

## Case Report

## Nefarious design of Mucormycosis in COVID-19 cases in India: A case report

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**Abstract**

India has encountered a de novo problem of deaths due to Mucormycosis in some patients treated for COVID-19. Under mentioned is a case of COVID-19 later complicated with mucormycosis who succumbed prior to any surgical intervention could possibly be performed.

**Keywords:** COVID-19, Mucormycosis, India.

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**Introduction**

The cocktail of COVID-19 & mucormycosis in India is proving catastrophic. Fungal infected sinuses are arduous to treat and usually prove fatal. This necessitates an urgent clarification of ambiguities regarding its causes & treatment. Cases requiring enucleation are on a dramatic rise[1]. Surat, a state in Gujarat, reported 40 cases and eight lost eyes in 15 days[2]. Recently, the Union health ministry urged the states and Union territories to declare mucormycosis a notifiable disease under the Epidemic Diseases Act, 1897[3]. A prompt diagnosis & treatment may impede the advancement of the disease, in which the reported mortalities due to intraorbital & intracranial tissue invasion is 50 to 80%[4]. Despite, an early diagnosis & aggressive medical-cum- surgical interventions the outcome is unsatisfactory ending-up in extension of infection & mortality[5]. Undermentioned case report is a beacon of light in the same direction.

**Case**

A 67 year old male was reported COVID-19 positive by RT PCR at a private hospital in Delhi in April 2021. Subsequently he was admitted to isolation ward of tertiary care medical hospital, after 6 days with complaints of fever (recorded as 103.5° F), sore throat and shortness of breath. At the time of admission, his oxygen saturation (SpO<sub>2</sub>) was 92% on room air. He had a past history of Type II DM, hypertension and was already on oral hypoglycemics and antihypertensives since ten years. Chest X ray revealed pneumonitis.

Treatment as per COVID-19 protocol was started which included zinc supplements, corticosteroids and oxygen support. Patient became afebrile by the 5th day but was continued on COVID-19 specific treatment because oxygen saturation remained unsatisfactory. On 9th day a repeat RT PCR test was done which again came positive. Patient's general condition started deteriorating and he started developing delusional symptoms for which psychiatric consultation was obtained. By 13th day patient developed COVID - 19 pneumonitis as shown in figure 1 coupled with acute respiratory distress syndrome and subendocardial ischemia. He also started developing signs of rhino orbito cerebral mucormycosis including ptosis in right eye, B/L periorbital swelling as shown in figure 2, binocular diplopia, painful eye movements. Sample was collected to be sent to Microbiology department for KOH mount preparation and fungal culture where it was identified as Mucor spp. Patient was started on intravenous lyophilised Amphotericin B 50 mg BD and was being planned for surgical intervention once blood sugar levels were controlled but patient succumbed before any surgical intervention could be performed.

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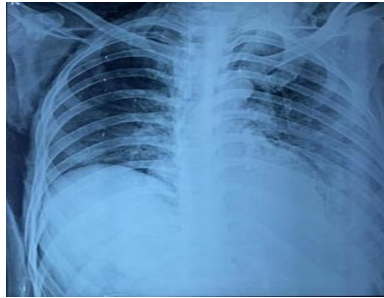


Fig 1:X-ray image



Fig 2:Patient

### Discussion

Mucormycosis results from a variety of fungi that may be typically innocuous environmental fungi and primarily affects immunocompromised patients. White *et al.* studied 135 COVID-19 infected cases, and reported an incidence of 26.7 per cent for invasive fungal infections[6]. Song *et al.* studied in April 2020 and concluded that a large number of COVID-19 affected or recovered patients were at higher risk of invasive fungal diseases and contributed a management algorithm for such cases[7]. Pathogenesis of Mucormycosis involves a complex interplay of factors that include diabetes mellitus, past respiratory pathology, immunosuppressive therapy, nosocomial infection sources and systemic immune alterations due to COVID-19 infection itself like overexpression of inflammatory cytokines, and decreased CD4<sup>+</sup> T and CD8<sup>+</sup> T cell counts. Critically ill patients who required mechanical ventilation, or who had a longer duration of hospital stays were more prone to fungal co-infections. Aggressive use of steroids in COVID-19 management also compromises immunity. It is long known that zinc deprivation retards microbial growth in tissues. Zn depletion induces stress in fungal cells and impedes fungal development by hampering the activity of Zn-binding proteins especially transcription factors involved in many biological processes[8]. Published data about Zn homeostasis in fungi have deduced that compounds interfering with this metabolic process would inhibit fungal growth. It can be inferred that Zinc supplementation in COVID-19 treatment protocol might be supporting the growth of this saprophytic fungus. Experts say unhygienic distribution of oxygen to COVID -19 patients could be a potential cause of Mucormycosis. The recent shortage of medical oxygen led to diversion of industrial oxygen to hospitals but questions around its clean transport loomed[9]. The present case was diabetic who was treated with non medical (industrial) oxygen, zinc supplements and steroids. Surgical debridement of the infected area should be performed promptly once the diagnosis is confirmed. Amphotericin-B deoxycholate remains the anti-fungal treatment of choice. Prognosis remains poor even with aggressive surgery and intravenous anti-fungal treatment. Reported mortality rates of 33.3–80 per cent, and even 100 per cent are exhibited in disseminated infections.

### Conclusion

Clinician must pay focused attention to increased incidence of fungal infections in COVID-19 affected or recovered patients and also explore the contributory etiology so that affective measures could be triggered to prevent victimisation of more patients.

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