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Case Report
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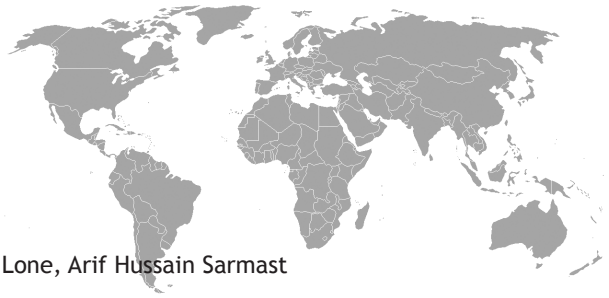
Pulmonary Mucormycosis



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ABSTRACT

Mucormycosis or zygomycosis is a relatively uncommon but an important oppportunistic infection that occurs almost exclusively in individuals with host defence deficiencies.We report a patient with pulmonary mucormycosis who presented with low grade fever and hyperglycemia.

Key words: *Mucor, fungus, diabetes mellitus*

Akciğer Mukormikozisi

ÖZET

Mukormikozis veya zigomikozis nispeten nadir fakat konak savunma eksikliği olan kişilerde önemli bir fırsatçı enfeksiyondur. Biz düşük dereceli ateş ve hiperglisemi ile başvuran akciğer mukormikozisli bir olguyu sunduk.

Anahtar kelimeler: *Mukor, mantar, diabetes mellitus*

INTRODUCTION

Mucormycosis or zygomycosis is a relatively uncommon but an important oppportunistic infection that occurs almost exclusively in individuals with host defence deficiencies. The major predisposing conditions are diabetes mellitus, especially when accompanied by ketoacidosis and haemotologic malignancies, primarily lymphomas and leukemias (1-3).

CASE

A 67-year old man, past smoker, known case of Hypertension and Diabetes Mellitus was admitted with a 6 week history of easy fatiguability, fever and hyperglycaemia. He had been well until 6 weeks before admission when malaise, anorexia and a productive congh developed. Three days before admission worsening polyurea and nocturia were noted. On admission examination revealed diaphoresis with a temperature of 37°C, pulse 80/min, Blood Pressure 130/80mmHg and a respiratory rate of 16/min. He had poor dentition but no other oropharyngeal abnormalities. Auscultation of chest revealed occasional Rhonchi. Abdominal palpation revealed enlarged liver 4cm below costal margin. The rest of examination was unremarkable. X-ray chest showed a parahilar lesion(5 cm in dimension) in right lung (Figure 1). A repeat X-ray study after 1 week showed fibrotic changes in lung fields. Contrast enhanced Computed Tomography chest showed a right upper lobe segmental intrabronchial mass with obstruction pneumonitis of apico- posterior segment with epsilateral hilar andaorto-pulmonary lymph node enlargement.(Figure 2) Bronchoscopy was performed which revealed a necrotic area in the apical segment branch of right upper lobe overlying a soft tissue lesion that was friable and bled on touch. Histology of the bronchial specimen non-septate hyphae with right angle branching consistant with mucor infection. (Figure 3) Laboratory data included a Hemoglobulin 11.9, Hematocrit of 44.3, white blood cell

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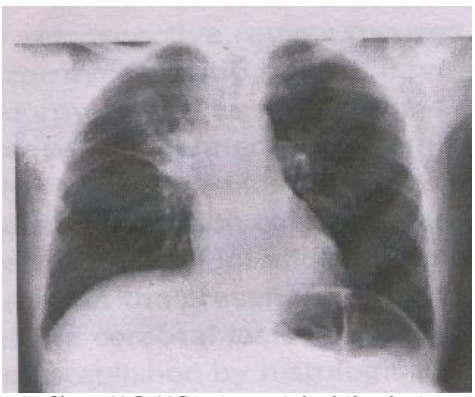

***Figure 1**. Chest X-RAY PA view: right hilar lesion*

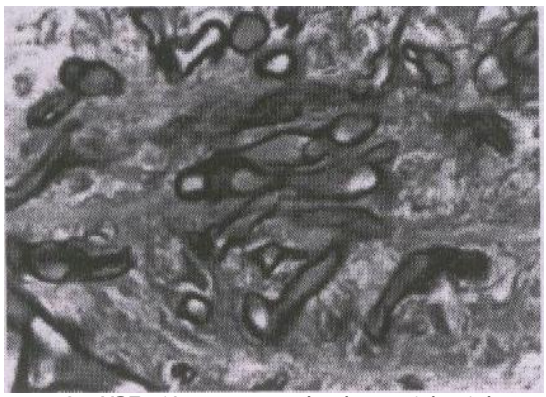

***Figure 3**. HPE: Non-septate hyphae with right angle branching consistent with mucor infection.*

count of 7200/mm3 , with 71% polymorphs, 26% lymphocytes. Platelet count was 130.000. The Serum Na^+ was 125 mEq/L, serum K^+ was 3.6 mEq/L, HCO_3^- 21mEq/L, serum creatinine 1.2 mg/dl, urea 22 mg/dl and plasma glucose 196mg%. Urinalysis revealed glycosuria and pus cells of 7-9/HPF with a 24 hour urinary protein of 1.8 grams . there were no ketones in urine or blood. The Liver functions, the lipoprotein-panel and the thyroid profile were normal, sonography-Abdomen. was suggestive of fatty-liver grade 1. The patient was initially treated with fluids, insulin, ceftriaxone. Blood and urine cultures were sterile. Patient persisted with cough and the antibiotic regimen was changed to piperacillin-tazobactam. Modest clinical improvement was noted .

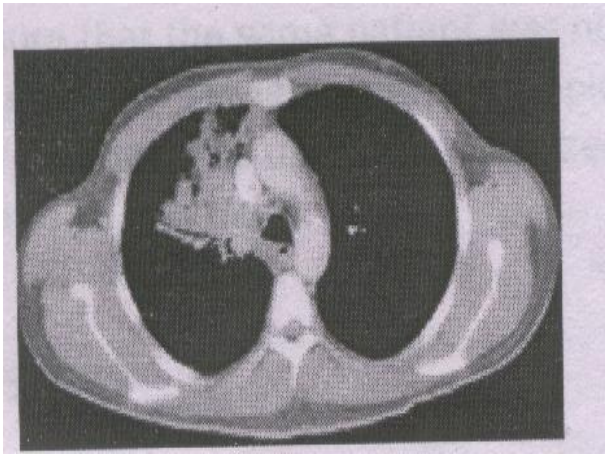

***Figure 2**. CECT CHEST: right upper lobe segmental intrabronchial mass with obstruction pneumonitis of apicoposterior segment*

After 10 days intravenous antibiotic therapy was discontinued and patient was discharged. He was treated as an outpatient once a week for 4 weeks with modest improvement in cough and mild resolution of x-ray changes. Patient is on follow up and is doing well.

DISCUSSION

Mucormycosis or zygomycosis is a relatively uncommon but an important oppportunistic infection that occurs almost exclusively in individuals with host defence deficiencies. The major predisposing conditions are diabetes mellitus, especially when accompanied by ketoacidosis and haemotologic malignancies, primarily lymphomas and leukemias(1-3). other risk factors include neutropenia, immunosuppressive chemotherapy, broad spectrum antibodies, chronic renal failure and extensive burns. Mucorycosis has very rarely been reported in patients with presumably normal immune function (4), suggesting that a heightened level of clinical suspicion may be warranted in immunocompetent patients as well. Patients infected with HIV are at risk for infections with Aspergillus spp. but it is unclear why more cases of mucormycosis have not been reported in HIV/AIDS.

The unique association between mucormycosis and diabetic ketoacidosis is not well understood. In diabetic ketoacidosis, hyperglycaemia and hyperosmolality result in increased capacity for fungal growth in vivo and defective polymorphonuclear leukocyte function. However the precipitating factor in the development of invasive mucormycosis is not hyperglycaemia but acidosis. Acidosis may promote fungal growth by altering

the binding of iron to serum proteins. In diabetic serum under acidic conditions there is substantially reduced binding of iron to transferrin. This results in increased concentrations of free serum iron which promotes the growth of mucorales. Although rhinocerebral and pulmonary disease are the most common clinical presentaions of mucormycosis, disseminated disease involving the GIT, kidneys, spleen, skin and endocardium has been reported . in general, pulmonary mucormycosis is more common in patients with lymphomas or leukemia \whereas rhinocerebral infection is more frequent in patients with diabetic ketoacidosis. The incidence of dissemination may be as high as 50% in patients with underlying haemotologic malignancies. The clinical presentation of pulmonary mucormycosis is not specific. The usual symptoms are fever, chills and cough. Pleuritic chest pain and a pleural friction rub may be present especially in patients with thrombotic infarction. Haemoptysis is a frequent and lethal complication of pulmonary mucormycosis due to the propensity of the organism to invade pulmonary venules. Similarly, none of the radiological findings are characteristic although a predilection for upper lobe involvement has been noted in most patients. The presence of air crescents sign is noteworthy and should prompt the workup because massive haemoptysis and death are more common in these patients. This sign appears to be a useful diagnostic clue for fungal infection, and aspergillosis and cryptococcosis need to be considered as well. CT scan appears to have some benefit in the diagnosis of angioinvasive fungal infectios. Jamadar et al. (6) revived the CT appearance of pulmonary mucormycosis and found a prediction for upper lobes and cited caritation, air crescent sign, halo sign and rim enhancement as radiological evidence of necrosis in these patients. Routine laboratory studies are not likely to provide the diagnosis. Sputum gram stains are rarely revealing sputum cultures, even when positive, are not reliable indicators of infection since some species of mucorales may occasionally be found in the sputum of individuals with out clinical diseases(5). Even cultures of surgical specimens may be false negative either due to sampling error when highly necrotic tissue is submitted for cultures and no viable fungus is present, or the microbiology lab usually processes specimens for fungal culture after initially homogenizing the specimen; the organism neing aseptate is killed by this Dicing process. This is an important concept and reinforces the high level of suspension that one must have to notify the laboratory when submitting a specimen for appropriate processing. Broncoscopy with transbrochial biopsy, percutaneous needle biopsy of lung or open lung biopsy must be employed in order to provide histopatholic evidence of invasive disease. The histologic features include a polymorphonuclear leukocyte infilitrate, necrosis, invasion of blood vessels with thrombosis . the diagnosis is most clearly established by identifying the organism is tissue sections. Charesteristic features of mucorales include non-septate hyphae and acute, or even right angle branching.

The optimal mode of treatment of treatment of patients with pulmonary mucormycosis is not resolved. early diagnosis, control of any underlying pathologic process , antifungal therapy and surgical debridement are all of paramount importance. Both Amphotericin-B and surgical resectionsof the involved tissue have been successfully employed. The most conservative approiach may abe to resect the involved tissue and employ amphotericin B therapy but this approach awaits further study(1). In most patients pulmonary mucormycosis is a very aggressive infection with a relentless downhill course and a rapid demise. Subacute disease is extremely rare. The potentially subacute nature of infection with mucorales is illustrated by the clinical course of our patient. The patient had been ill for 6 weeks before the diagnosis of mucormycosis was extablished . the patient did not have rapidly progressive illness, but failed to demonstrate complete clinical improvement with seemingly appropriate antibiotic therapy. This case serves to illustrate the subacute clinical sourse of pulmonary mucormycosis in patients with diabetes mellitus. Maintaining a high level of clinical suspicion is important in any patient in the right clinical setting with a pneumonic process or a pulmonary infilitrate that continues to progress with conventional therapy, and an aggressive approach must be used to establish the diagnosis.

The patient had diabetes mellitus, but did not have the topical fulminant illness associated with the infection. The subacute progressive illness seen in this patient is unusual and suggests the need for aggressive diagnostic and therapuatic measures in the patients who are at the risk for this infection. Keep this unusual infection always in mind when a patient of high risk presents with such a situation.

REFERENCES

1. *Lerther RI, Howard DH, Sypherd PS, et al. Mucormycosis. Ann Int Med 1980;93:93-108.*
2. *Meyer RD, Armstrong D. Mucormycosis- changing status. CRC Crit Rev Clin Lab Sci 1973;4:21-51.*
3. *Meyer RD, Rosen P, Armstrong D. Phycomycosis complicating Leukemia and Lymphoma. Ann Int Med 1972;77:871-9.*
4. *Record NBJr, Ginder DR. Pulmonary Mucormycosis without obvious predisposing factors; J Am Med Associat 1976;235:1256-57.*
5. *Edwards JEJr. Zygomycosis PS. Hoeprich (Ed.). Infectious diseases. P.1130. Harper and Row. Philadelphia.*
6. *Jamadar DA, Kazerooni EA, Daly BD, et al. Pulmonary zygomycosis; CT appearance. J Comput Assist Tomogr 1995; 19;733-38.*