

BRIEF REVIEW

Mucormycosis: COVID-19 and Corticosteroids

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COVID-19 presents a global challenge. Advancements in prevention and treatment are being developed to counter this illness.[1, 2] The course of COVID-19 varies. People with comorbidities such as poorly controlled diabetes mellitus, severe pulmonary illnesses, liver cirrhosis, and/or immunosuppressive states are at greater risk of serious life-threatening complications.[3, 4] Treatment with corticosteroids has proven efficacious for patients with COVID-19 pneumonia and hypoxemia and diminishes the need for intubation.[5]

The emergence of rhino-orbital mucormycosis (ROCM) has resulted from the prescribing of corticosteroids in India. Diabetes mellitus is an independent, additional risk factor. The triad of COVID-19, diabetes, and corticosteroid exposure seriously contributes to the pathogenesis of mucormycosis.[4]

Mucormycosis can also invade the lungs, skin, and gastrointestinal tract, and/or be widely disseminated. ROCM occurs following inhalation of fungal spores.[1] The pathogenesis includes dysfunction of the immune system. Vascular invasion is the hallmark of mucormycosis, characterized by thrombosis, infarction, and/or necrosis. COVID-19 is associated with endothelial damage, and thromboses serve as a nidus for fungal invasion.[3, 4, 6] The involvement of CD+4, CD+8, and T-lymphocytes and development of a cytokine storm

can result in free iron availability in some people.

Patients may present with fever, headache, nasal congestion/swelling, facial numbness, gingival eschars, black palatal discoloration with possible perforation of the nasal septum, and/or ocular proptosis, with or without diplopia. The rapid dissemination of mucormycosis characterizes the course, particularly in diabetics. As the infection spreads, trigeminal nerve palsies, obtundation, cavernous sinus thrombosis, and/or carotid artery involvement may occur.[7] Intracranial involvement increases the fatality rate up to 90%.[4]

Early diagnosis of ROCM is critical. Prompt treatment with amphotericin and itraconazole is recommended.[1] Surgical debridement is frequently indicated. Posaconazole, combination therapy with caspofungin, or both and iron-chelator therapies are being investigated.[8]

Physicians need to be highly aware of the risk of mucormycosis in patients with COVID-19 treated with corticosteroids in the presence of illnesses associated with immunosuppression. Prompt diagnosis of COVID-19, managing predisposing factors such as diabetes mellitus, and when needed, judicious application of corticosteroids should help to mitigate the risk for mucormycosis.[8]

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