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Rare Case: Autopsy Presentation of Systemic Mycosis in an Obstetric Patient on Ventilation

Zaibun Nisa[1*], Ananya Pal[2], Moumita Maity[3], Anup K Boler[4]
[1]Junior Resident-3, [2-3]Assistant Professor, [4]Associate Professor, Department of Pathology, Nil Ratan Sircar Medical College & Hospital, Kolkata-700014, West Bengal, India

***Corresponding Author:**
Name: Zaibun Nisa
Email: dr.zaibunnisa@outlook.com

Abstract: Mucormycosis is an infectious disease which is caused by a group of fungi of the order mucorales. It usually affects persons who are immunocompromised. The predisposing factors are diabetic ketoacidosis, renal failure, malignancy, old age and very rarely in persons under ventilation. Respiratory tract is the most common route of transmission. It frequently involves the nasal sinuses, lungs and brain. Out of these, rhinocerebral mycosis is the most common and most lethal form of infection causing high mortality. This form is usually present in patients under ventilation. Here, we present an uncommon autopsy finding of a 26 year old pregnant lady who was non diabetic, with no past history of any other immunosuppressed condition like renal failure or malignancy. She underwent twin delivery by caesarean section but due to some complication she was put under ventilation for 15 days. She died after 15 days. Autopsy was done which revealed a black necrotic area over medial aspect of frontal lobe of the brain & on microscopy showed an angiocentric fungal granuloma invading the cerebral vessel & obliterating its lumen by the formation of a thrombus. Autopsy findings from the lung showed areas of congestion with grey hepatization & on microscopy revealed the alveoli filled with fungal bodies, proteinaceous exudate and dense inflammatory infiltrate. PAS & Grocott methanamine silver stain was done to confirm the morphology of fungal colonies. Special stains revealed broad, aseptate fungal hyphae with branching at right angles. These were found to be consistent with mucormycosis.
Keywords: Fungal granuloma, Immunocompromised host, Pregnancy, Thrombus, Ventilation

INTRODUCTION

Mucormycosis is a rare fungal infection which is caused by fungi of the order Mucorales [1].The most common species implicated are Mucor, Rhizopus, Absidia, and Cunninghamella [2, 3]. It is most often seen in the immuncompromised states such as AIDS; diabetes; malignancies such as Lymphomas; renal failure; organ transplantation; long term corticosteroid & immunosuppressive therapy [4, 5]. It frequently involves the sinuses, brain, or lungs. While oral or rhinocerebral mucormycosis are the most common forms, the infection can also manifest in the gastrointestinal tract, skin, and in other organ systems [5]. Inhalation of spores is the most common route of transmission in systemic mycosis. Mucormycosis is notoriously known for its characteristic feature of angioinvasion. This compromises the blood supply of the surrounding tissue leading to its death [6].

CASE REPORT

We present an autopsy presentation of a 26year old female patient who underwent caesarean section giving birth to twins. But to some complication she was put under ventilation for 15days following which she died. Autopsy was performed to know the cause of death. Gross examination from the brain (10x9x5.5) cc revealed a black necrotic area (3x2x0.8)cc over medial aspect of both the frontal lobes. Microscopic examination showed an ill defined fungal granuloma with invasion of the blood vessel. These fungal hyphae were broad aseptate with branching at right angle. Gross examination of the lung (11x10x5.5) cc revealed areas of congestion with grey hepatization. Sections from the lung showed features of pneumonitis with dense inflammatory infiltrate & alveoli filled with fungal bodies & proteinaceous exudate.

Fig. 1: Specimen of brain showing a black necrotic area over medial aspect of frontal lobe

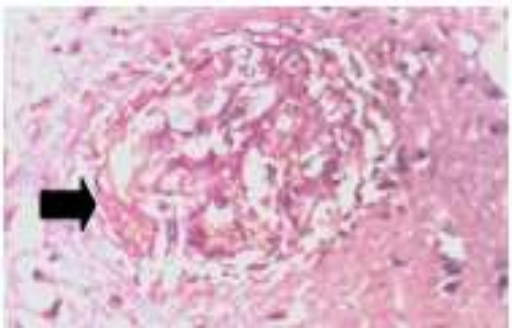

Fig. 2: Histopathological picture showing fungal granuloma of brain (HE stain; X100)

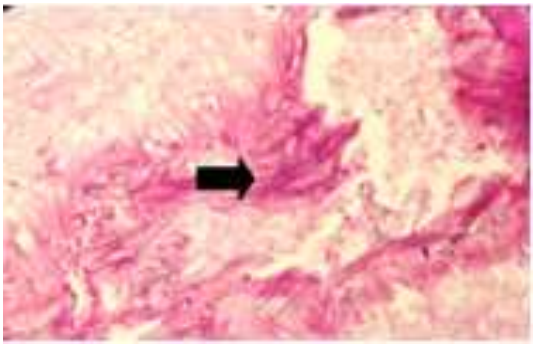

Fig. 3: Histopathological picture showing aseptate, broad branching fungal hyphae invading cerebral vessel (PAS stain; X400)

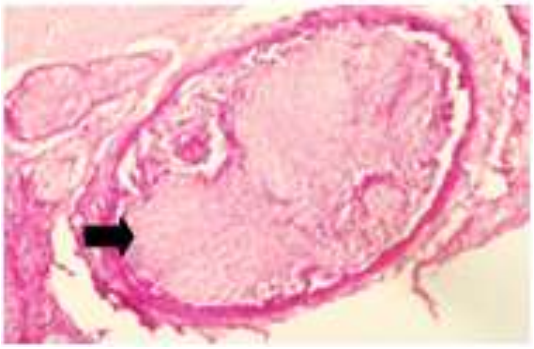

Fig. 4: Histopathological picture showing a thrombus obliterating the lumen of cerebral vessel (HE stain; X100)

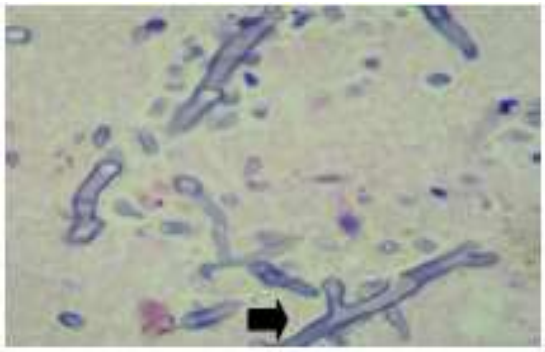

Fig. 5: Histopathological picture showing broad, aseptate branching fungal hyphae in brain (Grocott; X400)

Fig. 6: Specimen of lung showing grey hepatization & areas of congestion

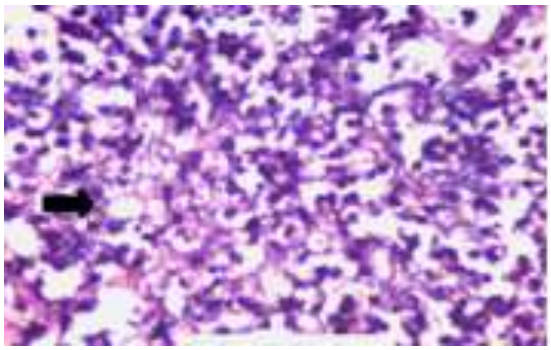

Fig. 7: Histopathological section showing fungal hyphae within the alveoli of lung (HE stain; X400)

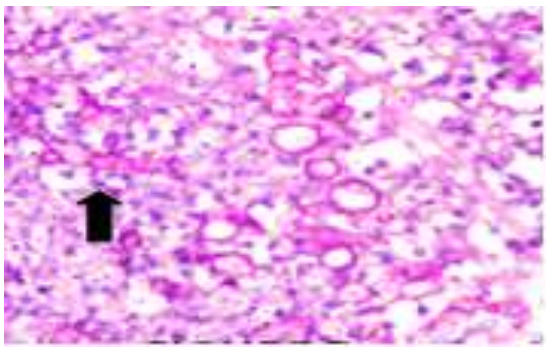

Fig. 8: Histopathological section showing fungal hyphae within the alveoli of lung (PAS stain; X400)

Fig. 9: Histopathological section showing fungal hyphae within the alveoli of lung (Grocott stain; X400)

DISCUSSION

Mucormycosis frequently involves the nasal sinuses, brain, or lungs. There is fungal invasion into the vascular network which results in thrombosis and death of the surrounding tissue by loss of blood supply [6]. Cerebral symptoms include one-sided headache behind the eyes, facial pain, fevers, nasal stuffiness that progresses to black discharge. If nasal sinuses are involved it presents with symptoms of acute sinusitis along with swelling of the eye. Pulmonary symptoms include dyspnea and persistent cough [7]. Death usually occurs due to massive stroke [6].

In most cases, the prognosis is poor and depends upon the form & severity of mucormycosis. The mortality rate is 30%-70% in rhinocerebral form whereas it is 90% in disseminated mucormycosis of an otherwise healthy patient [6] & 100% in case of immunocompromised patients [8].

The diagnosis of mucormycosis depends mainly on the biopsy specimen. Haematoxylin & Eosin stain from the brain biopsy reveals an ill defined fungal granuloma in and around the vessel. On Periodic acid Schiff stain, it shows deeply eosinophilic fungal hyphae which were aseptate with branching at right angle. The organisms are often surrounded by necrotic debris. Grocott methanamine silver stain reveals ribbon like morphology of mucormycosis.

CONCLUSION

Mucormycosis is one of the most common & lethal cause of oppurtunistic infection with high mortality rates especially in immunocompromised patients. Rarely young patients with no past history of immunosuppression may be involved.

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