UNCOMMON PRESENTATION OF PULMONARY ASPERGILLOMA

Cases of pulmonary aspergilloma without any predisposing factors are rarely reported. Clinical presentation varies from case to case. Here, we report a case of pulmonary aspergilloma in a 60-year-old male patient who was admitted to the Intensive Respiratory Care Unit with spontaneous pneumothorax. The patient had a history of dyspnea on exertion since 9 months and mild haemoptysis since the last 6 months. A computerised tomographic scan of the lungs showed a lesion in the left main bronchus along with obstructive emphysema of the right lung, moderate pneumothorax and mediastinal emphysema. Bronchoscopy was performed and the biopsy samples were processed for histopathological examination and culture on Sabouraud’s dextrose agar, which yielded growth of Aspergillus flavus. Repeat sputum samples also yielded the growth of A. flavus. The patient responded to intravenous liposomaamphotericin B and intercostal drainage.

Key words: Aspergillus flavus, clinical features, pulmonary aspergilloma

Pulmonary aspergilloma has been classified into four types. They include invasive pulmonary aspergilloma, seminvasive aspergilloma, pulmonary aspergilloma and allergic bronchopulmonary aspergillosis. The individual type is not species dependent but depends on the immunologic conditions of the host.[1]

Pulmonary aspergilloma (intra-cavitatory mycetoma or fungal ball) is an aspergillus infection in patients with pre-existing cystic or cavitative lung disease. The fungus grows non-invasively as a saprobe within a pre-existing cavity. Fungal hyphae grow on the cavity wall, peel off and together with blood products and cellular debris form a mass, i.e. fungus ball. Virtually any pulmonary disease that results in a residual pulmonary cavity or cystic space can harbour an aspergilloma.[2] Residual tuberculosis cavities are probably the most commonly involved.[3] Other conditions predisposing to aspergilloma are sarcoidosis, bullae or lung cysts, cavitated bronchogenic carcinoma, pulmonary infarction and apical fibrosis of ankylosing spondylitis.[2] Aspergilloma in a patient with no previous history of chronic lung disease has also been reported. Although Aspergillus species are the most commonly known to cause the disease, other fungi such as Allescheria boydii, Fusarium species and Zygomycetes are also reported to cause the disease. Identification of the aetiologic agent is important for the treatment point of view as Allescheria boydii does not respond to amphotericin B.[4,6]

Chest radiograph in aspergilloma usually shows a cavitatory lesion.[1-6] The most common clinical presentation in aspergilloma is haemoptysis, dyspnea, with or without fever, chest pain and weight loss.[1-7]

Here, we report a case of aspergilloma of the lung, where the patient showed a rare acute presentation of spontaneous pneumothorax and emphysema along with history of dyspnea and haemoptysis.

Case Report

A 60-year-old male patient was admitted in the intensive
respiratory care unit on 6 January 2007 with spontaneous pneumothorax. The patient had a history of dyspnea on exertion since the last 9 months and mild haemoptysis since the last 6 months. There was no past history of tuberculosis or any other lung disease, diabetes, hypertension or autoimmune disorders.

On examination, the patient was afebrile, with no icterus, cyanosis, pallor or any lymphadenopathy. His pulse rate was 110/min, BP was 110/80 and respiratory rate was 24/min. His investigations showed a serum glucose of 106 mg/dl, urea of 42 mg%, uric acid of 7.2 g/dl (3.8–7.2 g/dl), Na⁺ of 142 mmol/l (136–141 mmol/l), K⁺ of 3.8 mmol/l (3.8–4.1 mmol/l) and chloride of 104 mmol/l (98–107 mmol/l). His total leukocyte count was 20,000/mm³, with 80% polymorphs and 20% lymphocytes, Hb 12 g/dl and ESR 12/h. X-ray of the chest ostero-Anterior view showed left-sided hyperinflated shadow.

High-resolution computerised tomography (CT) scan showed [Figure 1] enhancing soft tissue polypoidal lesion in the left main bronchus, 2 cm from the carina, which measured approximately 2.5 cm x 1.2 cm x 1.8 cm in dimension, which completely obstructed the lumen of the left main bronchus. There was obstructive emphysema of the right lung, moderate right-sided pneumothorax and extensive mediastinal emphysema and surgical emphysema, as described above. The described lesion was suggestive of neoplasm to rule out which bronchoscopy and biopsy of the lesion was performed.

Bronchoscopy showed a polypoidal lesion, the biopsy of which showed a tangled mass of septate hyphae and the conidiophores covering the entire vesicle had uniseriate phialides pointing in all directions in haematoxylin and eosin staining [Figure 2]. The biopsy sample was also cultured on Sabouraud’s dextrose agar, which, after 72 h of incubation, showed the growth of A. flavus colonies, which was confirmed by performing alactophenol cotton blue mount from the culture and confirming the isolate by performing a slide culture. The patient’s sputum sample was also collected, which showed septate hyphae and, on culture, grew A. flavus. Intercostal drain (ICD) was inserted in the 5th intercostal space. The serum galactomannan test was also positive for the patient. Repeat biopsy and sputum samples collected on different occasions showed the growth of A. flavus.

The patient was started on intravenous liposomal amphotericin B. Follow-up X-ray of the lung showed lung expansion. The patient gradually recovered on the above therapy, with the subsequent CT scan showing reduction of the mass and inflammation in the bronchus. The patient’s symptoms meanwhile subsided with the insertion of the ICD and the medical treatment, with marked reduction in dyspnea and other complaints.

Discussion

The original pathologic description of human aspergillosis by Virchow in 1856 is, “the most unusual form of aspergillus infection recognized is aspergilloma”. Other fungi that may produce this disease are Zygomycetes, Fusarium and Allescheria boydii. Identification and isolation of the agent is important from the treatment point of view as some fungi such as Allescheria boydii do not respond to amphotericin B.15,6 Most important predisposing factor for aspergilloma is residual tuberculous cavity. Other conditions predisposing to aspergilloma are sarcoidosis, bullae or lung cyst, bronchogenic carcinoma, bronchiectasis, pulmonary infarction, apical fibrosis of ankylosing spondylitis or other
fungal infections.\cite{1-7} The unique findings in the present case was that no such predisposing factor was observed. The complications, i.e. obstructive emphysema of right lung, pneumothorax and surgical empyema, are also rare presentations in the present case. Also, the fungus ball obstructing the major bronchus is a rare presentation observed in this case. Pulmonary aspergilloma without any predisposing factors have already been reported.\cite{4,7}

Clinical presentation of pulmonary aspergilloma varies from asymptomatic infection to severe respiratory insufficiency.\cite{6,7} The most common symptoms are haemoptysis, mild blood-tinged sputum to severe haemoptysis and dyspnea. Other manifestations reported are fever and chest pain. Most patients will experience mild haemoptysis, but severe haemoptysis has been reported in cases having tuberculosis as the underlying disease.\cite{6,7} Bleeding usually occurs from the bronchial blood vessels lining the cavity due to the exotoxins released by the fungus with haemolytic properties and mechanical friction of the aspergilloma with the cavity wall blood vessels.\cite{8} Fever is rare unless there is secondary bacterial infection.\cite{4}

Most cases of aspergilloma reported show occurrence in the upper lobes, probably reflecting the upper lobe predilection for the tuberculous cavities. The middle and lower lobes of the lungs are occasionally involved. Aspergillomas can be multiple and bilateral, with one cavity containing several fungus balls. The presence of fungus ball obstructing the main bronchus is a rare presentation, as observed in the present case. The fungus may spread from the original site, involving both the lungs, may form cavities, areas of consolidation, empyema or with emphysema, as observed in the present case also being reported.\cite{6} In the present case, the presentation was atypical, i.e. it was acute with hydropneumothorax, which has not been reported earlier.

Clinical radiographic appearance of the aspergilloma is that of a discrete round or oval density occupying a large or small part of the upper lobe pulmonary cavity. A variety of other appearances described earlier are poorly defined intra-cavitatory densities, intra-cavity air–fluid levels and empty cavities along with other findings such as pleural thickening, consolidation, empyema or, rarely, emphysema. In the present case, hydropneumothorax was also noted.

In conclusion, the diagnosis of aspergilloma in immunocompetent hosts, without any pre-existing underlying cavity, is difficult and is based on the combination of radiological findings, findings of bronchoscopic examination, sputum examination and culture of sputum and samples obtained by bronchoscopy or percutaneous aspirations. Repeated isolation is important, as performed in the case, as \textit{A. flavus} is a saprophyte.

References


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