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RHINOCEREBRAL MUCORMYCOSIS DUE TO *RHIZOPUS* IN A RECENTLY DIAGNOSED DIABETIC FEMALE: A CASE REPORT

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Abstract: 65 year old female patient presented in semiconscious state to emergency department. She had a history of toothache since 1 month for which she had taken treatment from a private practitioner & got relieved for few days with recurrence of toothache with sudden appearance of swelling over & around right eye before 3 days of hospital admission. Patient also had history of nonprojectile vomiting & abdominal pain since 2 days. Clinical diagnosis of orbital mucormycosis with diabetic ketoacidosis with stroke was made. Nasal biopsy specimen was sent for KOH mount, fungal culture & histopathology. The diagnosis of fungal infection due to *Rhizopus* species was confirmed by Potassium hydroxide (KOH) examination, Hematoxylin and Eosin staining of nasal biopsy, followed by culture on Sabouraud's Dextrose agar. Patient was ventilated & started with amphotericin B & insulin treatment but patient deteriorated & succumbed in 2 days of hospital admission.

Keywords: Diabetes mellitus, Rhinocerebral mucormycosis, *Rhizopus* species



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INTRODUCTION

Mucormycosis is an aggressive, opportunistic fungal infection caused by organisms belonging to the class of Phycomycetes. Mucormycosis occurs almost exclusively in immunocompromised patients e.g. uncontrolled diabetics, those on chemotherapy and steroids.¹ It affects nose and paranasal sinuses by direct invasion or through the blood vessels mainly in diabetic and immunocompromised patients.² Rhino-oculo-cerebral mucormycosis (ROCM) is the commonest anatomical presentation of mucormycosis and is a potentially fatal disease. Despite advances in diagnosis and management, mortality rates are high.¹

CASE REPORT

65 yr old female patient brought to our hospital in semiconscious state. Patient had history of toothache since one month which was followed by sudden appearance of swelling & bluish black discoloration over & around the right eye three days before presenting to hospital. Patient also had history of nonprojectile vomiting & abdominal pain since 2 days. On examination, there was weakness in left upper & lower extremity. She was diagnosed as a case of diabetes mellitus 5 days back with no major medical illness in past. A clinical diagnosis of orbital mucormycosis with diabetic ketoacidosis with stroke was made.

On examination her pulse was 118/min feeble, blood pressure 84/50 mm Hg with cold extremities & pallor. Patient was drowsy & had left hemiplegia with right eye ophthalmoplegia.

Respiratory system examination showed coarse crepitations with reduced air entry.

Findings of the cardiovascular system & per abdominal examination were within normal limits.

Laboratory investigations revealed random blood sugar level 420 mg/dl, raised blood urea level 102 mg/dl, serum creatinine level 2.3mg/dl, serum potassium level 2 mg/dl with increased WBC counts.

The treating physician sent the sample from wound over right eye & nasal biopsy samples for KOH & fungal culture. Nasal biopsy sample was also sent for histopathology. It showed aseptate hyphae in KOH preparation and Hematoxylin and Eosin (H and E) staining.(Fig.1 & 2). Based on these findings, the patient was started on intravenous Amphotericin B with insulin & potassium correction by injection potassium chloride. Her vitals & blood sugar levels were continuously monitored.

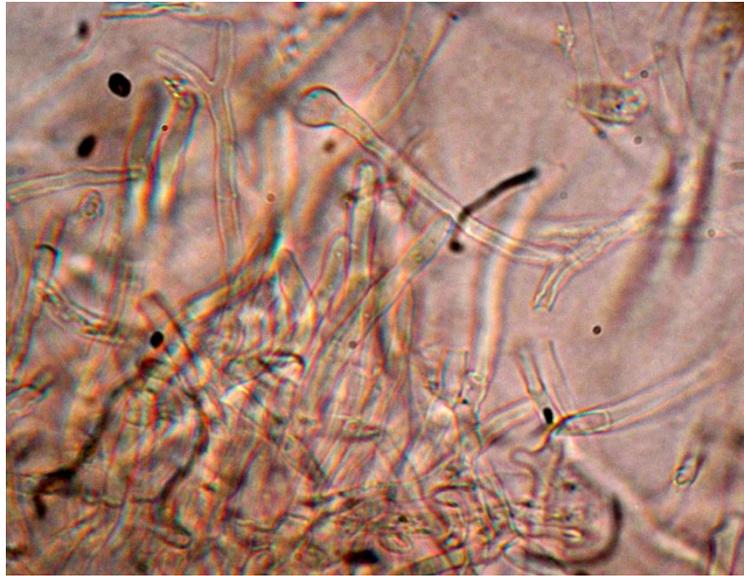


Fig. 1: KOH preparation of nasal biopsy specimen showing broad aseptate hyphae

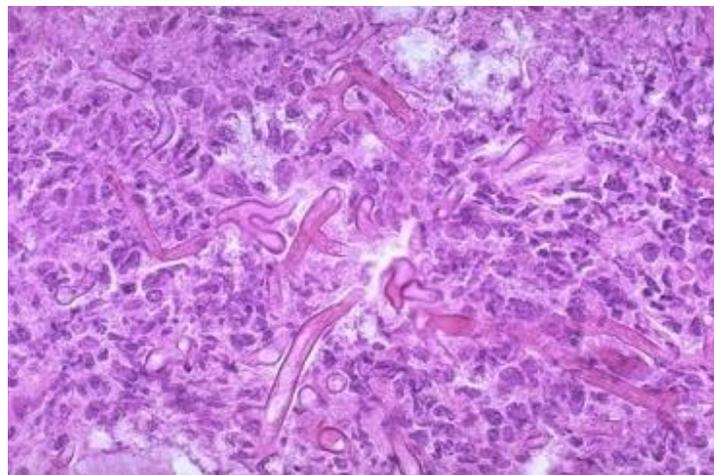


Fig. 2: H&E staining of nasal biopsy smear showing aseptate hyphae

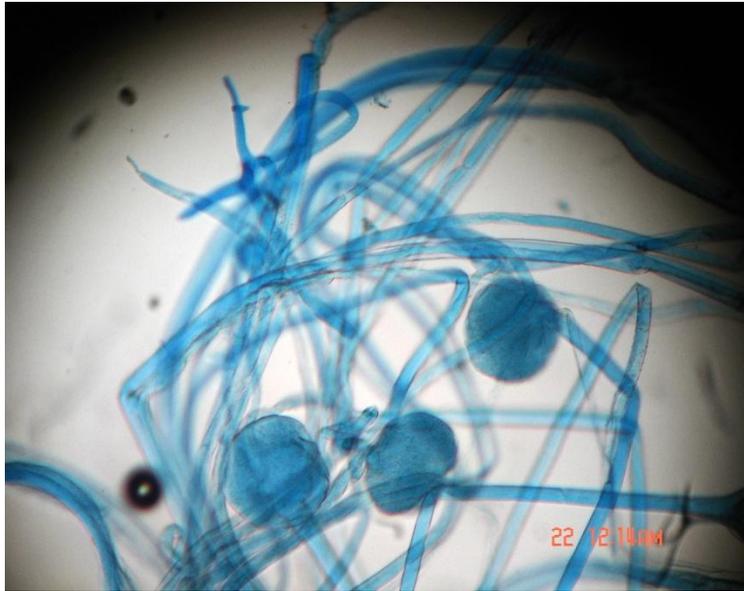


Fig. 3: LPCB mount from growth on SDA showing collapsed sporangium and rhizoids

Biopsy samples were also taken for culture and were inoculated on Sabouraud's Dextrose agar (SDA), with and without actidione. After 48 h of incubation, luxurious cottony white growth typical of mucormycosis was observed. Lactophenol Cotton Blue (LPCB) was done from the growth on SDA which showed aseptate hyphae, collapsed sporangium and rhizoids just beneath the point where sporangiophore was present (Figure 3), suggestive of *Rhizopus* species.

Patient deteriorated & succumbed in spite of treatment in 2 days of hospital admission.

DISCUSSION

Infection with zygomycetic fungi is a well-recognized entity and occurs in persons with underlying disorders of various types, such as diabetes mellitus, hematological malignancies, severe malnutrition, chronic renal failure, chronic hepatic disease or immunodeficiency disorders. The most common predisposing factor for zygomycosis is diabetes mellitus since glucose and low pH enhance fungal invasion and growth. This is due to the hampering of the host phagocytosis and mobilization of polymorphonuclear leucocytes. *Rhizopus* and other *Mucorales* thrive on high glucose and acidic conditions. Cutaneous infections account for 16% of all forms of zygomycosis with associated mortality of 16%, compared to 67% for rhino-orbito-cerebral, 83% for primary pulmonary disease and 100% for disseminated disease.³

The most common organisms are *Rhizopus* species, although others like *Absidia*, *Mucor* are also frequently seen, whereas *Saksenea vasiformis* and *Apophysomyces elegans* are rare pathogens.⁴

The most common clinical findings are headache, nasal discharge, epistaxis, followed by restriction of ocular movements, proptosis, ptosis and periorbital cellulitis. Loss of functions of the third, fourth and sixth cranial nerves is most commonly reported.³

In present case, patient presented with right eye ophthalmoplegia.

The prognosis of mucormycosis has improved markedly in the last 30 years.³

High degree of suspicion, prompt diagnosis, and aggressive medical (amphotericin, glycemic control) and surgical treatment (extensive debridement of the affected tissues) can give gratifying Results.⁵ But in the case reported here patient deteriorated & succumbed.

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