

AN INFREQUENT INFECTION IN IMMUNOCOMPETENT PATIENT OF PULMONARY MUCORMYCOSIS

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INTRODUCTION:

Mucormycosis includes a wide group of opportunistic fungal infections caused by Zygomycetes, order Mucorales. Mucormycosis manifests as rhino-orbito-cerebral, pulmonary, gastrointestinal, cutaneous & disseminated mucor infections.[1]

Recently mucormycosis has emerged as breakthrough sinopulmonary infection in hematologic patients and recipients of transplantation being on antifungal prophylaxis with *Aspergillus*-active antifungals that lack activity against *Mucorales*. The prognosis and outcome of pulmonary mucormycosis have not improved significantly over the last decade unlike that of pulmonary aspergillosis, mainly due to difficulties in early diagnosis and the limited activity of current antifungal agents against *Mucorales*.

Patients with severe acute respiratory syndrome (SARS) infection might develop coronavirus disease (COVID-19), which is associated with significant and sustained lymphopenia compromising the immune system, especially in the most severe cases [4,5,6]. Some authors described that a significant decrease in lymphocyte count and an increase of neutrophil count together with an inflammatory storm, occur more frequently in patients who developed severe COVID-19 and co-infections [3]. Patients are prone to develop Mucor in such patient.

Considering these facts that the mucor affects in immunocompromised patients or in patients on immunosuppressants or hematological malignancy patients, mucor in an immunocompetent patient is quite rare. Therefore we report such a rare case of mucor in an immunocompetent male with no comorbidities.

CASE REPORT

A 37-year-old male presented to our OPD in January 2022 with complains of cough, chest pain and blood in sputum. Right sided chest pain which was significantly aggravated by deep breathing. He had history of fever with chills since 5 days for which he was admitted at an outside hospital received treatment with antibiotic but showed little improvement, following which he was referred to our hospital for further diagnosis and treatment. He had no history of hypertension, diabetes or coronary heart disease.

Laboratory findings:

White blood cell: $14.74 \times 10^9/L$ (reference interval: $3.50-9.50 \times 10^9/L$); Neutrophil%: 91% (RI: 40.0-75.0%);

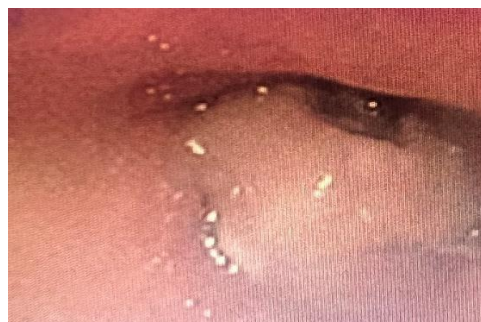
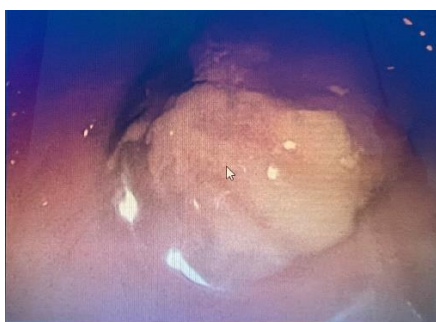
Lymphocyte%: 10.2% (RI: 20.0-50.0%);

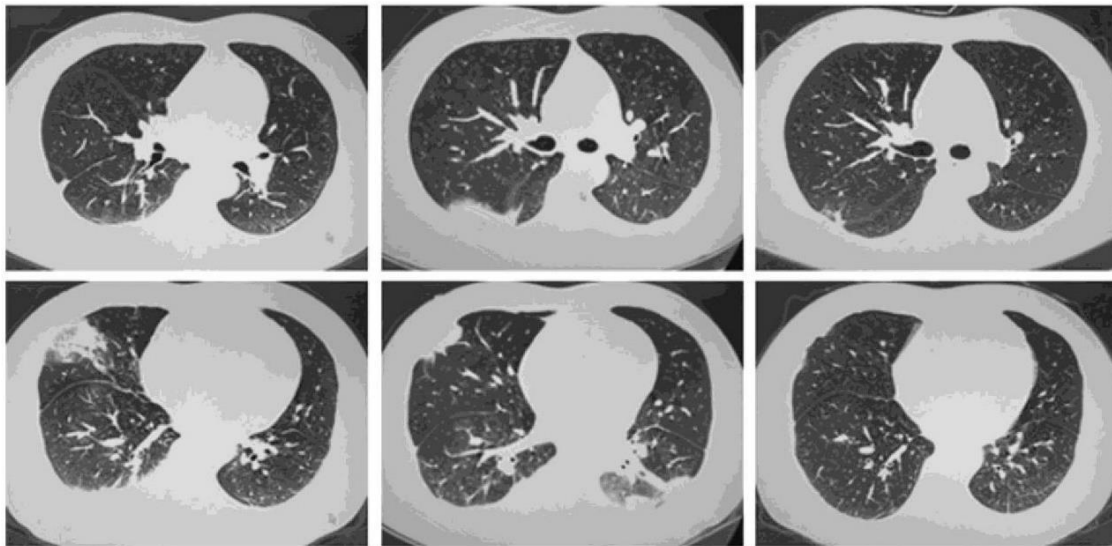
C-reactive protein: 92.9 mg/L (RI: <1 mg/L).

Influenza and parainfluenza IgM antibodies were negative.

Routine renal and liver function, electrolyte & urine routine were normal.

Fiber-optic bronchoscopy showed endoluminal white colored adherent growth as shown in image below.





Chest CT scan suggested pulmonary infection with pleural effusion. 7 days after admission: chest CT imaging suggested more extensive pulmonary infection with pleural effusion. 70 days after admission: signs of lung infection were dramatically improved, and pleural effusion was also obviously absorbed.

Chest CT imaging suggested pulmonary infection with pleural effusion, which was confirmed by pleural ultrasonography. Therefore, he continued to be treated for severe community-acquired pneumonia.

Second day post-admission, he developed a fever with a temperature of 38.5 °C & continued to have chest pain. Possibility of pulmonary tuberculosis was considered which was ruled out by sputum AFB staining & CBNAAT. Seven days after admission, his chest pain significantly worsened. We repeated the CT chest which showed extensive pulmonary infection.

Bronchoscopy was done which showed the endoluminal growth inside the bronchial tree. Bronchoalveolar lavage was taken and cultured which was positive for *Mucor*. Patient was put on antifungal therapy with intravenous liposomal Amphotericin B 150mg daily for 03 weeks, followed by oral Posaconazole 300mg twice on Day 1 then 300mg daily once. Patient showed significant improvement in chest pain, cough and temperature returned to normal. Repeat CT chest showed further improvement and chest effusion was absorbed. During follow-up over 6 month he recovered completely without any recurrence and relapse.

DISCUSSION

Pulmonary Mucormycosis is the third most common presentation of mucormycosis. It has a mortality rate over 50% and is known for its aggressive clinical course [7]. This highly fatal fungal infection is commonly found in immunocompromised patients with haematological malignancy or diabetes or who receive long-term immunosuppressive therapy, after haematopoietic stem cell transplantation or solid organ transplantation or have autoimmune diseases [8]. However, pulmonary mucormycosis can rarely present in patients without any of the above risk factors. Due to its non-specific presentations, pulmonary mucormycosis is easily misdiagnosed, especially in immunocompetent patients, which would result in serious consequences. The increasing incidence over the past few decades makes it a great threat to human health [9].

As most pathogens of mucormycosis affect the skin and subcutaneous tissue. It can also invade the lung, causing pathological changes characterized by thrombosis, vascular invasion and tissue necrosis [10]. We report a case of isolated pulmonary mucormycosis in an adult male with no known immunodeficiency.

We consider that this case will help clinicians identify pulmonary mucormycoses as early as possible, especially in immunocompetent patients too, to improve therapeutic efficacy and prognosis.

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