

Pulmonary Aspergilloma-A Case Report



Medical Science

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ABSTRACT

Introduction: To report a case of pulmonary aspergilloma in an individual presented with healed fibrocavitary lesion of lung.

Method: A case of 26 years old male, non smoker presented with complaints of hemoptysis , fever , weight loss and allergy to dust since 8 months . Patient was a case of pulmonary tuberculosis and had taken treatment for 1 year . Chest X ray showed shadow in right upper lobe . The shadow showed crescent sign . CT scan showed fibrocavitary Koch's lesion in apicoposterior segment of right upper lobe. Bronchiectatic smaller cavities in adjacent lung parenchyma and aspergilloma in one large cavity . We received the gross specimen of right upper lobe lung measuring 8x7x5cms. Cut section showed a cavity bearing necrotic, friable grayish brown mass measuring 4x3x2.5cms. The cavity showed communication with bronchus. Microscopic sections from necrotic mass revealed fungal hyphae uniform , narrow, tubular & regularly septate. Branching was regular, progressive & dichotomous. Cavitary wall was lined by granulation and fibrocollagenous tissue. Lung parenchyma showed alveoli with extensive hemorrhage. Few bronchioles showed dilatation and degenerative changes .

Conclusion : Healed fibro cavitary lesion of lung can present with Aspergilloma.

INTRODUCTION

Pulmonary Aspergilloma caused by *A.fumigatus*, also known as *Aspergillus* fungus ball grows in pre-existing pulmonary cavity which may formed due to previous tuberculosis condition, carcinoma, emphysematous bulla or sarcoidosis[1-2]. The patients ranged in age from 40 to 81 years ,with a mean of 59 years. They are usually present in upper lobe of lung. Other sites of involvement are the brain and the kidneys. Patients may remain asymptomatic or may present with episodes of haemoptysis which may be massive and life-threatening. Cough with fever ,dyspnoea and weight loss are other clinical manifestations.The diagnosis is usually made clinically and radiographically without lung biopsy.Bleeding is usually caused by local invasion and endotoxic or mechanical irritation of exposed bronchial blood vessels. Radiologically it presents as a single or multiple ball like lesions inside a cavity/cavities, partially surrounded by a radiolucent crescent (Monod's sign)[3]. A recent thickening of the wall of a pre-existing cavity and/or pleural thickening may indicate early disease. Many of these patients either do not expectorate or their sputa are negative for mycelia[4,5] .

CASE PRESENTATION

A case of 26 years old male, non smoker presented with complaints of hemoptysis , fever , weight loss and allergy to dust since 8 months . Patient was a case of pulmonary tuberculosis and had taken treatment for 1 year . On examination, respiratory system- Vocal Fermitus – increased in right supramammary and right interscapular region.Dull note heard over above mentioned areas.Vocal Resonance- increased in above mentioned areas. Presence of inspiratory crackles. On investigations,hemoglobin was 13.6 gm/dl,total leucocyte count of 6510cells/mm³, differential leucocyte count was P 52% , L 40% , E 8%,erythrocyte sedimentation rate was 21 mm in the first hour. Sputum examination for acid-fast bacilli(2 samples) were negative. After induction sputum for acid-fast bacilli(2 samples) were negative. Chest X ray [fig.1]showed shadow in right upper lobe . The shadow showed crescent sign . CT scan [fig.2]showed fibrocavitary Koch's lesion in apicoposterior segment of right upper lobe. Bronchiectatic smaller cavities in adjacent lung parenchyma and aspergilloma in one large cavity . Surgical resection of right upper lobe was done and tissue was submitted for histopathological examination. We received the gross specimen[fig.3&4] of right upper lobe lung measuring 8x7x5cms. Cut section showed a cavity bearing necrotic, friable grayish brown pultaceous mass measuring 4x3x2.5cms.

The cavity showed communication with bronchus. Microscopic sections[fig.5,6,7&8] from necrotic mass revealed fungal hyphae uniform , narrow, tubular & regularly septate also on (GMS) stain on necrotic material showed fungal hyphae and globose. Branching was regular, progressive & dichotomous. Cavitary wall was lined by granulation and fibrocollagenous tissue. Lung parenchyma showed alveoli with extensive hemorrhage. Few bronchioles showed dilatation and degenerative changes . However no invasion into surrounding lung parenchyma was seen.

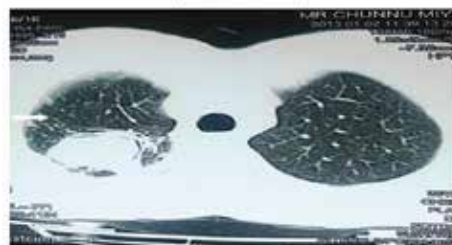
X-RAY CHEST



P/A View - shadow in right upper lobe, Crescent sign.

Fig.1

CT-CHEST



CT - Rounded mass surrounded by crescent sign.

**Fig.2
GROSS**



Brownish thick necrotic material oozing out from lung

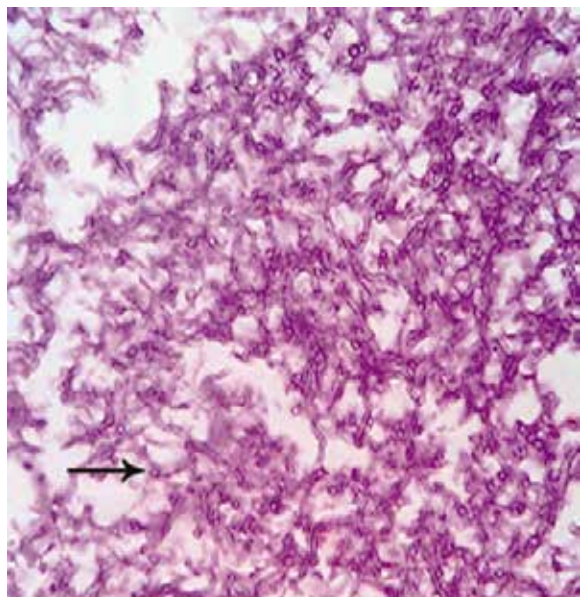
Fig.3



Lung showing cavitary lesion

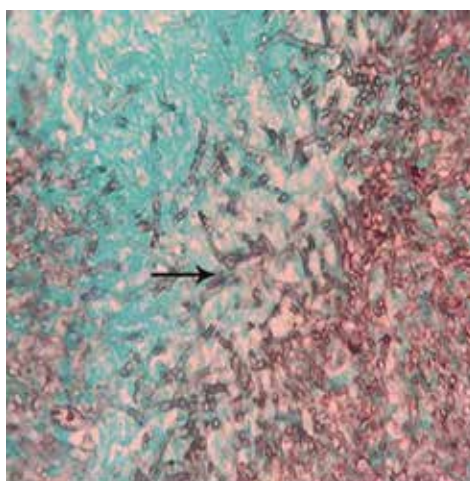
Fig.4

MICROSCOPY



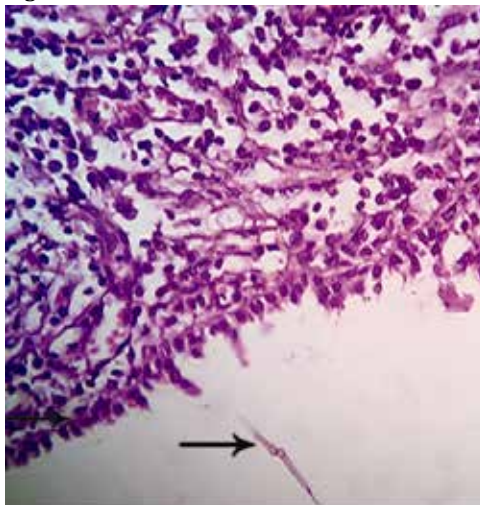
Aspergillus Fungus on (H&E 40X) stain
Septate, regular, progressive & dichotomous acute angled branching few showing bulbous tips. Bizarre forms of fungi.

Fig.5



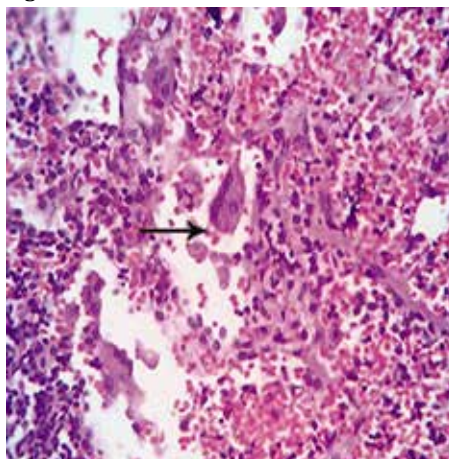
Gomori's Methanamine Silver (GMS 40X) stain
on necrotic material fungal hyphae & globose on imprint smears

Fig.6



Adjacent lung parenchyma (H&E 40X)
fungal hyphae, Ciliated pseudostratified columnar epithelium

Fig.7



Shows alveoli with extensive hemorrhage,
and giant cell reaction.

Fig.8

DISCUSSION

Aspergillus fumigatus is the most common causative agent. It can be found in air, soil, water, food and decomposing vegetations. Route of transmission is through inhalation of conidia, however, infections can be transmitted through water aerosol. After inhalation, the conidia rests in the lung alveoli, where they may germinate especially when associated with immunosuppressed status, and converts into hyphae. The incidence is rising because of increasing number of immunosuppressed patients.

Aspergillus produces small spores, which when inhaled, may result in saprophytic colonization. Aspergilloma (mycetoma) is a mass of fungal mycelia, tissue debris and inflammatory cells. It occurs in pre-existing cavities resulting from tuberculosis, bronchiectasis or sarcoidosis. Aspergilloma is generally detected on routine chest imaging. Typical imaging shows an upper lobe cavity containing irregular outlined mass opacity[6].

The diagnosis of aspergilloma is usually made on the basis of clinical and chest radiographic features coupled with serologic evidence to *Aspergillus* spp[7].

Aspergilloma is also known to cause massive hemoptysis by local invasion of bronchial vessel. Although the risk of morbidity and mortality is high, surgical resection of cavity for the prevention of massive hemoptysis is possible in tubercular cavity[8]. Close supervision is necessary and in an event of hemoptysis, embolization should be considered.

CONCLUSION

- Healed fibro cavitory lesion of lung can present with Aspergilloma.
- Aspergilloma can occur in pre-existing pulmonary cavity which may formed due to previous tuberculosis condition, carcinoma, emphysematous bulla or sarcoidosis
- Patient may remain asymptomatic for a long duration
- Symptoms are often unspecific, making imaging the cornerstone of the diagnosis.
- A intracavitary mass with an air crescent on x-ray and demonstration of hyphae on Gomori's methamine silver stain are pathognomonic findings.

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