

Mixed Invasive Fungal Infection of Lung in a Case of Traumatic Chest Wall Injury

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Abstract:- Over the past few years, invasive fungal infections have increased in immunocompromised patients, although rarely seen in immunocompetent patients. We report an autopsy case of mixed fungal infection (Aspergillus, Mucor, and Candida) in lung in a male patient, with a severe chest wall injury in a road side accident. The patient was bed ridden for many years due to multiple injuries and fractures all over the body. Early detection, surgical intervention, and appropriate antifungal therapy are essential in the treatment of multiple fungal infections.

Keywords:- *Mucor, Aspergillus, Candida, Lung.*

I. INTRODUCTION

The opportunistic fungi cause serious infections, most common being *Aspergillus* and *Mucor*. These fungal infections, most often, occur in immunocompromised patients and patients with uncontrolled diabetes, and on immunosuppressive therapy. Only few cases of these fungal infections in an immunocompetent patients have been reported so far. Spores, being the most common source of infection, present in the environment which may enter into the body through the lungs, gastrointestinal system, or the skin.[1] Combined invasive mucormycosis and aspergillosis has been described rarely. Coexistent mucormycosis and aspergillosis has probably been underestimated. Predisposing factors and clinical features in these fungal infections are almost the same.[2]

II. CASE REPORT

Viscera of 41 years old male who died due to complications of severe injuries due to road side accident was received in the department which included specimen of brain, heart, both lungs, pieces of liver, kidney and spleen. He had road side accident 10 years ago. He had amputation of right leg and multiple episodes of chest infection leading to repeated hospitalisation since then. He died due to respiratory failure and cardiac arrest. Grossly, all the specimens were unremarkable except both pieces of lungs which showed a cavitary lesion with grey tan & necrotic areas. Sections were taken from representative areas from all the specimens (Figure 1A). On microscopic examination, microsections from brain, spleen and kidney

were unremarkable and features of steatohepatitis and early cirrhosis were seen in liver. The pieces of lung showed features of fungal pneumonia, foci of necrosis and multiple fungal organisms (spores and hyphae of *Candida albicans*, broad hyphae of mucormycosis and sporangia of *aspergillus*). Fungi showed positivity with PAS staining/Gomori methanamine staining.(Figure B,C,D)

III. DISCUSSION

Invasive candidiasis causes almost 70% of all invasive fungal infections around the world, followed by cryptococcosis (20%), and aspergillosis (10%). Other molds such as *Zygomycetes*, *Fusarium* and *Scedosporium* species are emerging in the last few years and represent a cause of concern. The mortality attributed to invasive candidiasis varies from 30-50%, and it can reach almost 100% in some molds. Invasive mycoses have long been recognized as significant pathogens, particularly in immunocompromised patients.[3] Fungal infections in immunocompromised patients is due to deficient phagocytosis. In a previously healthy individuals, the co-existence of acidosis due to tissue damage along with loss of vitality and local immunosuppression could be the cause of post traumatic fungal infections (filamentous fungal infection).[1] Risk factors associated with fungal infections include existence of immune deficiency, uncontrolled diabetes mellitus, myeloproliferative diseases, long term use of corticosteroids, transplant patients, AIDS, intravenous drug users, and patients undergoing chemotherapy.[1] The diagnosis of two or more invasive filamentous fungal infections occurring concurrently or subsequently in immunocompromised patients is quite challenging. The occurrence of combined invasive mucormycosis and aspergillosis has been underestimated and rarely described.[4] Most of these fungal infections have been described in traffic and agricultural accidents and in natural disasters from the spores present in the soil. Fungal infections develop on the site of open wound in the skin through which the spores are inoculated into the tissue. Symptoms are usually manifested within 10 days after the injury in open skin injuries. Diagnosis is based on the histopathological examination of tissue biopsy and the culture of wound swabs.[1] An early diagnosis, prompt institution of antifungal therapy (amphotericin) with timely surgical debridement might have decreased morbidity in

this patient. Correction of underlying disorder is of utmost importance.[4]

To conclude, the possibility of fungal infections should always be kept in mind, particularly in cases where the infection occurs a week or more after the injury, in patients with risk factors and severe road side injuries.

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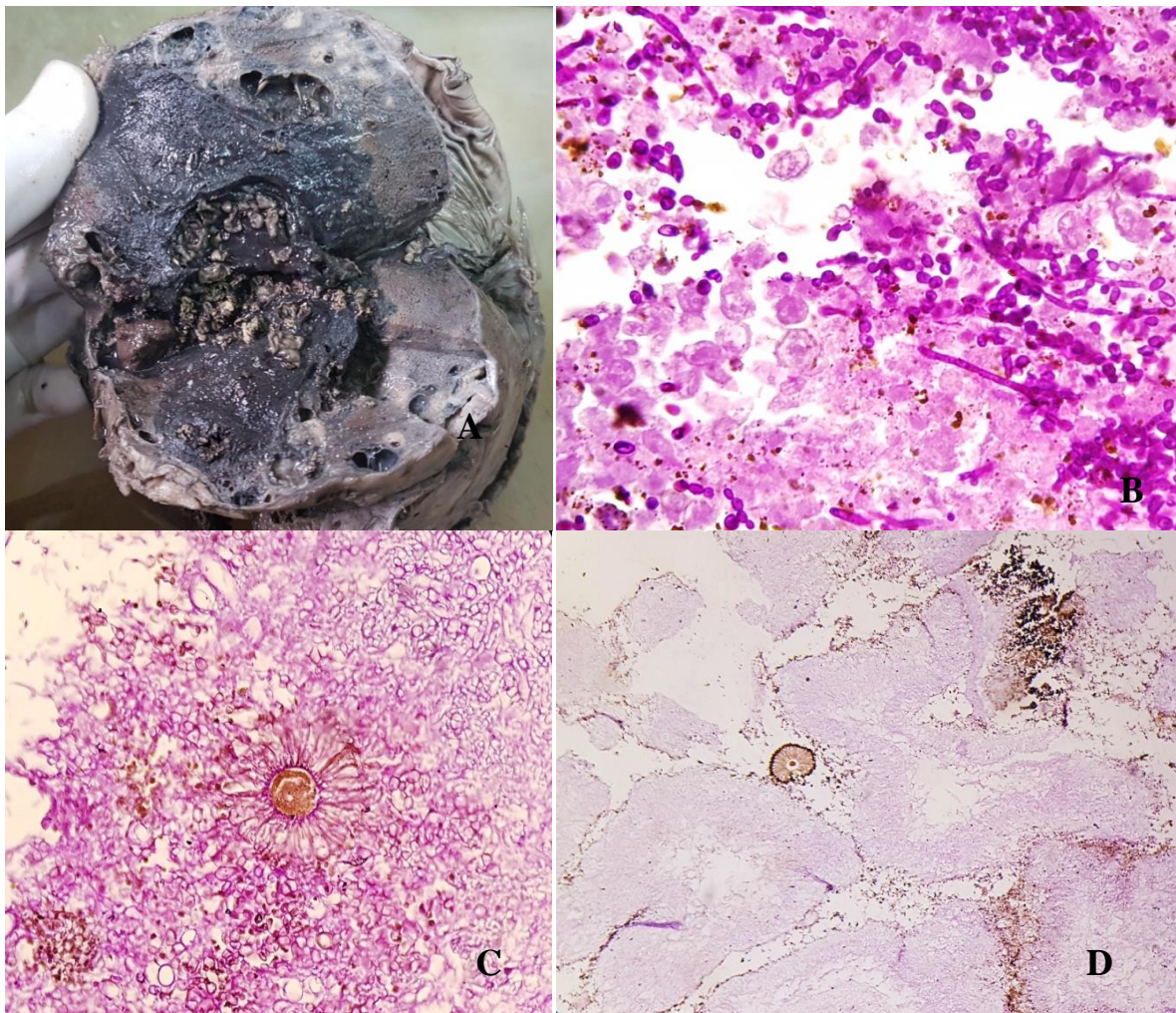


Fig 1:- A: Gross appearance of cavitory lesion in lung with necrotic material; B: Candidial hyphae & spores in necrotic background (PAS, 400X); C: Sporangia of Apeergillus & broad hyphae of mucormycosis (PAS, 400X); D: Fungus in a necrotic background (H & E, 100X)