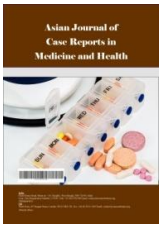

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Pulmonary Mucomycosis Treated Successfully with Medical Therapy

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Case Report

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ABSTRACT

Mucormycosis is a rare life-threatening fungal infection. It occurs usually in immunocompromized patients. We present a case of pulmonary mucormycosis in patient with poorly controlled diabetes. The diagnosis was suspected on radiological finding showing a right upper lobe cavitating consolidation and confirmated by isolating typical aspect of the pathogene within histological exam. Patient was treated by liposomal amphotericin B and had significant improvement.

Keywords: Pulmonary mucomycosis; medical therapy; fungal infection.

1. INTRODUCTION

Mucormycosis is a rare fatal opportunistic infection occuring usually in immuno-compromized patients. It is caused by an ubiquitous saprophytic fungi of the order Mucorales and class Zygomycetes. (1) The most common organisms causing mucormycosis belong to the genera Rhizopus, Lichtheimia, and Mucor [1]. The main clinical presentation of mucormycosis are Rhinocerebral, cutaneous, pulmonary, gastrointestinal and central nervous

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system. [2] Mucormycosis affects the lungs in 58 to 81% of cases. [3] Hematological malignancies ,chemotherapy, immunosuppressive therapy , diabetes mellitus reprensent some of predisposing clinical factors of this infection. [2] Most reported cases of pulmonary mucormycosis were treated by surgical resection and combined medical therapy. Here we present a case of mucormycosis in a diabetic treated with liposomal amphotericin B and had positive clinical outcomes.

2. CASE REPORT

A 51 years old man, smoker of 60 pack-years, with type II uncontrolled diabetus mellitus of 2 years duration was reffered to our hospital with a 3 months history of recurrent cough, hemoptysis and fever. Physical examamination showed a temperature of 36.7˚C (normal range, 36-37˚C), a pulse rate of 85 beats/min, a respiratory rate of 20 breaths/min and a blood pressure of 130/60 mmHg. Further physical examination results were unremarkable. Chest radiograph showed an infiltration of the right upper lobe. (Fig. 1).

laboratory results showed a white blood cell count of 10 000/l and elevated CRP (224 mg/l). Blood and sputum cultures for bacteria were negative. There was no evidence of acid-fast bacilli in the sputum. HIV, hepatitis (B and C) and aspergillus serologies were negative. The patient was diagnosed with community acquired pneumonia, and empirical antibiotic therapy was started. However, the patient clinically did not improve and radiography showed progression of the lesion in the upper lobe. (Fig. 2).

Due to the patient's extensive smoking history, the initial concern was for pulmonary malignancy. Computed tomography (CT) scans showed right upper lobe necrotizing consolidation of 3 cm. (Fig. 3) Bronchoscopy revealed a whitish mass completely occluding the anterior segment of right upper lobe bronchus. (Fig. 4).

Endobronchial biopsy showed aseptate fungal hyphae, right-angle branching, consistent with *Mucor.* Malignancy was not present in the specimens obtained.

The patient recieved an antifungal therapy based on 1mg/kg of intravenous amphotericin B. monitoring of renal function showed a rapid progressive renal failure. We swiched to the liposomal amphotericin B (Ambisome 3mg/kg) for 4 weeks. The patient showed a prompt response to treatment with an improved general condition, good pulmonary status, decreasing C-reactive protein and stable renal function . Clinical and radiological improvement was remarkable (Fig. 5).

Hyperglycemia was controlled initially with insulin, followed by oral hypoglycemic agents. Repeat bronchoscopy performed 2 weeks after discontinuation of amphotericin B therapy confirmed clearing of the endobronchial mass. Four months later the initial presentation, CT scan showed a regression of the lesion. (Fig. 6).

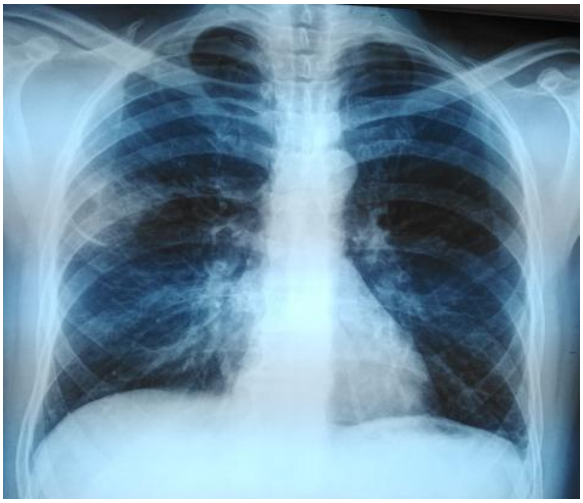


Fig. 1. An Xray showing a peripheric right infltrate

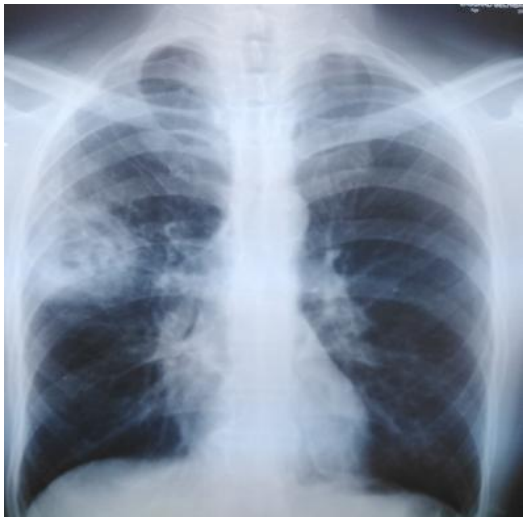
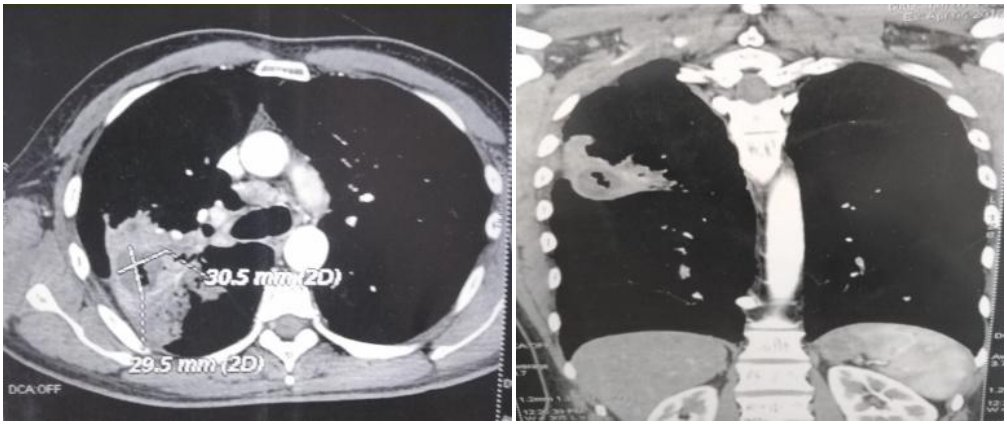


Fig. 2. An X ray showing cavities wthin consolidation of right upper lobe



Figs. 3 and 4. The initial pulmonary CT scan showing a consolidation centrated by a 3 cm cavitating lesion of the upper right lobe

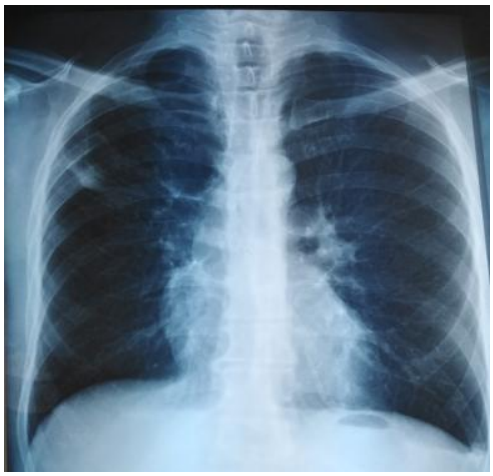


Fig. 5. An X ray showing a regression of the consolidation

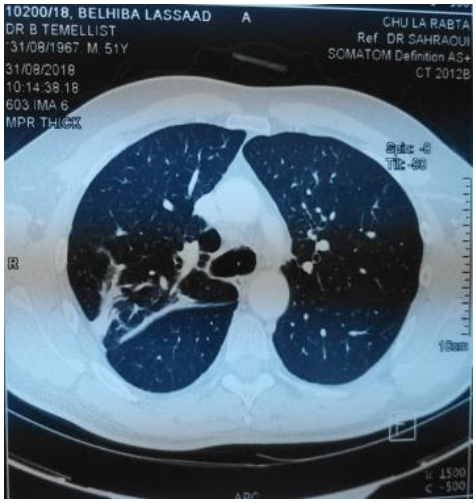


Fig. 6. The pulmonary CT scan showing a regression of the cavitating consolidation

3. DISCUSSION

Pulmonary mucormycosis occurs after inhalation of fungal Sporangiospores, widely spread in nature. They rarely cause human disease, luckily because our immune system is effective at eliminating them. However, in patient with predisposing factors , pulmonary mucormycosis are expected to be seen. [4] In our patient, poorly controlled diabetes mellitus was the predisposing factor. The acidosis usually present within non equilibrated diabetes plays an important role in the development of fungal infection. [5] Fungal infection need to be considered in non resolving pneumonias when antibiotic fail to achieve a cure. [6] in 30% of cases it is associated with bacterial pneumonia, which can delay the diagnosis of the fungal infection. [5] Clinically, it is difficult to differentiate between pulmonary infections due to Aspergillus and the rare mucormycosis. [7]

The symptoms of pulmonary mucormycosis are non-specific and can include dyspnea, coughing, fever, and chest pain. Vascular invasion may lead to hemoptysis, which can be fatal [8].

The main radiographic manifestations of pulmonary mucormycosis were infiltrates (26%), cavity or nodules (17.39% each), consolidation (13%), and tracheitis (4.35%) [9]. The halo sign has a high specificity value. The air-crescent sign is uncommon and often portends a poor prognosis. [8] The right lung is more commonly involved than the left, and there is a predilection of the upper lobes [10].

Diagnostis techniques are percutaneous needle biopsy, open lung biopsy and fiberoptic bronchoscopy which was the diagnostis method in our case [11]. Direct histological examination of the tissue biopsy is the gold standard. The histopathological findings reveal irregular broad non septate hyphae and spores [6].

Despite the risk of renal toxicity, amphotericin B (1-1.5 mg/kg/day) is the main stay of treatment [7]. Oral posaconazole is recommended, but these two types of drugs are often ineffective without surgical intervention [12]. Voriconazole is ineffective against mucormycosis [13]. The treatment of underlying disease is also important [8]. In our case, a favourable outcome was obtained with liposomal amphotericin B at a dose of 3 mg/kg conducted for one monthe. Still a controversial issue, whether a liposomal or lipid formulation of amphotericin B is superior however liposomal amphotericin B has low nephrotoxicity [14]. The therapy duration is not well defined, a total cumulative dose of 1.5 g of amphotericin is usually sufficient [8]. Surgical therapy, such as wedge resection, lobectomy and pneumonectomy, in combination with medical therapy, has been associated with lower mortality rates in patients with mucormycosis [15]. The lowest survival rate at 42.85% was noted among patients with malignancy [9].

in the case of our patient, the diagnosis was confirmed by bronchial biopsy. Our patient responded well to liposomal amphotericin B Therapy and had clinical and radiological improvement without requiring surgery.

4. CONCLUSION

We reported a case of nonresolving pneumonia in a patient with uncontrolled diabetes.The diagnosis of pulmonary mucormucosis was suspected by CT scan typical lesion and confirmed by bronchial biopsy . Our patient responded well to liposomal amphotericin B Therapy.

ETHICAL APPROVAL AND CONSENT

As per international standard or university standard guideline patients consent and ethical approval has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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