



## Mucormycosis!!! Do We Really Need to Panic? Role of Dentists in Diagnosing and Treating the Condition

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### Abstract

Mucormycosis (phycomycosis, zygomycosis) is an acute opportunistic infection caused by a saprophytic fungus found in soil, bread molds, and decaying fruits and vegetables. Numerous predisposing risk factors are associated with mucormycosis, although most cases have been reported in poorly controlled diabetics or in patients with hematologic malignant conditions.

A recent surge in COVID-19 cases and hence the condition favouring the growth of these fungus, such as immunocompromised state in patients, due to chronic steroid therapy has also increased to a level of concern. The aggressiveness of this fungus makes various treatment modalities to fail. But early diagnosis and moreover accurate measures taken to prevent the fungus from invading our body have proven to be successful.

**Keywords:** Mucormycosis; Saprophytic; Diabetics; COVID-19; Steroid Therapy

### Introduction

Mucormycosis is a rare opportunistic infection caused by fungi belonging to the Mucorales order and the Mucoraceae family, which also includes *Zygomycetes*, *Absidia*, *Mucor*, *Rhizomucor*, *Rhizopus*, *Cunninghamella* and more rarely *Apophysomyces* and *Saksenaeeae*. These are usually saprophytic organisms found in nasal, paranasal, and oral mucosae and can be isolated from decaying vegetation [1,2].

In addition to the presence of the fungus, lesions of mucormycosis are characterized by widespread tissue necrosis and an acute inflammatory infiltrate. The organisms have a predilection for invading blood vessel walls by direct extension and producing vascular thrombosis. Subsequently, the tissues supplied by the thrombosed vessels undergo ischemic necrosis. With time, lymphatic vessels and veins are also involved [3,4].

### Signs and symptoms

Involvement of the oral cavity usually appears as palatal ulceration or necrosis and occurs as a result of infection in the nasal cavity or paranasal sinuses (Figure 1).

Patients often exhibit facial cellulitis and anesthesia, nasal discharge, necrotic turbinates, fever, headache, and lethargy. Without appropriate treatment, the disease spreads into the orbit and brain and results in death [5].

### How aware should we be of the fungus!

According to recent statistics, the mortality rate of mucormycosis is approximately 50%, being triggered by the life saving treatment with steroids in critically ill COVID-19 patients.

The major risk factors for mucormycosis include uncontrolled diabetes mellitus in ketoacidosis, other forms of metabolic

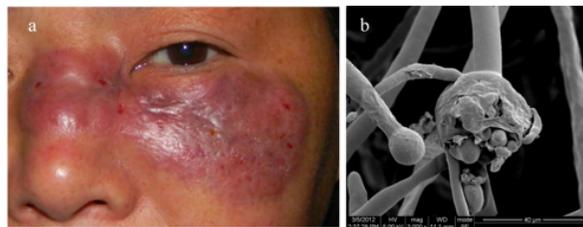


**Figure 1:** Palatal Ulcer Source: Ramesh DN, Anjum G, Rukmangada T, Patil N. Rhinocerebral maxillary mucormycosis: A palatal ulcer. *Indian Journal of Dental Research.* 2020 Jul 1;31(4):652.

acidosis, treatment with corticosteroids, organ or bone marrow transplantation, neutropenia, trauma and burns, malignant hematologic disorders, and deferoxamine therapy in patients receiving hemodialysis [6-8].

Patients suffering from the fungal infection typically have symptoms of stuffy and bleeding nose; swelling of and pain in the eye; drooping of eyelids; and blurred and finally, loss of vision.

There could be black patches of skin around the nose (Figure 2). Therefore, getting the treatment at the very first sign of any of these symptoms, is a must.



**Figure 2:** A 47-year-old man with mucormycosis and electron micrograph of his skin showing sporangia of Mucorales fungi. Source: Wikipedia.

Administering right dose of steroids during and after COVID, maintaining a healthy level of blood glucose and adding on healthy foods to diet, completely avoiding processed foods are some of the ways to stall the possibility of mucormycosis.

Since the fungus thrive on stale and decaying eatables in the form of molds, discarding them and washing fruits and vegetables thoroughly, before consuming them should be practised.

**Role of dentists**

Oral cavity being one of the sites showing evident signs of the infection, regular dental appointments holds greatly helpful, for diagnosis of mucormycosis, at an early stage.

Dentists should advise their patients to maintain oral hygiene and the various ways to do the same. Based on a literature review, Amphotericin B is most commonly used along with the surgical debridement [9]. Surgical management is crucially important and should involve early debridement of all infected and necrotic tissues. This may have to be repeated based on progression of the disease. In some cases, radical resection may be required, which can include partial or total maxillectomy, mandibulectomy and orbital exenteration [10,11]. Recent studies show that post COVID, individuals should change their toothbrush once they test negative.

**Conclusion**

Though invasive in nature, mucormycosis has more of individualised focus areas. Early diagnosis and improved treatment with antifungals prescribed in correct dosage can decrease patient morbidity and mortality. Maintaining one’s immunity, regularly checking with debilitating conditions if any and following a proper regimen for oral hygiene are key factors in keeping the infection at bay. Nevertheless to say this fungal infection needs a team approach of dental and medical practitioners.

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