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Symptoms and treatment strategy of black fungus in Covid-19 patients

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ABSTRACT

Mucormycosis, commonly called black fungus, is a rare but serious fungal infection caused by a kind of fungus called mucormycete, which is abundant in the environment. It mainly affects people who have health problems or take medicines that lower the body's ability to fight germs and sickness. It is being detected relatively frequently among Covid-19 patients in some states of India. The disease often manifests in the skin and also affects the lungs and the brain. People who have been unwell with COVID-19 and are still recovering have a compromised immune system, which means they're more at risk because their body can't fight off the infection. Those who were hospitalized with severe COVID-19 disease were likely to be prescribed steroids for the reduction of infection. The steroid act by reducing the inflammation in the lungs and dampen the body's immune response in order to stop it attacking the body's healthy cells it leads to the decreased immune surveillance. Those patients were easily affected by means of mucormycete. While there is no major outbreak, the national Covid task force has issued an advisory regarding this disease.

Keywords: Black fungus, Mucormycete, Covid-19, Steroids, Immune response.

INTRODUCTION

As India grapples with a deadly second wave of COVID-19, a new threat is emerging, a rare infection called mucormycosis, or the "black fungus". Even prior to the pandemic, the rare fungal infection disproportionately affected Indian patients, with the prevalence of the infection estimated to be about 70 times higher in India than the rest of the world. But University of Queensland professor of medicine Paul Griffin said COVID-19 "tipped the balance" in the favor of the disease. (1). Black fungal infection is usually seen among Covid recovered patients with co morbidities such as diabetes or kidney, heart failure, or cancer. Black fungal infection is usually seen among Covid

recovered patients with co morbidities such as diabetes or kidney, heart failure, or cancer. (2) The sign of this infection mimic these of Covid-19 and customary flu. if its ignored or untreated infection originates nostril to eye and brain and produce life threatening complications (3). The western state of Maharashtra, home to Mumbai, has recorded about 2,000 cases and eight fatalities due to mucormycosis so far.(4) This article intended to explore the disease, symptoms and treatment strategy of Black fungus' in Covid-19 patients.

MUCORMYCOSIS

Mucormycosis is a fungal infection caused by a group of moulds called mucormycetes, found in soil and in decaying vegetation. Julie Djordjevic, head of the fungal

pathogenesis group at the Westmead Institute for Medical Research, described the fungi as "nature's decayer". It mainly affects people who are on medication for health problems that reduces their ability to fight environmental pathogens. Sinuses or lungs of such individuals get affected after they inhale fungal spores from the air. It may also affect brain, skin and kidneys. People can get sick if they breathe in or eat some types of spores from the environment, but they can also enter the body through a cut or broken skin. They're very effective at replicating themselves. They make spores which are very airborne and they can produce billions of them. (1), (3). It affects the sinuses, the brain and the lungs and can be life-threatening in diabetic or severely

immunocompromised individuals, such as cancer patients or people with HIV/AIDS. (5).

CAUSES

Black fungal infection is usually seen among Covid recovered patients with comorbidities such as diabetes or kidney, heart failure, or cancer. Use of steroids in the treatment of Covid infection plus the fact that many Covid patients have diabetes as comorbidity could be one of the reasons for this rise in black fungus infection again. Covid patients with weak immunity are more prone to this deadly infection. According to medical experts, patients with weak immunity are usually more prone to mucormycosis. (2)

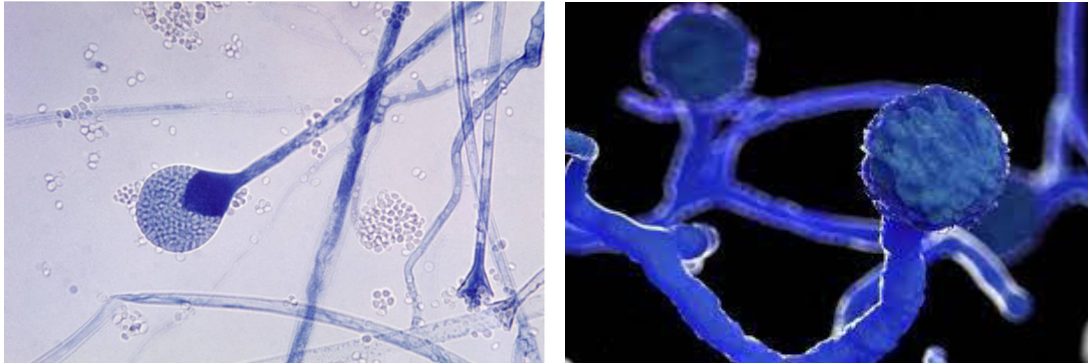


Fig 1: Mucormycetes. Source: BSIP/Universal Images Group via Getty Images

SYMPTOMS

Indications of mucormycosis include Sinusitis, along with clogging of the nasal tract and bloody or blackish mucus emission from the nose. Pain on only one side of the face, cheekbones, with lack of sensation and bulging. Distinct blackish discoloration on the bridge of the nose. Prominent aching in teeth, jawbone, degrading of tooth

structures. Hazy vision, with objects appearing blurred or in double, with eye pain. Abnormal blood clotting or thrombosis of tissues, along with skin injury and damage or necrosis of dermal cells. Further deterioration of respiratory functions, with chest pain, excess fluid build-up in lungs i.e. pleural effusion and coughing up blood or haemoptysis. (6) (7)

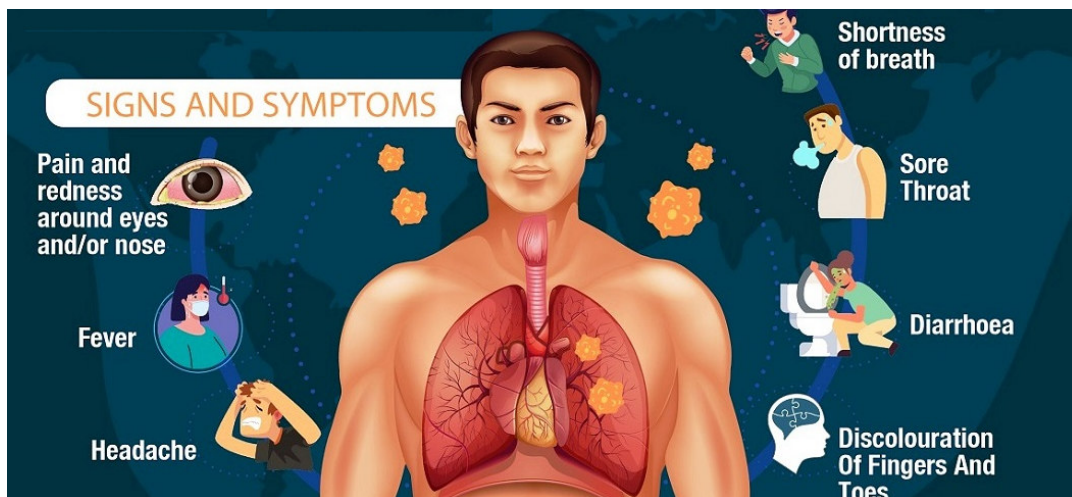


Fig 2: Mucormycosis - Symptoms



Fig 3: Mucormycosis - Symptoms

MUCORMYCOSIS COMPLICATIONS AND OUTLOOK

Blindness, Blood clots or blocked vessels, Nerve damage. Mucormycosis can be deadly without treatment. Because the infection is so rare, the exact mortality rate isn't clear. But researchers estimate that overall, 54% of people with mucormycosis die. The likelihood of death depends on which part of the body is affected. The outlook is better for people who have sinus infections than it is for lung or brain infections. (8)

DIAGNOSIS

Physical examination, swab test, tissue biopsy, imaging tests like CT or MRI scans to understand about the severity. (8)

TREATMENT

It is treated with antifungal, mucormycosis may eventually require surgery. it is of utmost importance to control diabetes, reduce steroid use, and discontinue immunomodulating drugs. To maintain adequate systemic hydration, the treatment includes infusion of normal saline (IV) before infusion of amphotericin B and antifungal therapy, for at least 4-6 weeks.

It is very much important to control hyperglycemia and monitor blood glucose level after discharge following Covid-19 treatment, and also in diabetics. One should use steroids judiciously correct timing, correct dose and duration are important.

Management of Covid patients with mucormycosis is a team effort involving microbiologists, internal medicine specialists, intensivist neurologist, ENT specialists, ophthalmologists, dentists, surgeons (maxillofacial/plastic) and others. (3)

LIFE AFTER SURGERY FOR MUCORMYCOSIS

Mucormycosis can lead to loss of the upper jaw and

sometimes even the eye. Patients with loss of function due jaw difficulty with chewing, swallowing, facial aesthetics and loss of self-esteem, the eye or upper jaw, these can be replaced with appropriate artificial substitutes or prostheses. While prosthetic replacement of the missing facial structures can commence once the patient stabilises after surgery. Prosthetic reconstruction can be affected after surgery, but interim solutions should be planned even before surgery of the jaws for better long-term outcomes. Prosthetic reconstruction can ensure that the cure is not more dreadful than the disease itself. (3)

PREVENTION

Ensuring personal hygiene by bathing and scrubbing the body thoroughly, particularly after returning home from work, working out or visiting neighbors, relatives, friends. Wearing face masks and face shields when going to dirty polluted environments such as construction sites. Making sure to don fully covered clothing of concealed shoes, long pants, long-sleeved shirts and gloves while coming in contact with soil, moss, manure, like in gardening activities.(6)

CONCLUSION

Patients most vulnerable to mucormycosis are those who have been treated with steroids and other drugs for Covid 19 to reduce inflammation. While there is no major outbreak, the national Covid task force has issued an advisory. Efforts are underway to collect data for large studies being done by the Fungal Infections Study Forum and Clinical infectious Diseases Society. It is very much essential to take this issue very serious since the people around the world pathetically affected mentally and economically, it should not produce further damage to the quality of life of the humans. Further research on this only would helps in the eradication of the mucormycosis worldwide.

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