Fatal Case of Invasive Pulmonary Aspergillosis Post COVID-19 Pneumonia Due to Aspergillus Niger

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Introduction: Invasive pulmonary aspergillosis (IPA) including aspergillus tracheobronchitis mostly affects immunocompromised patients such as transplant or cancer patients. However, as the coronavirus disease 2019 (COVID-19) pandemic has developed, IPA has been increasingly reported in patients with severe COVID-19. The prevalence of COVID-19 associated pulmonary aspergillosis (CAPA) ranged from 0 to 33%. Most cases of CAPA reported in the literature are caused by Aspergillus fumigatus. However, only few cases of Aspergillus niger are reported in the literature. Herein, we describe a fatal case of CAPA caused by Aspergillus niger.

Case Presentation: 69 year old female with a history of diabetes mellitus type II was initially hospitalized for COVID-19 pneumonia that was treated with Remdesivir and Dexamethasone and later discharged to rehabilitation facility on two liters/minute of oxygen. Two weeks later, she presented with worsening shortness of breath, hemoptysis, and increased oxygen requirement. On admission, laboratory tests showed white blood cell count of 23.6/mm3, elevated C-reactive protein at 22.4 mg/L, and elevated procalcitonin at 0.42 ng/mL. Computed tomography (CT) of the chest showed diffuse ground glass infiltrates from prior COVID-19 pneumonia and a new cavitary lesion in the left upper lobe (Figure 1A). Patient was initially started on empiric antibiotics for suspected necrotizing pneumonia. Bronchoscopy revealed diffuse plaques overlaying the upper airway, trachea and all the major bronchi (Figure 1B) and bronchoalveolar lavage (BAL) cultures grew Aspergillus niger which was also detected in the endobronchial biopsies that were obtained. (1, 3)-β-D-glucan was 60 pg/mL and Aspergillus galactomannan antigen was detected on both serum and BAL. Voriconazole therapy was started after bronchoscopy. Despite the antifungal therapy, patient's clinical condition continued to decline, she was transferred to the intensive care unit where she was intubated and placed on mechanical ventilation for hypoxemic respiratory failure. Unfortunately, she developed multiorgan failure and expired on the same day.

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Discussion: Aspergillus fumigatus is the most isolated Aspergillus species in patients with CAPA. However, other species such as Aspergillus niger can be detected, as in our case. The possible etiology for CAPA may include host immune dysregulation due to T-cell perturbations, lymphopenia, and utilization of glucocorticoids. Given the overlap between the clinical features of COVID-19 and pulmonary aspergillosis, early diagnosis is challenging, in fact, often diagnosed post-mortem. Our case highlights the importance of including pulmonary aspergillosis in the differential diagnosis of COVID-19 patients presenting with relapsing respiratory failure and/or cavitary lesion.

