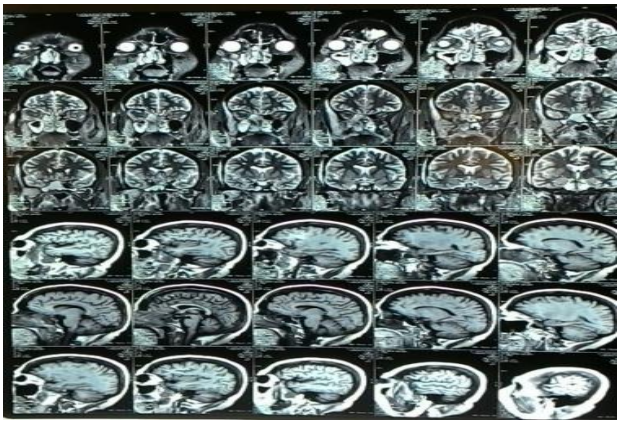

**Figure 3: MRI Brain showing pan sinusitis and tiny hemorrhagic contusion.**

MRI showed – patchy areas of restricted diffusion with low ADC values noted in left frontal and basi-frontal lobe could represent tiny hemorrhagic contusion. Marked mucosal thickening is seen involving all paranasal sinuses (right > left) – sign of pan-sinusitis. Sub galeal soft tissue swelling is noted over the right frontal, peri-orbital, pre- maxillary and cheek region.

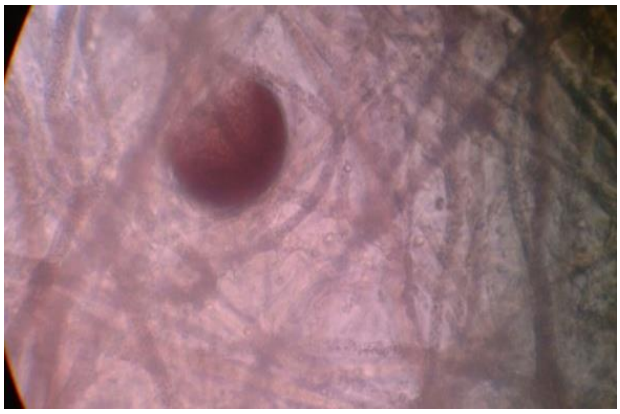

**Figure 4: Endoscopic nasal biopsy showing fungal hyphae.**

Patient was treated with amphotericin B dose – 3.5 to 5 mg/kg body weight. Culture and sensitivity of right nasal secretion shows *Pseudomonas aeroginosa*, and *Klebsiella species*. Injection meropenem 1 gm IV TDS was given for 7 days.

## DISCUSSION

Mucormycosis is infection caused by any of several related molds. Many distinct species of fungi can cause mucormycosis. They belong to a large group of molds called Mucorales. These molds include *Rhizopus*, *Rhizomucor*, *Absidia*, and *Mucor*.[4,5] Each species causes similar symptoms.

These molds are common in the environment and include many common bread molds. People probably breathe in the spores of these molds all the time.

However, these molds usually do not cause infection. Infections typically occur when one of the following is present.

- Diabetes is not controlled well [6]
- The immune system is weakened by drugs (such as corticosteroids or drugs that suppress the immune system or by leukemia or other disorders that decrease the number of white blood cells in the blood.[7]

Mucormycosis can be caused by:

- Inhaling spores produced by the molds (the most common cause)
- Having the mold's spores enter through a break in the skin

Inhaling the spores can cause several types of infection:

- The nose, sinuses, eyes, and brain are most often infected. This severe infection—called rhinocerebral mucormycosis—is often fatal.
- Spores can enter the lungs, causing pulmonary mucormycosis.
- When spores inhaled into the mouth are swallowed, the digestive tract can be infected.

When the infection results from spores entering through a break in the skin, it affects the skin—a form called cutaneous mucormycosis.[8] This form usually occurs in people with a normal immune system when contaminated soil meets broken skin, as may occur during earthquakes or other natural disasters. Mucormycosis does not spread from person to person.

***Symptoms of mucormycosis***

Rhinocerebral mucormycosis may cause pain, fever, sinus pain, and, if the eye socket is infected (called orbital cellulitis), bulging of the affected eye (proptosis). Vision may be lost. The roof of the mouth (palate), the facial bones surrounding the eye socket or sinuses, or the divider between the nostrils (septum) may be destroyed by the infection. The dead tissue turns black.[9] Infection in the brain may cause difficulty using and understanding language, seizures, partial paralysis, and coma.

Mucormycosis in the lungs causes fever, cough, and difficulty breathing. In mucormycosis skin infections, the area around the break in the skin may be warm, red, swollen, and painful. People may have a fever. Ulcers or blisters may form, and the infected tissue may turn black.

The fungus tends to invade arteries. As a result, blood clots form in the arteries, blood flow to tissues is blocked, and tissue dies. The fungus grows uncontrolled in the dead tissue, which becomes black. The surrounding area may bleed. Doctors diagnose the infection by identifying the fungus in tissue samples. Most people are given high doses of amphotericin B intravenously, and surgery is done to remove infected and dead tissue.[10]

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