

Black Fungus Complicated with COVID-19 in a Man with Underlying Non-Hodgkin's Lymphoma

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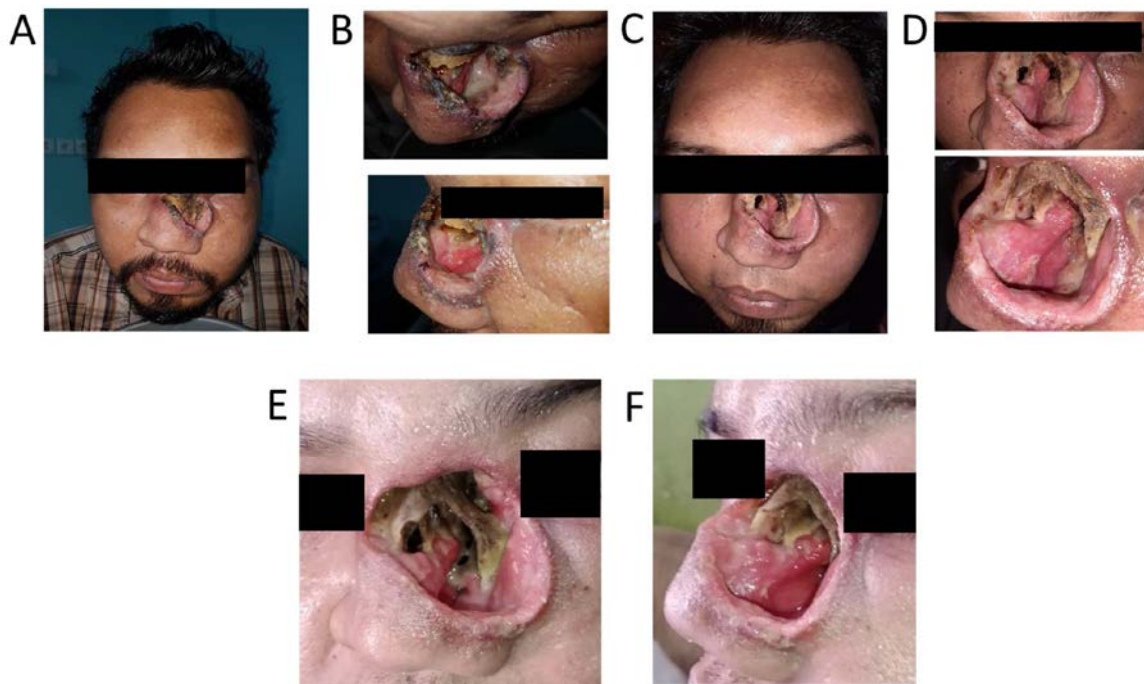


Figure 1. (A,B) The patient upon first presentation at the outpatient clinic in July 2020. (C-F) The patient after the first debridement in September 2020 during protracted hospitalization period due to his contracting COVID-19.

COVID-19 is a disease reported to suppress cellular immunity.¹ This may lead to the development of opportunistic infections,

among others black fungus, or mucormycosis. On the other hand, pre-existing defect in immunity may render patients susceptible to both

mucormycosis and COVID-19. Mucormycosis is a relatively rare fungal infection with rapid progression unless diagnosed promptly and treated adequately. Urgent surgical and medical intervention is lifesaving.² The manifestation of mucormycosis largely depends on the presence of exposure to the pathogen and the existing risk factor of the host. As black fungus is locally invasive, the majority of cases will involve tissue damage with local destruction and contiguous spread to nearby structure. We present a case of black fungus complicated with COVID-19 in a man with underlying non-Hodgkin's lymphoma.

A 34 year-old man initially visited the ENT outpatient clinic in June 2020 due to the chief complaint of pain on the left side base of the nose, and swelling of the left eye. The patient developed an open wound on the base of the nose which grew larger. He complained of congestion and pain on the left side of the nose, and greenish discharge from the nose every day, with irregular pattern of fever. The CT scan revealed soft tissue lesion on the anterior nasal cavity especially on the right side, which eroded the nasal bone, with the suspicion of mass or chronic infection; pansinusitis with erosion of the left ethmoid and maxillaris sinus, left nasal bone erosion with fistulation and ulceration to the left soft tissue nasal region and medial to the left orbita; as well as thickening of the cutaneous and subcutaneous tissue of the nasomaxillar region to the left inferior palpebra. Nasoendoscopy revealed a fistula on the left dorsal nasal cavity and suspicion of black fungus infection. Surgical and nasoendoscopic debridement was performed. As the endoscopic appearance suggest mucormycosis, and microscopic examination revealed the presence of spores and hyphae. Upon culture, dematiaceae (black fungus) colony growth was found. The patient was discharged after two-month of hospitalization for wound care and diagnosis.

He was planned to receive voriconazole or amphotericin B, and therefore he was re-admitted in September 2020. However, during this hospital admission the patient was found to be PCR positive for SARS-COV-2 due to contact tracing from another patient in the same ward, and he was promptly moved to the COVID-19

isolation ward for further management. He did not develop new COVID-19 symptoms other than fever and myalgia. Although the antifungal treatment was resumed in this period and initial debridement and repeat biopsy sample was taken, he did not receive timely nor extensive surgical debridement due to the logistical challenges related to his admission in the COVID-19 isolation ward. The patient was discharged after 21 days in late October 2021 and negative PCR SARS-COV-2 result and planned for a follow up outpatient visit. The pathology anatomy evaluation of the septal tissue obtained from nasal lesion the type NK/T-cell lymphoma although result was only available after the patient was discharged.

During the COVID-19 pandemic, co-infections of any viral, bacterial or fungal pathogen with SARS-COV-2 is very likely. In unfortunate instances such as the case presented in this report, hospital-acquired COVID-19 although did not cause additional morbidity or severe symptoms, to some extent led to suboptimal management of the fungal infection such as delaying completion of the treatment regimen or in performing extensive surgical debridement required in the management of invasive mucormycosis. Additionally, the patient was only later diagnosed with non-Hodgkin's lymphoma after repeat biopsy was taken, revealing a host risk factor for invasive fungal disease and risk of deterioration in the patient. Suboptimal or delayed diagnosis and treatment of non-COVID-19 diseases have been reported worldwide even with effective resource allocation.^{3, 4} It is important to therefore to identify cases in which delay in the management of non-COVID-19 disease could potentially be life-threatening or leading to disease progression and prioritize delivery of care in these patients.

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