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Review Article

Prevailing Scenario of Mucormycosis (Black Fungus) Disease in the Crisis of Covid-19

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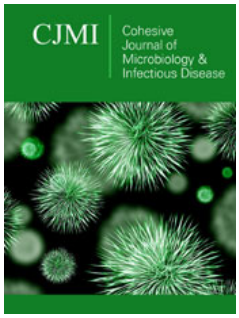

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Abstract

Mucormycosis or black fungal disease is a rare fungal infection worldwide. Recently one in particular fungal disease Mucormycosis (MCM) also known as zygomycosis. India suffering from this fungal infection already in a deep covid19 crisis. The Rajasthan government has declared mucormycosis or black fungus as an epidemic. Cases of black fungus and resultant deaths are also rising in states like Maharashtra, Utter Pradesh, Uttarakhand, Haryana, Gujarat. The state had nearly 100 above cases of black fungus. This black fungal disease caused by a filamentous fungus Mucormycetes which is present naturally in the environment.

Keywords: Mucormycosis; Black fungus; Fungal infection

Introduction

Mortality rate of black fungus disease or mucormycosis is high. The common fungus *Rhizopus oryzae* is responsible for this fungal infection [1]. The patients of diabetes mellitus, hematopoietic disorder, malignancy is mainly affected by mucormycosis. It is a rare fungal infection. The common species of mucormycetes is Rhizopus and Mucor [2]. Usually, it is not harmful to human but decreased their immunity. The lungs of such type of individuals who are on medications for other health problems which reduces their ability to fight environmental pathogens [3]. These are some difficulties to manage the mucormycosis that are their diagnosis is very difficult and treatment is surgery.

Following are the types of mucormycosis:

a) Rhino-cerebral mucor-mycosis: The rhino-cerebral mucormycosis is a rare infection of sinuses, nasal passages, oral cavity, and brain. The infection result in death.

b) Gastrointestinal mucormycosis: It related to digestive system.

c) Cutaneous mucormycosis: It is common type of mucormycosis which mainly affect the skin. It spreads throughout the skin and treat by surgery.

d) Disseminated mucormycosis: This type of fungal infection spread throughout the body by blood circulation. It affects the brain, liver, spleen.

e) Pulmonary mucormycosis: It is a lungs infection. This type of fungal infection found in patients of cancer, organ or stem cell transplanted [4] (Figure 1).

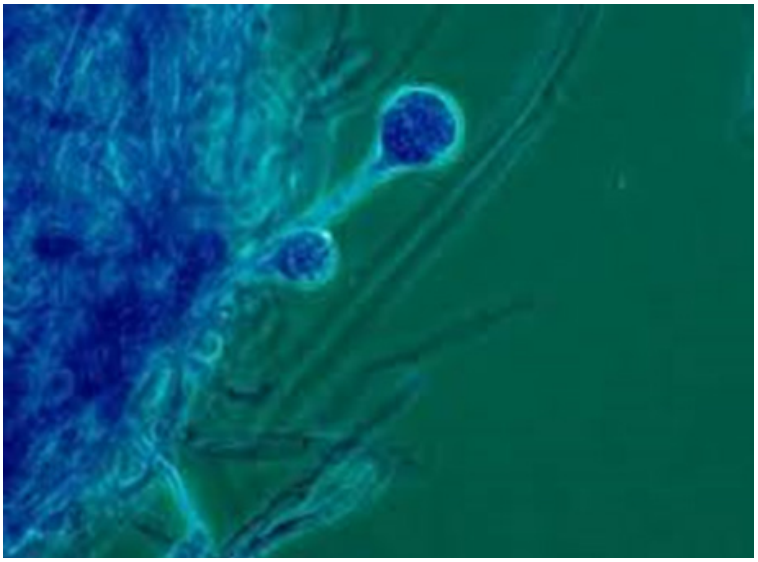

Figure 1: Mucormycetes fungi.

Classification of mucormycetes:

Phylum: Fungi

Subphylum: Mucormycotina

Family: Mucoraceae

Order: Mucorales

Genus: Rhyzopusor Mucor

Symptoms

These are common symptoms for individuals who are affected by black fungul disease:

a) Fever

b) Vision loss

c) Headaches

d) Stomachache

e) Coughing

f) Shortness of breath

g) Blood vomits

These are the symptoms of Covid-19 Associated Mucormycosis (CAM) patients with covid19 (active/ recovering/postdischarge)

Rhino orbito carebral mucormycosis

a) Congestion

b) Nasal discharge

c) Facial pain

d) Swelling

e) Headache

f) Orbital pain

g) Loosening of toothache

h) Double vision pain

Pulmonary mucormycosis

a) Fever

b) Cough

c) Chest pain

d) Pleural effusion

Cutaneous mucormycosis

a) Pain

b) Swelling around blisters

Disseminated mucormycosis

This type of infection spreads throughout the body and causes several organs to infection and may led to shock or death.

Do's

A. Control hyperglycemia

B. Check blood glucose level

C. Use of steroids judiciously

D. Use antifungal

Transmission

It is transmitted by breathing, inoculation and inhalation of spores present in environment. Such types of spore enter in the lungs and affect lungs. Mucormycosis not transmitted from human to human and human to animal [5] (Figure 2).

Figure 2: Transmission of mucormycosis through breathing.

Diagnosis

If patient has mucormycosis in their lungs or sinuses, then sample of fluid collected from respiratory system and send to a laboratory for diagnosis. Tissue biopsy may perform in the laboratory in which a small sample of affected tissue is analyzed for evidence of mucormycosis under a microscope or in a fungal culture. There is also need imaging tests such as a CT scan of lungs, sinuses, or other parts of body, depending on the location of the suspected infection.

Treatment

Mucormycosis is a serious infection and needs to be treated with prescription antifungal medicine, usually amphotericin B, posaconazole, or isavuconazole. These medicines are given through a vein (amphotericin B, posaconazole, isavuconazole) or by mouth (posaconazole, isavuconazole). Other medicines, including fluconazole, voriconazole, and echinocandins, do not work against fungi that cause mucormycosis. Often, mucormycosis requires surgery to cut away the infected tissue [5-10].

Prevention

a) Use masks when visiting dusty construction sites.

b) Wear shoes, gloves, while handling soil.

c) Maintain personal hygiene.

Conclusion

Mucormycosis is an emerging infection in immunocompromised patients like diabetic patient with neutropenia or neutropenic presenting with rhino-orbitofrontal brain or lung unimproved by appropriate antibiotic therapy. Other locations are less characteristic. Diagnosis is suspected on clinical and radiological features and confirmed by mycological and pathological examination. Treatment consists of amphotericin B combined with surgery. Morbidity and mortality are high due to the invasive nature of the frequent underlying malignancy, hence the importance of early and appropriate management [10-30].

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