

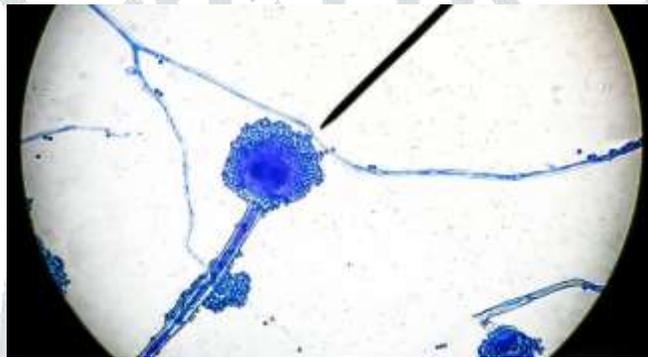
# BLACK FUNGUS COMPLICATES INDIA'S COVID PANDEMIC AND GENERAL ADVISORY RELEASED BY GOVT OF INDIA

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India faces a global health crisis as the number of severe acute respiratory syndrome coronavirus 2 (SARSCoV2) infections reaches over 23.7 million. As the country's health system buckles with increased admissions and a lack of resources, another health threat has emerged. Public health officials report a rare black fungus infection, called mucormycosis, which is increasingly seen in vulnerable patients, including those with COVID19 disease.



## What is mucormycosis ?

Mucormycosis is a very serious and potentially fatal infection caused by exposure to mucor mold. Mucor is a microbial genus of approximately 40 species of molds commonly found in soil, plants, decaying fruits and vegetables, and manure.

The fungal infection commonly affects the sinuses of the lungs after inhaling fungal spores from the air. The fungi can also enter the skin after a cut, burn, or skin injury.

The mortality rate of this infection is about 50 percent. It impacts highrisk populations due to their reduced immune system function, including those with diabetes, cancer, and human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS).

A classic feature of this infection is tissue necrosis or tissue death. The fungal infection is not contagious and does not spread between people and animals. There is no vaccine to prevent the infection.

## India and the fungal infection:

India sees an increase in mucormycosis cases, partly because many people grapple with SARSCoV2 infection. The COVID19 pandemic created conditions for the infection to thrive and spread. The immune system of residents is compromised by SARSCoV2, allowing the black fungi to take hold. The black fungus impacts the health of people with comorbidities, like diabetes and weakened immune systems.

One of the ways COVID19 is being treated is through highdose steroids to treat inflammation. However, the drug can suppress the immune system, making it easier for other pathogens to take advantage. As two infections continue to wreak havoc, India's health care system is on the brink of collapse.

In the western state of Maharashtra, including Mumbai, doctors report that around 200 patients who had recovered from COVID19 were being treated for mucormycosis. Of these patients, eight died. Meanwhile, in Gujarat, the local government ordered the allocation of separate wards in hospitals. Further, the officials ordered 5,000 doses of amphotericin B, the drug used to treat the fungal infection. New Delhi also reported cases of mucormycosis.

### EVIDENCE BASED ADVISORY IN THE TIME OF COVID-19

#### (Screening, Diagnosis & Management of Mucormycosis)

#### Mucormycosis - if uncared for - may turn fatal:

Mucormycosis is a fungal infection that mainly affects people who are on medication for other health problems that reduces their ability to fight environmental pathogens.

Sinuses or lungs of such individuals get affected after fungal spores are inhaled from the air.

This can lead to serious disease with warning sign and symptoms as follows:

- Pain and redness around eyes and/or nose
- Fever
- Headache
- Coughing
- Shortness of breath
- Bloody vomits
- Altered mental status

#### What predisposes:

- Uncontrolled diabetes mellitus
- Immunosuppression by steroids
- Prolonged ICU stay
- Co-morbidities – post transplant/malignancy
- Voriconazole therapy

**How to prevent:**

- Use masks if you are visiting dusty construction sites
- Wear shoes, long trousers, long sleeve shirts and gloves while handling soil (gardening), moss or manure
- Maintain personal hygiene including thorough scrub bath

**When to Suspect (in COVID-19 patients, diabetics or immunosuppressed individuals):**

- Sinusitis – nasal blockade or congestion, nasal discharge (blackish/bloody), local pain on the cheek bone One sided facial pain, numbness or swelling Blackish discoloration over bridge of nose/palate Toothache, loosening of teeth, jaw involvement
- Blurred or double vision with pain; fever, skin lesion; thrombosis & necrosis (eschar)
- Chest pain, pleural effusion, haemoptysis, worsening of respiratory symptoms

**Dos :**

- Control hyperglycemia
- Monitor blood glucose level post COVID-19 discharge and also in diabetics
- Use steroid judiciously – correct timing, correct dose and duration
- Use clean, sterile water for humidifiers during oxygen therapy
- Use antibiotics/antifungals judiciously

**Don'ts:**

- Do not miss warning signs and symptoms
- Do not consider all the cases with blocked nose as cases of bacterial sinusitis, particularly in the context of immunosuppression and/or COVID-19 patients on immunomodulators
- Do not hesitate to seek aggressive investigations, as appropriate (KOH staining & microscopy, culture, MALDITOF), for detecting fungal etiology
- Do not lose crucial time to initiate treatment for mucormycosis

**How to manage:**

- Control diabetes and diabetic ketoacidosis
- Reduce steroids (if patient is still on) with aim to discontinue rapidly
- Discontinue immunomodulating drugs
- No antifungal prophylaxis needed
- Extensive Surgical Debridement - to remove all necrotic materials

**Medical treatment :**

- ✓ Install peripherally inserted central catheter (PICC line)
- ✓ Maintain adequate systemic hydration

- ✓ Infuse Normal saline IV before Amphotericin B infusion
- ✓ Antifungal Therapy, for at least 4-6 weeks (see the guidelines below )
- ✓ Monitor patients clinically and with radio-imaging for response and to detect disease progression

#### **Team Approach Works Best:**

- Microbiologist
- Internal Medicine Specialist
- Intensivist
- Neurologist
- ENT Specialist
- Ophthalmologist Dentist
- Surgeon (maxillofacial/plastic)
- Biochemist

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