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Case Report

Coexistent squamous cell carcinoma of lung with Aspergillosis diagnosed by cytology

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ABSTRACT

Aspergillus infestation in squamous cell carcinoma (SCC) of lung has been reported in pathology specimens but not on fine needle aspiration cytology (FNAC) smears. We report a case of concurrent Aspergillosis and SCC of lung diagnosed by cytology in a 72 year old man who presented with cough and breathlessness. Computerized tomography (CT) thorax revealed right lower lobe consolidation with ill-defined nodular opacities and central cavitation. CT guided aspiration smears from the lung lesion revealed malignant squamous cells dispersed in single and occasional groups suggesting SCC. Cytological smears and cell block study of the fluid aspirated from the cavity showed fungal hyphae, malignant squamous cells and necrotic debris and thus a diagnosis of SCC with Aspergillus colonization was established. To our knowledge, there has not been any reported case of coexistent pulmonary SCC and fungus proven by cytology in literature.

Keywords: Cavitating, Squamous cell carcinoma, Lung, Aspergillus, FNAC

INTRODUCTION

Pulmonary Aspergillosis occurs in parenchymal cavities or ectatic airways. It rarely affects healthy people, but those with pre-existing structural lung disease, atopy, occupational exposure or impaired immunity are susceptible.[1] More cases of bronchogenic carcinoma have been reported in recent years, and these patients are more prone to secondary Aspergillosis.[2] Cytopathological examination of respiratory specimens often yield negative results and lack sensitivity in detecting the fungus in an early stage of infection.[3] In our case cytology smears supported by cell block study paved way for the diagnosis of Aspergillosis arising in a cavitating SCC of lung.

CASE REPORTS

A 72 year old male, a smoker, presented with history of productive cough and breathlessness for 4 weeks. He also gave history of loss of weight and loss of appetite. There was no history of hemoptysis, chest pain, fever, allergy or immunosuppression. He was a non-diabetic. On examination he had clubbing and right lower lobe consolidation. Other systems were within normal limits. CT thorax revealed right lower lobe consolidation with ill-defined nodular opacities and central cavitation and mediastinal lymphadenopathy.

CT guided aspiration of the lung lesion was performed and the smears studied were moderately cellular and showed malignant squamous cells predominantly in singles and occasional syncytial groups. The malignant squamous cells had rounded borders with hyperchromatic enlarged nucleus and coarse irregular granular chromatin. Cytoplasm of the squamous cells showed a variable degree of keratinisation. The background showed inflammatory cells and necrosis.

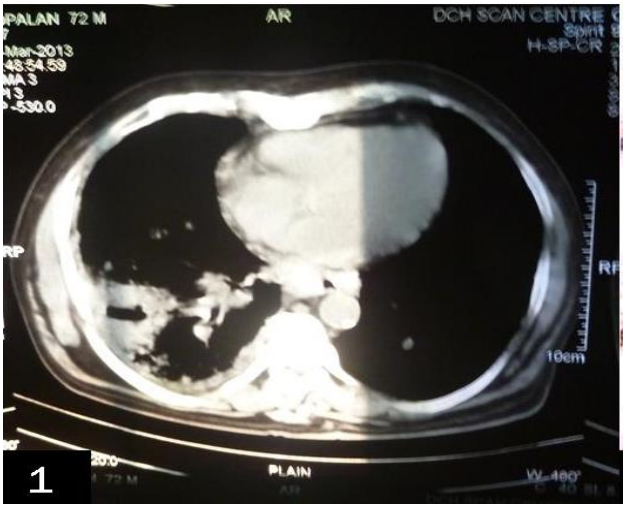

Figure 1: A CT scan with contrast of the chest showing right lower lobe lung mass with central cavitation.

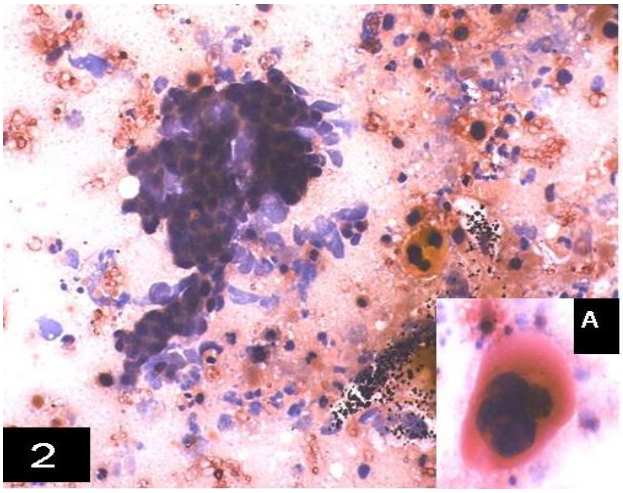

Figure 2: Cytology smear showing malignant squamous cells in a syncitial cluster. Background shows carbon laden macrophage. (Pap stain, × 400). Inset A shows malignant squamous cell with keratinisation.

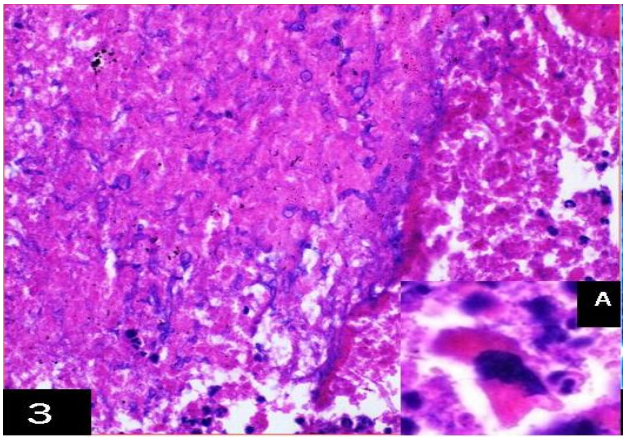

Figure 3: Cell block section showing septate fungal hyphae and necrosis (H and E, x400). Inset A shows malignant squamous cell.

Cytological smears of the fluid aspirated from the cavity showed acute branching septate fungal hyphae, malignant squamous cells and necrotic debris. Cell block study of the fluid aspirated confirmed the diagnosis of SCC with Aspergillus colonization. Gomori Methanamine Silver (GMS) stain revealed hyphal fungal organisms consistent with Aspergillus species.

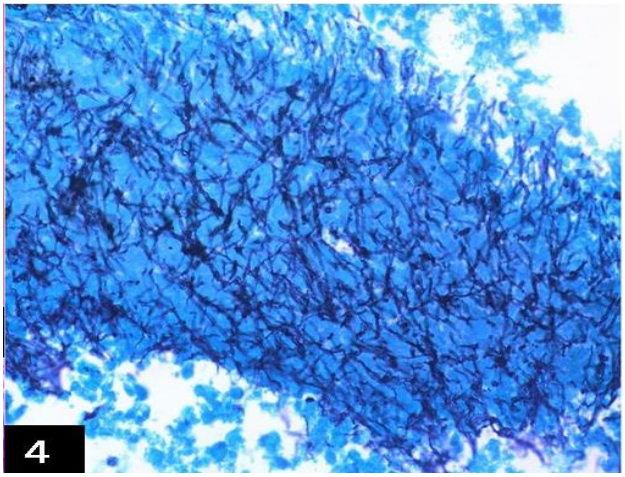

Figure 4: Aspergillus with uniform hyphae and branching at 45 degrees (GMS, × 400).

DISCUSSION

Four distinctive patterns of Aspergillus related lung diseases are recognized, as follows: Pulmonary aspergilloma (PA), saprophytic colonization, hypersensitivity induced aspergillosis and invasive pulmonary aspergillosis.[4]

PA is diagnosed in a patient with a healed tuberculosis cavity when the colonizing fungi condense to produce a roentgen graphically visible fungal ball within the cavity lumen and the serum contains antibodies to Aspergillus.[5] PA is commonly found in cavities such as those seen in cases of post tuberculosis infection, bronchiectasis, lung cyst and abscess, bullae, pulmonary infarcts, cystic fibrosis, histoplasmosis, sarcoidosis and HIV infection.[1] It is typically caused by Aspergillus fumigates, although other species may be associated with its formation, usually in the upper lung fields. The diagnosis is based on various features such as air crescent sign on radiology[6] and aspergillosis serology.

Aspergillus colonization of a lung neoplasm frequently lacks one or both of the features characteristic of post-inflammatory intracavitary aspergilloma, a loose fungal ball and antifungal serum antibodies.[5] The clinicopathologic differences between post-inflammatory and intraneoplastic pulmonary saprophytic aspergillosis may be explained by a shorter period of fungal colonization in lung tumors as development of a fungal ball and antifungal antibodies require time.[5] In the present case there was neither radiological nor serological evidence of aspergilloma.

In one study, the prevalence of Aspergillus growth in patients with cavitary or non-cavitary bronchogenic carcinoma was reported as being 14.2%,[7] but only a few cases of combined aspergillosis and lung cancer have been reported in literature.[4] Aspergillosis has been reported in combination with adenocarcinoma,[4] small cell carcinoma[8] and carcinoma sarcoma of lung.[9] Fungal infestation in primary lung carcinoma occurs very infrequently, probably because cavitation is a late event in local tumour development, and the abnormal air space thus has a proportionately brief period of exposure to the environmental dusts in which fungal spores circulate.[5] The patient in our case presented at a late stage of the disease with mediastinal lymphadenopathy and succumbed to death after receiving six cycles of chemotherapy.

CONCLUSION

Coexistence of squamous cell carcinoma of lung with aspergillosis indicates a bad prognosis is which is evident in our case as cavitation and subsequent aspergillus colonization is a late event in local tumour development. In cavitating lung cancers along with FNAC, cell block study of cavitary fluid should also be performed to diagnose such concurrent lesions. Smears showing fungal hyphae should be meticulously searched for atypical cell clusters especially in elderly individuals.

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REFERENCES

1. Bardana EJ. Pulmonary aspergillosis. In: Al-Dory Y, Wagner GE, editors. Aspergillosis. Springfield (IL): Charles C Thomas; 1985. p. 43-78.
2. Shahid M, Malik A, Bhargava R. Bronchogenic carcinoma and secondary aspergillosis—Common yet unexplored.Cancer. 2008113:547–58.
3. Reichenberger F, Habicht J, Matt P. Diagnostic yield of bronchoscopy in histologically proven invasive pulmonary aspergillosis. Bone Marrow Transplant.1999;24:1195–9.
4. Saleh W, Ostry A, Henteleff H. Aspergilloma in combination with adenocarcinoma of the lung. Can J Surg. 2008;51.
5. Smith FB, Beneck D. Localized Aspergillus infestation in primary lung carcinoma- Clinical and pathological contrasts with post-tuberculosis intracavitary aspergilloma. Chest. 1991;10:554-6.

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