



# Preliminary Planning for Mucormycosis in Developing Countries During COVID-19 Pandemic

Letter to the Editor

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## Dear Editor,

The coronavirus pandemic was formally declared a public health emergency of international concern (PHEIC) on 30<sup>th</sup> January 2020. In India, an upsurge of rampant opportunistic infection of coronavirus disease-2019 (COVID-19) associated mucormycosis (CAM), along with the skewed second wave of the COVID-19, has been an issue of concern from May to July 2021. Suppressed immunity due to COVID-19 and its management has created more opportunities for invasive fungal coinfections in immunocompetent individuals.

India is said to be the world capital of both diabetes and mucormycosis and accounts for 40% of the global burden of mucormycosis (1). Diabetes mellitus is the single most common risk factor for mucormycosis in India. Various authors have reported more than 70% of cases of CAM are attributed to India (2, 3).

The sudden increase of mucormycosis in India specifically might be the result of an

unfortunate triad of uncontrolled diabetes (high prevalence), injudicious use of corticosteroid, and COVID-19 infection.

Like other resource-constrained countries, we tried hard to overcome the shortage of protective equipment, and antivirals. Now we have reached a stage with a scarcity of antifungals. Surgical debridement of mucormycosis in the absence of adequate antifungals is a futile exercise. The decline in the surge can be seen with the combined efforts of public and healthcare professionals. Preventive measures and early detection will potentially bend the curve.

## Preventive measures

1. The primary measure will be the prevention of the outspread of the COVID-19 and the promotion of vaccination against it.
2. High-risk patients with poor immunity and uncontrolled glycemic state should be advised to be extra cautious. All attempts to avoid inhalation of fungal spores through the nose should be made.

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3. Avoidance of hot humid climate, which might have high environmental spore count, air purifiers may be beneficial.
4. Judicious use of corticosteroids and antifungals should be a practice to step-down the incidence of CAM and to reduce antifungal resistance.
5. Strict glycemic control during the management of COVID-19 and after recovery is paramount.
6. Immunosuppressive drugs like monoclonal antibodies and others which target the immune system should be discouraged.
7. Swab sticks for potassium hydroxide calcofluor white mount (KOH) should be sterile and not spread cross-infection.

#### Measures for early detection

1. Comprehensive examination of COVID-19 patients and detecting early warning symptoms can identify CAM at the earliest. Nasal obstruction in the form of crusting or discharge are the most common initial symptoms. Blackening of any facial part suggests fungal angioinvasion. Unilateral facial numbness and pain indicate the involvement of the trigeminal nerve. Toothache, loosening of tooth, palatal eschar, facial palsy, and headache are other characteristic findings. Ptosis, periorbital swelling, diplopia, blurred and reduced vision, proptosis indicates orbital involvement. Focal seizures indicate intracranial extension (4).
2. Diagnostic nasal endoscopy and biopsy should be a practice in high-risk patients with high inflammatory markers, on poor glycemic control, on mechanical ventilation, and who have spent more than 50 days in the ICU (5).
3. High-risk patients should be planned for contrast magnetic resonance imaging of paranasal sinuses, orbit, and brain.

To conclude, developing countries are vulnerable to the spread of pandemic. Stringent healthcare infrastructure and public awareness are paramount to recover from this human crisis. We are all in this together and shall evolve in a better way.

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