A PATIENT WITH MUCORMYCOSIS AND ASPERGILLOSIS: CASE REPORT

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ABSTRACT

The objective of this case report was to highlight the significance of curable combined fungal infections which are seen in patients with certain risk factors. Fungal pathologies such as aspergillosis and mucormycosis are invasive infections which can affect pulmonary or extra-pulmonary regions of immunocompromised host. Early diagnosis with the help of imaging and histopathology and treatment with combined medical or surgical therapies can lead to complete recovery. If left untreated, they can be fatal. Here we discuss a case of a patient who was diagnosed with mucormycosis and aspergillosis on histopathology. Patient was treated with systemic antifungals and showed marked improvement after treatment.

Key Words: Mucormycosis, Aspergillosis, Amphotericin B

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INTRODUCTION

Mucormycosis and aspergillosis are complicated fungal infections which can be life threatening at many occasions. They are rare, but still found in clinical practice, mainly affects immunocompromised individuals like post-transplant patients on immunosuppressive treatment or patients with diabetes mellitus (DM). Mode of transmission of this serious infection can be hematogenous or inhalational[1]. Possible forms of presentations are rhino-orbito-cerebral, gastrointestinal, pulmonary, cutaneous or disseminated form. Histopathology confirms the diagnosis by demonstrating the organism in the sample. Treatment options include amphotericin B (a parenteral anti fungal) and combined with surgical debridement of the affected area. They can give rise to lethal complications as the disease may adopt aggressive course, hence timely diagnosis and initiation of treatment at earliest play a crucial role in outcome[2].

In this case report, we discuss a case of a 55-year-old female who had poor glycemic control and who was diagnosed to have both aspergillosis and mucormycosis at the same time. Patient was seen in Fatima Memorial Hospital Lahore, in the month of August, 2017.

CASE REPORT

A 55-year-old Asian female diagnosed case of diabetes mellitus (uncontrolled), hypertension, chronic kidney disease, multi-nodular goiter and history of fever for last 15 days for which she was taking antipyretics at home. She presented to us with loss of vision in left eye, drooping of left eye lid, swelling and sudden onset left sided retro-orbital pain radiating towards left temporal area for the last 8 days.

Examination revealed an ill looking obese, well oriented female with Glasgow coma scale (GCS) of 15/15. Her left eye showed dilated, not reactive pupil, proptosis, restricted extraocular movements, periorbital edema and there was no light perception. Fundoscopy revealed no papilledema (disc margins were clear). Extensive ulceration with areas of crust were seen on examination of the nasal cavity and findings were confirmed by ENT consultant. On the basis of history and physical examination, provisional diagnosis of orbital apex syndrome was made.

Investigations showed HbA1c: 8.1%, serum creatinine 2.1 mg/dl, blood sugar level (BSL) 150-200 mg/dl, random blood sugar 375 mg/dl, total leucocyte count (TLC) 19500/mm3, differential leucocytes count was 90% polymorphs 10%, lymphocytes, serum potassium 4.4 mmol/l, serum sodium 139 mmol/l and serum magnesium was 1.7 mg/dl. Urine examination showed 1-2 pus cells and glucose was ++. Chest x-ray was reported normal.

Nasal endoscopy done by department of ENT revealed necrosed anterior part of middle turbinate and middle meatus was blocked by blackish crust, sugges-

tive of probable invasive fungal sinusitis and debridement was advised. Imaging (CT scan) of para nasal sinuses (PNS) showed left maxillary, ethmoidal and frontal sinusitis (Figure 1). Thyroid scan showed multi-nodular goiter. Tissue culture and sensitivity showed Pseudomonas aeruginosa sensitive to Ceftazidime. ENT team was taken on board in taking care of this patient. Debridement was done and sample for biopsy was taken. First histopathology report revealed 'left middle turbinate, nasal septum and anterior ethmoidal bone have fungal infection' while another histopathology reported "fungal organisms with branching septate and non-septate hyphae consistent with concomitant Mucor and Aspergillus (Figure 2).

The patient was diagnosed as having invasive aspergillosis along with mucormycosis with secondary bacterial infection by (Pseudomonas aeruginosa). Patient was started on liposomal amphotericin B therapy. Her dose of amphotericin B was adjusted as per glomerular filtration rate (GFR) of 48 ml/min at 0.5-0.7/mg/kg/day IV. Serum creatinine, magnesium, potassium, BSL were monitored during the course of treatment. Surgical debridement of necrotic tissues of nasal wall and palate was performed successfully. Optimal BSL was achieved with insulin regular (R) and insulin neutral protamine hagedorn (NPH). Antibiotics were started for combating the bacterial infection as well. Ceftazidime in renal adjusted dose was given for 10 days.

After starting the antifungal medication and controlling blood sugar levels, patient made a steady progress, her wound was much better with healthy granulation tissue. It was concluded that with early diagnosis and aggressive approach (combined medical and surgical modalities of treatment), she responded very well. No evidence of recurrence was found at 03 months follow-up and the patient was currently asymptomatic.

DISCUSSION

Mucormycosis is a fungal infection. It is a rapidly progressive fatal condition and rarely seen in immune-competent individuals. Aspergillus species are spore-forming fungi found in moist environments. Isolated orbital fungal infections (aspergillosis and mucormycosis) are extremely rare entity. Generally, it arises as a contagious invasion from oropharynx or para-nasal infection[3].

Pulmonary and extra-pulmonary infections can be seen secondary to these fungi, in immunocompromised as well as immune-competent individuals. The morbidity and mortality of these infections is very high even in good set ups. Major risk factors include uncontrolled diabetes, extremes of ages, steroid use, human immunodeficiency virus (HIV)/ acquired immune deficiency syndrome (AIDS), patients on immune-suppresants and recipients of organ transplants. In our case the aspergillus infection was of invasive type. There was no necrosis or blood vessel invasion but evidence of contiguous tissue destruction was found.

Concomitant infections by aspergillosis and mucormycosis confined to a single area although rare but have been reported by some authors. Similar cases have been reported by Vidya et al[4]; Alfano et al[5] and Maiorano et al[6]. Goswami et al[7] reported a case of lethal, combined (mucor and aspergillosis) rhino-cerebral fungal infection in a patient who had renal transplant, where a prompt diagnosis was established and the patient was

Figure 1: CT scan of para nasal sinuses showing involvement of frontal, maxillary and ethmoidal sinuses

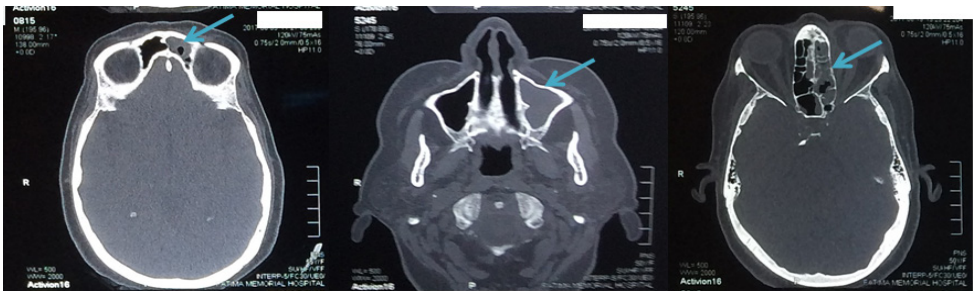
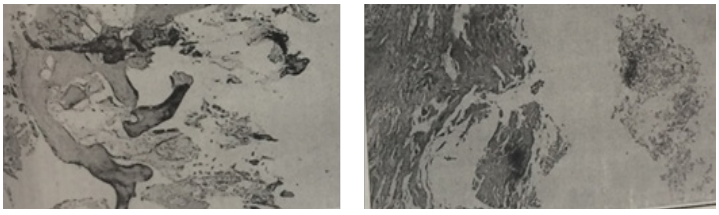


Figure 2: Histopathology slides showing septate and branching fungal hyphae



managed with both medical and surgical therapy as in our case but unfortunately patient developed septic shock and could not be revived. In this particular case culture initially turned out to be positive for Mucor only. Mucor is known to have a comparatively rapid growth which explains why initial sample were positive for mucor only. However, sample taken later showed both Mucor and Aspergillus infection.

A patient who presents with common symptoms of headache accompanied with visual disturbances and who is known to be immunocompromised needs attention. Prompt workup should be done for early diagnosis of underlying disease. Rhino- orbito-cerebral fungal disease can present with these symptoms and adopts a very rapidly progressive course. If left unattended, it has high mortality rate. A combination of antifungal medications along with surgical intervention is the mainstay of treatment for rhino-orbito-cerebral fungal infections. Combined therapy of liposomal amphotericin with novel antifungal like posaconazole has an advantage over monotherapy with amphotericin[8].

CONCLUSION

Early detection of mucormycosis is crucial since it may rapidly exacerbate as in our patient. Screening of this infection in high risk individuals along with early diagnosis and treatment can lead to better morbidity and mortality outcomes. Antifungals should be considered early if there is high index of suspicion of mucormycosis.

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