

COVID Associated Pulmonary Aspergillosis

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Abstract

Invasive pulmonary aspergillosis is a frequent complication of severe influenza pneumonia with ARDS. However, few of the recent studies have reported correlation and occurrence of aspergillosis in severe COVID-19 cases with pneumonia, referred to as COVID-19 Associated Pulmonary Aspergillosis (CAPA). Pulmonary aspergillosis, an allergic fungal reaction among people who already suffer from chronic lung disorders such as asthma, cystic fibrosis, tuberculosis or emphysema etc. Aspergillosis, a well-known complication of severe influenza suggests that SARS-CoV-2 might be a risk factor for invasive aspergillosis as COVID leads to the condition of acquired immunodeficiency.

Keywords: Pulmonary; Fungal; Allergic; Immunodeficiency

Introduction

In late February, the Southern Netherlands became a hot spot for the occurrence of invasive pulmonary aspergillosis cases, most commonly among the patients admitted to ICU. 6 ICU patients out of 31 developed IPA (Invasive Pulmonary Aspergillosis) [1,2]. Chest CT scan of one patient showed no apparent signs of fungal infection. But bronchoscopy in another patient highlighted abnormal, white patch due to infection caused by new COVID-19 virus, a global threat caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) [3]. Infection by coronavirus severely affects the respiratory system and poses our lungs to get prone to any viral, fungal infection and in a matter of time the disease can deteriorate the person's health. SARS-Cov-2 directly damages the lining epithelium of airway passage enabling the invasion by aspergillus [4]. Viral infection disrupts ciliary clearance and may often result in immune dysfunction. Patients suffering from COVID infection, in a state of Acute Respiratory Distress (ARDS) are at an increased risk to develop invasive aspergillosis according to a retrospective study conducted by mucoid sputum in left bronchus [5].

The study in Netherland identified the increased risk of IPA (19.4%) in a cohort of 31 ICU patients. Studies from Wuhan, China reported secondary infections to fungus in 3/9 COVID patients and 6/17 in critically ill patients. Even few immunocompromised patients have passed away due to IPA as well. Elevated incidence of secondary pulmonary aspergillosis associated with influenza have also been reported in ICUs of The Netherlands and Belgium. In various places early diagnosis for IPA and prompt treatment is performed, antifungal therapy is started in infected patients.

Description

The first case of azole resistant aspergillus infection has been reported. Recommended treatment as the 1st line treatment is isavuconazole or voriconazole. In azole resistant cases liposomal amphotericin B is a choice of drug. There have been various reports of CAHA (COVID Associated Pulmonary Aspergillosis) that has become a contributing factor to mortality. 30 times higher mortality rate was seen in patients with CAHA then without aspergillosis.

Invasive aspergillosis is a well-known complication of severe pneumonia caused by influenza virus with Acute Respiratory Distress Syndrome (ARDS). An observational study from Pakistan revealed the emergence of aspergillosis in severe COVID-19 patients suffering from Pneumonia resulting in COVID-19 Associated Pulmonary Aspergillosis (CAPA). It was a retrospective observational study conducted in patients severely suffering from pneumonia as a result of COVID infection from Feb 2020-April 2020. CAPA was diagnosed based on clinical parameters, radiological findings and mycological data among patients of greater than 18 years. The overall fatality rate of COVID patients with aspergillosis was 44%.

Cases with COVID-19 Associated Pulmonary Aspergillosis (CAPA) are being increasingly reported and physicians treating patients with COVID-19 related lung disease need to be actively considered for these fungal coinfections [6].

From the outset of COVID pandemic, aspergillus flavus was isolated from the respiratory tract in 1 out of 99 patients in the first cohort from Wuhan, China and later-in 2nd cohort 2 out of 52 patients reported infection with aspergillus species.

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Recently, retrospective case series from Belgium, France, Netherlands and Germany have reported evidence of increasing CAPA rate alarmingly among 20-35% in mechanically ventilated patients [7].

Conclusion

COVID-19 can cause immunosuppression that can involve any system and produce complications of any bodily system such as kidney failure, pneumonia, chest pain or anything. Recently pulmonary aspergillosis associated with COVID-19 was reported as well but anything that can help us fight this virus are safety measures, social distancing and good sanitation.

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