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A Rare Case of Massive Haemoptysis

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ABSTRACT

Haemoptysis can be a life threatening event. We present a case report of mucormycosis in a diabetic patient which caused massive haemoptysis and death.

Keywords: Haemoptysis, bronchoscopy, mucormycosis

INTRODUCTION

Pulmonary mucormycosis is a rare and life threatening invasive fungal infection. It predominantly affects immunocompromised patients, commonly in those with diabetes mellitus. Diagnosis is confirmed by bronchoscopic guided transbronchial biopsies or bronchoalveolar lavage showing fungal elements. Death in these patients commonly occurs due to progression of the disease and on rare occasions due to sudden massive hemoptysis. An aggressive management with amphotericin B and newer antifungals such as posaconazole remains the treatment of choice. Surgical debridement is required when feasible and indicated.

Non-specific in its presentation, the early detection of pulmonary mucormycosis remains a diagnostic challenge for physicians. The condition if not treated early is associated with a high morbidity and mortality (40- 70%).

CASE REPORT

A 65 year old diabetic gentleman presented to our casualty with complaints of hemoptysis since the last four days, approximately 25 - 50 ml during each episode. He gave no other significant history of fever, breathlessness or chest pain. Grocery shop owner by occupation, He was a nonsmoker/nonalcoholic. On physical examination he was afebrile with a pulse rate of 84 bpm, Respiratory rate of 16 per minute, BP of 136/84mm Hg , The rest of the general physical examination was otherwise unremarkable. Chest examination revealed a reduced vocal fremitus in right mammary area .he had normal vesicular breath sounds in all areas with coarse crepitations in right mammary area. He was admitted to the ICU in view of his significant history. His blood investigations revealed a Haemoglobin of 15mg%, total count of 16800 cells/mm3, platelet count of 2.85 lakh cells/mm3, Serum Urea of 53 mg/dl, serum creatinine of 2.27 mg/dl, random blood sugar of 157 mg/dl, glycosylated hemoglobin (HbA1C) of 8.4%, no ketone bodies with absence of acidosis on arterial blood gas analysis with normal bleeding parameters(INR, aPTT). A chest x-ray revealed an irregular thin walled cavity with air fluid level in the right mid and lower zone (fig 1 & 2). Sputum was negative for acid fast bacilli or fungus (KOH mount).

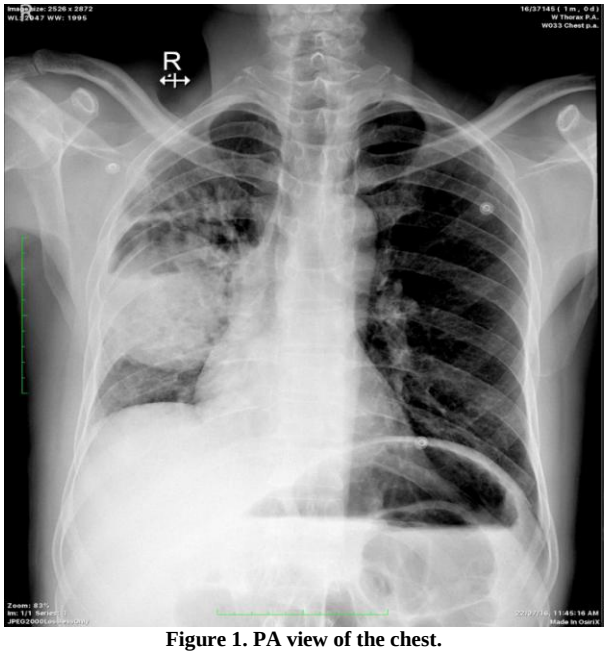

Figure 1. PA view of the chest.

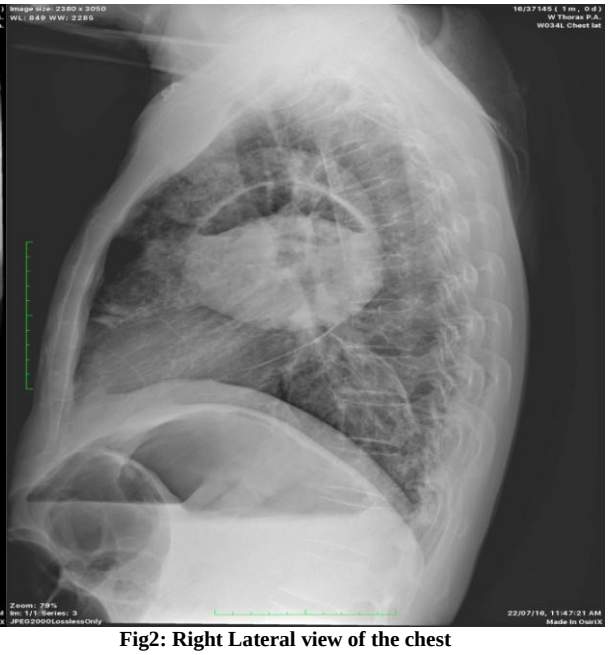

Fig2: Right Lateral view of the chest

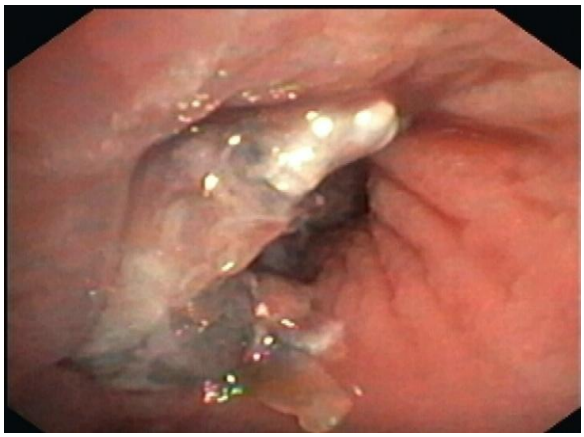

Fig 3: Bronchoscopic image

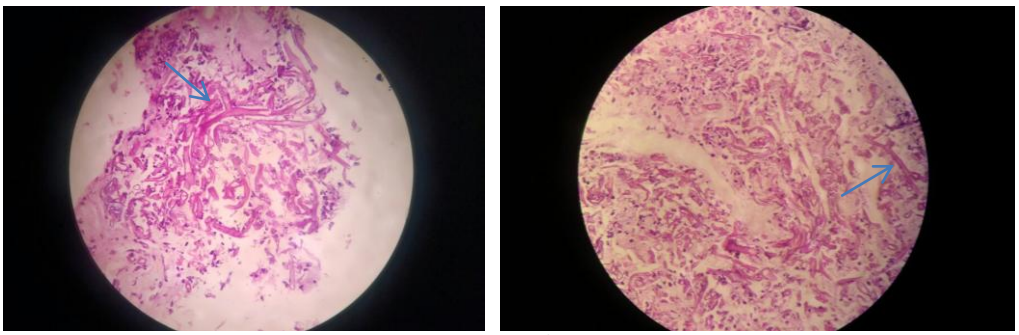

Fig 4 &5: Histological images of biopsy showing mucor

Empirical antibiotics were started and changed accordingly to a sputum report showing *Pseudomonas aeruginosa* and *Klebsiella Pneumoniae.*

As patient had no further episodes of hemoptysis, he was shifted to the ward and managed conservatively. However, as he didn't show a radiological improvement, a bronchoscopy was planned. It showed a irregular highly vascular lesion in the right upper lobe impinging on the right main bronchus with active bleeding from the anterior segment of right upper lobe (fig 3). A bronchoalveolar lavage and biopsy was obtained. In view of the same, a suspicion of bronchogenic carcinoma was raised. The

initial cytology report however showed no malignant cells.

On the next day, Patient developed massive hemoptysis (approximately 1500ml in 5 minutes) resulting in aspiration, hemodynamic instability and cardiopulmonary arrest. He could not be revived despite the best efforts. Posthumously the biopsy report showed fungal elements with large 90 degree branching non-parallel wall hyphae (Figure 4,5). The report read in favour of Mucormycosis.

DISCUSSION

Mucormycosis is caused by the saprophytic fungi of the class Zygomycetes. Rhizopus, Lichtheimia, and Mucor genera are the most common organisms groups causing mucormycosis. [1] The disease mostly affects immunocompromised patients. Ketoacidosis with uncontrolled diabetes mellitus, hematological malignancies, renal failure, solid tumors, acquired or congenital neutropenia and immunosuppressive therapy are common predisposing factors. The most common site of infection is a rhinocerebral mucormycosis. Involvement of the lungs usually occurs secondary to fungal spore inhalation. Its angio-invasive fungal elements cause infarction associated with its local spread. Necrosis ensues resulting in a mass lesion or in a disseminated fatal disease. [2]

As the patient's hosts response is impaired, the presentation can vary from non-specific symptoms like fever, cough, chest pain and hemoptysis. Massive hemoptysis is known to causing death when fungal elements invade large mediastinal vessels. Signs include fever, clubbing, decreased breath sounds, crackles and rarely features of superior vena cava syndrome. In the case of our patient he presented with the complaints of hemoptysis alone and no significant signs on physical examination except for localized coarse crepitations.

Diagnosis can be particularly challenging in part because it's relatively rare. Lee et al analysed data of 30 years present in Medline indexed journals over 30 years. [3] Radiographs from 87patients with pulmonary mucormycosis showed predominantly upper lobe involvement (45%) in the form of infiltrates, consolidation and cavities. Air cresent sign was an uncommon feature (8%). Pneumothorax and pleural effusions have also been seen (8% each). A single thin walled cavity with an air fluid level was noted in our patients radiograph.

Confirmation of the etiology using flexible fiberoptic bronchoscopy has lessened the burden of obtaining of a suitable histopathological sample in such cases. [4] The non-resolving pneumonia prompted us to obtain a suitable diagnostic sample using flexible bronchoscopy. Endobronchial visualization of a mass like lesion was the uncommon finding in our case. This led us to consider a neoplastic etiology vs. a large fungal ball as the likely etiology.

During hospital stay the patient was treated on a course of antibiotics according to a culture of the sputum obtained earlier. However he expired following massive hemoptysis. The histopathological report obtained later showed evidence of mucormycosis. Visualization of sparsely septate hyphae with branches often arising at right angles is usually suggestive of the Mucorales organism. The use of special stains like calcofluor, fungi-fluor and blancofluor aid in their identification.

Current treatment guidelines recommended medical line of therapy of with antifungals like Amphotericin B, caspofungin and posoconazole. Pneumonectomy/lobectomy can be considered in localized form of disease. [5] The outcomes appear poor overall either way.

CONCLUSION

Pulmonary mucormycosis can pose a diagnostic dilemma. Massive hemoptysis is life threatening complication and common cause of death in such patients.

Nonresolving pneumonias in appropriately treated immune-compromised patients should prompt a search for other non-bacterial causes for the same.

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