

A Note on Mucormycosis □

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Opinion Article

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ABSTRACT

Mucormycosis is an infectious disease caused by fungus *Zygomycota* generally effects on sinus or on lungs. Also it effects on skin, GI tract as well as pulmonary system. Mucormycosis is rarely occurring infection but not contagious and does not spread by contact of person to person. The symptoms of Mucormycosis depend on where in the body the fungus is growing. Depending upon the medical history of the patients, symptoms, physical examination and laboratory tests are carried out in diagnosing mucormycosis. Liposomal Amphotericin B is the drug of choice and needs to be initiated early.

DESCRIPTION

The distinctions Mucormycosis is a rarely occurring infection caused by the organisms those are belonging to the fungi category of microorganisms generally known Mucoromycotina. These fungi typically found in the soil and it associates with the decaying organic matter, such as leaves, rotten wood or compost piles. This fungi also called *Zygomycota* similarly the infection caused by it known as Zygomycosis. Mucormycosis manifested by a variety of different syndromes in humans, particularly in immunocompromised patients and those with diabetes mellitus. This kind of infection generally effects on cerebral and pulmonary system. This infection is more common among people with weakened immune systems, but it can occur in people who are healthy^[1,2].

Transmission

- Mucormycosis is not contagious and does not spread by contact of person to person.
- Mucormycosis caused by the fungus and this fungus is found in the environment and affected through inhalation, inoculation or ingestion of spores from the environment.
- Mucormycosis mostly affects the sinus part or lungs after inhaling fungal spores from the air. In such cases, it may spread to brain and eyes.
- It may also occur on the skin after a cut, wound, burn or other type of skin infection.
- The number of cases are sporadic due to healthcare- associated outbreaks have been linked to adhesive bandages, wooden tongue depressors, hospital linens, negative pressure rooms, non sterile medical devices, building construction, poor air filtration and water leaks.

Types of mucormycosis and symptoms

The symptoms of Mucormycosis depend on where in the body the fungus is growing. Mucormycosis mostly affect pulmonary system including sinuses or lungs [3,4]. If the infection is not treated quickly the fungus spread throughout the body [Table 1](#).

Table 1. Common symptoms occur in patients infected by mucormycosis are as follows.

S.no	Symptoms of Rhinocerebral Mucormycosis	Symptoms of Pulmonary Mucormycosis	Symptoms of Gastrointestinal tract	Symptoms of Cutaneous Mucormycosis
1	One sided facial swelling	Fever	Abdominal pain	Pain
2	Headache	Fever	Nausea	Pain
3	Nasal or sinus congestion	Shortness of breath	Vomiting	Ulcer
4	Fever	Chest pain	Gastrointestinal bleeding	Excessive redness
5	Black lesions on nasal bridge	Breath problems	GI ulcers	Swelling

Risk factors for developing mucormycosis include

Almost all the patients with low immunity can have risk for developing Mucormycosis.

1. Neutropenia
2. Cancer
3. Organ transplant
4. Uncontrolled Diabetes
5. Skin infections
6. AIDS
7. Malnutrition
8. Severe Trauma
9. Iron Overload

10. Blood Malignancies etc.

There are two main types of infection that people can get, and these depend on the route of exposure. In the pulmonary or sinus form, exposure occurs by inhaling fungal spores from the environment. These spores can cause an infection to develop in the lungs, sinuses, eyes, and face, and in rare cases can spread to the central nervous system. In the cutaneous form of infection the fungus can enter the skin through cuts, scrapes, puncture wounds, burn, or other form of skin infections. Mucormycosis is not contagious and does not spread from person to person.

Identification test

Depending upon the medical history of the patients, symptoms, physical examination and laboratory tests are carried out in diagnosing Mucormycosis. Sometimes you may also advise for the imaging test such as CT scan of your lungs, sinuses, or other parts of your body depending on the site of infection. Also sometimes to detect the infection sample of fluid from your respiratory tract or nasal mucosa can be collected and this sample send to the laboratory for analyze under microscope or in a fungal culture.

Name of the following tests used to investigate the infection;

1. NCCT PNS (CT scan for Paranasal Sinuses): Used to see Bony erosion
2. HRCT (High Resolution CT scan): >10 nodules
3. MRI (Magnetic Resonance imaging scan): CNS involvement

For better diagnosis the following tests are carried out on laboratory basis;

1. KOH staining and microscopy
2. MALDI-TOF (Matrix assisted Laser Desorption Ionization-Time of Flight)
3. Presence of Ribbon like aseptate hyphae 5-15 micron that branch at right angles.

Treatment

Mucormycosis is difficult to treat. It may sometimes require both I.V. antifungal therapy and surgical excision, thus necessitating a multidisciplinary team approach in a facility setting. Liposomal Amphotericin B is the drug of choice and needs to be initiated early. Other antifungal like posaconazole, or isavuconazole, or isacuconazole have also been prescribed for treatment.

Anyone who has an infection of Mucormycosis in the presence of predisposing conditions as mentioned above. Timely initiation of treatment reduces mortality. Multidisciplinary team approach is required.

Treatment of Mucormycosis involves combination of surgical debridement and antifungal therapy ^[5-7].

1. First line monotherapy
2. Combination antifungal therapy
3. Salvage therapy

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