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Guest Editorial

Mucormycosis (Black fungus): Newest threat post Covid-19 infection

Amina Sultan[1,*]

[1] *Dept. of Pediatric & Preventive Dentistry, Faculty of Dentistry, Jamia Millia Islamia, Jamia Nagar, New Delhi, India*

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As a devastating second wave of COVID-19 is receding, another challenge in the form of alarming outbreaks of Mucormycosis, commonly referred to as Black Fungus, have surfaced in patients diagnosed and treated for Covid-19. Before the pandemic, the exact estimate of Mucormycosis in India was 0.14 per 1000, nearly 70 times higher than the worldwide data.[1] There were instances of Mucormycosis during the first wave too. The experts believe that unrestricted use of steroids, uncontrolled diabetes amongst the patients with covid-19, and an unhygienic mode of oxygen use have caused this alarming rise in the cases of Black fungus during the second surge. The fungal infection Mucormycosis is an uncommon but fatal fungal infection that usually affects patients with altered immunity. These include conditions like uncontrolled Diabetes Mellitus (DM), the use of drugs that suppress the immune system such as corticosteroids, a variety of other immunocompromising diseases, like malignancies and organ transplantation, damaged tissue following trauma or surgery, acquired immunodeficiency syndrome (AIDS), intravenous drug abusers, and malnutrition. Diabetes Mellitus (DM) is the leading risk factor associated with mucormycosis globally, with an overall mortality of 46%.[1–3] Also, in various studies, obesity has been associated with the development of complications in COVID-19 patients.[4] As of June 8, 2021, approximately 28,252 cases of Mucormycosis have been reported from 28 states and UTs, mainly from Maharashtra and Gujarat. Out of 28,252 Mucormycosis cases, 86% of infections have a history of Covid-19 and 62.3% a history of diabetes.[5] Mucormycosis is an Angio invasive disease caused by mould fungi of the genus Rhizopus. Rhizopus Oryzae is frequently accountable for nearly 60% of Mucormycosis cases and also responsible for 90% of the Rhino-orbital-cerebral (ROCM) form, the most common variety seen in the human population globally.[1,2,6]

In a community, we can contract Mucormycosis – by inhaling or swallowing spores in food or medicines or through open wounds. Frequently, disease occurs via inhalation mode. A strong immunity and healthy lungs, generally prevent them from causing an infection in an individual. Concurrently, the virus responsible for Covid-19 also damages airway tissue and blood vessels, increasing chances of fungal infection. These fungal spores colonize in the oral, nasal, pharyngeal mucosa, including paranasal sinuses.[2,5] Through paranasal sinuses this fungus can be readily transmitted to the mouth, leading to palatal perforation or the orbit via the nasolacrimal duct and medial orbit. As the infection advances towards the orbit and skull, it may result in multiple issues, such as orbital cellulitis, chemosis, proptosis, loss of vision, ophthalmoplegia, superior orbital fissure syndrome, sagittal sinus thrombosis, epidural or subdural abscess formation. Patient reporting a bloody nasal discharge indicates that disease has invaded into the brain via turbinates which may result in cerebral ischemia, brain infarction, and eventually

* *Corresponding author.*
E-mail address: asultan@jmi.ac.in (A. Sultan).

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death.[7]

Specific pathologic investigation such as Grocott methenamine-silver is the gold standard for diagnosing mucormycosis, but this is a tedious and time-consuming procedure. It may cause a delay in management, resulting in higher morbidity and mortality. We can prevent the spread of the disease progression by repeated surgical debridement and removal of the infected tissue with fungal components. Sometimes the patient may require radical resection involving partial or total maxillectomy, mandibulectomy and orbital exenteration. Additional treatment options involve nebulized/local irrigation with AmB, topical hydrogen peroxide, leukocyte transfusions, and interferon-gamma. Also, hyperbaric oxygen therapy promotes neovascularization, improves healing in poorly perfused acidotic and hypoxic tissues. It may prove efficient in patients who appear to be deteriorating despite the best medical and surgical treatments.[8]

There is a scarcity of available data that exhibits to what extent avoiding fungal exposures helps in prevention. Mucormycosis is a treatable disease, but patients with compromised immunity should avoid contact with areas and substances, including foods, that might increase their risk for fungal exposures. These involve places with high dust hazards (e.g., excavation grounds, construction and renovation sites), occupations involving soil, and food items that contain moulds (e.g., blue cheese). The prognosis is usually compromised and influenced by time utilized for diagnosis and, largely, by the patient's medical condition.[9] While WHO "strongly recommends" administration of corticosteroids such as dexamethasone in severe and critical COVID-19 patients, they should not be used in mild cases of COVID-19. The absence of any definite therapy and the lack of clear guidelines for using certain drugs in treating COVID-19 patients has led to haphazard usage of medicines, including steroids. While steroids are life-saving for many patients with COVID-19, we can prevent mucormycosis in most of the cases if their diabetes was better controlled and with restricted use of the steroid.

The alarming increase in mucormycosis cases should be a wake-up call for COVID-19 patients and health experts to use steroids judiciously. Steroids should be given in the correct dose and duration, particularly in patients with diabetes; refrain from self-medication with steroids at any cost. We can manage Mucormycosis even non surgically if diagnosed timely. It is another reason why everyone, especially diabetic patients, should get vaccinated early. Since complete vaccination prevents developing severe Covid-19, patients with diabetes will not need steroids; and, hence have fewer chances of developing mucormycosis. The black fungus seems to spread like an epidemic, and therefore it is crucial to take all preventive actions. We also need enhanced awareness amongst the community, better tests to diagnose the infection, and a focus on controlling diabetes and using corticosteroids wisely.

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Author biography

Amina Sultan, Professor & Head

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