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DISSEMINATED ASPERGILLOSIS -A CASE REPORT

Respiratory Medicine

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ABSTRACT

Aspergillosis is a fungal infection of the lungs, caused by the genus Aspergillus. Aspergillomas form in cavities found within the lungs formed from previous lung disease and can infect other tissues such as skin, sinuses or become disseminated throughout the body. Disseminated aspergillosis develops in severely immunocompromised patients, the critically ill patients and patients on steroids. The present case highlights the importance of early detection and prompt treatment of disseminated aspergillosis with antifungal therapy which if not treated promptly could prove fatal to the patient. The patient responded very well to the treatment and showed clinical, radiological improvement and microbiological clearance.

KEYWORDS

Aspergillosis, Disseminated aspergillosis, Aspergilloma

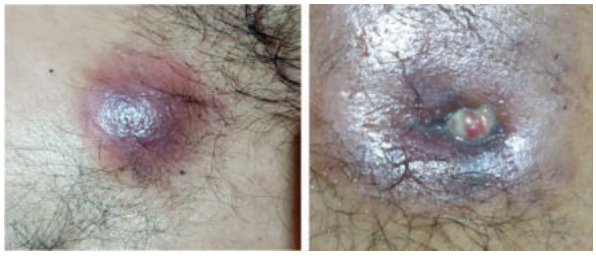
INTRODUCTION

Aspergillosis is a fungal infection of the lungs, caused by the genus *Aspergillus*, which is widely present in the environment, both indoors and outdoors. Pulmonary aspergillosis is mainly caused by the species Aspergillus *fumigatus* and can present in the form of aspergilloma, allergic bronchopulmonary aspergillosis, extrinsic allergic alveolitis, invasive bronchopulmonary aspergillosis and chronic pulmonary aspergillosis[1] . Aspergillomas (also referred to as mycetoma or fungal ball) form in cavities found within the lungs formed from previous lung disease and can infect other tissues such as skin, sinuses or become disseminated throughout the body. Disseminated aspergillosis develops in severely immunocompromised patients, the critically ill patients and patients on long-term or high dose steroids whereas they are effectively eliminated in imunocompetent hosts[2]. The overall number of cases of disseminated aspergilosis are increasing worldwide even though the number of deaths due to the case have reduced significantly over the years due to prompt diagnosis and antifungal therapy administration.

Case Report

A 43 year old male, working as a sweeper in the municipality presented with history of coughing out blood tinged sputum and a swelling on the anterior chest wall in the midline. Patient was also a type 2 diabetic (uncontrolled) on oral hypoglycaemic agents and a known case of post covid lung fibrosis who had received injectable steroids for 21 days followed by oral steroids for 1 month post discharge from hospital 6 months back. Patient did not have any previous history of taking anti-tuberculosis treatment. On clinical examination patient's vitals were stable. On examination of the chest, it showed a round erythematous swelling in the midline adjacent to right 6th and 7th ribs overlying the xiphisternum measuring approximately 3 cm x 2 cm, fluctuant, with mild tenderness on palpation and without any local rise of temperature. Rest of the respiratory system examination did not reveal any abnormality. The examination of abdomen, cardiovascular and central nervous systems were normal. A chest x-ray PA view done showed a small cavity in the right upper lobe with evidence of some density within.

Patient was then referred to Department of Surgery for evaluation of the abscess where he underwent surgical drainage of the abscess and the pus was then sent for CBNAAT and cytopathology. Pus CNBAAT was negative for Mycobacterium tuberculosis but cytopathology showed granulation tissue with presence of growth of Aspergillus fumigatus. A CECT Thorax which was done at the same time showed right upper lobe aspergilloma and a peripherally enhancing collection causing osteomyelitis of the xiphisternum as well as adjacent 6th, 7th and 8th rib on right side. Hence patient was diagnosed as a case of disseminated aspergillosis involving the lung parenchyma, ribs and the chest wall (abscess) on the basis of clinical history, microbiological results and radiological findings.



BEFORE AFTER

Figure 1: Showing the chest wall abscess at first presentation and post surgical drainage of abscess

Figure 2:Showing healed abscess post 1 year of Itraconazole therapy

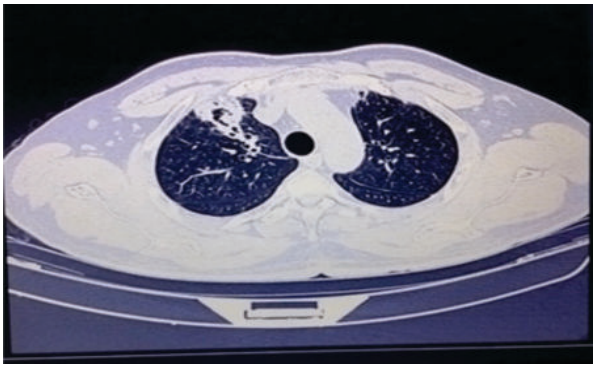
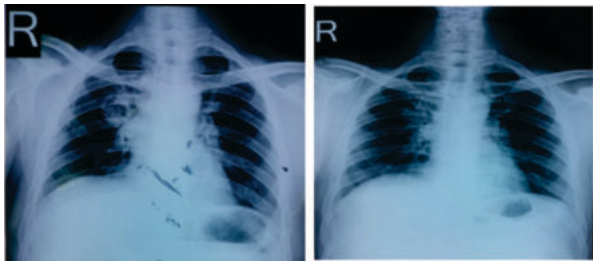


Figure 3: CECT Thorax showing right upper lobe aspergilloma with invasion into overlying rib.



BEFORE **AFTER**

Figure 4: Showing Chest X-ray prior to initiation and after completion of antifungal treatment

Patient was started on antifungal therapy with Itraconazole for a period of 1 year according to IDSA 2016 practice guidelines along with conservative management of the haemoptysis and strict control of blood sugars with insulin. Daily dressing of the chest wall swelling was also done and blood parameters were monitored at regular intervals. Subsequently patient symptoms subsided and the chest wall swelling gradually decreased in size. Patient general condition also improved. A CT scan of the thorax done at the end of treatment showed reduction in size of the cavity as well as decrease in size of the density within.

DISCUSSION:

Aspergillosis refers to a group of diseases caused by the genus Aspergillus, a group of fungal species that are commonly seen growing on many plants and trees as well as a common contaminant in starchy foods, nuts etc[3]. . These fungi possess the ability to grow where a high osmotic pressure exists (high concentration of sugar, salt, etc.).

Disseminated aspergillosis develops in severely immuno compromised patients patients with severe neutropenia, patients on steroids, transplant patients and critically ill patients with Aspergillus fumigatus being the most common species causing pulmonary disease. Aspergillus produces asexual spores that are then dispersed into the air. These spores enter the body through inhalation resulting in their deposition in the bronchioles or alveoli. Human infection occurs via the inhalation of these airborne conidia, followed by conidial deposition in the bronchioles or alveolar spaces. In healthy individuals, the mucociliary clearance mechanisms in the respiratory tract results in elimination of majority of these spores. The remaining spores are engulfed by the alveolar macrophages resulting in phagocytosis as well as the initiation of an inflammatory response that recruits neutrophils which destroy these spores[4,5]. Any alterations in the host immune response due to the above mentioned risk factors leads to invasion of the pulmonary parenchyma by the fungi resulting in the vivid manifestations of aspergillosis[6]. Treatment of disseminated aspergillosis includes antifungal therapy with agents like amphotericin, itaconazole, voriconazole alone or combined with surgical excision of sequestered necrotic lesions and use of immunomodulating agents (adjunctive cytokine therapy)[7].Our patient showed significant clinical and radiological improvement after administration of initial injectable followed by oral Itraconazole therapy for a period of 1 year. This case hence shows that a high index of clinical suspicion for disseminated aspergillosis is required in the critically ill and severely immunocompromised for prompt diagnosis and timely treatment initiation.

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