

Bilateral cavitory lung adenocarcinoma in a young lady: A rare case report with review of literature

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ABSTRACT

A mucinous variant of bronchioloalveolar carcinoma is described as a rare variant of invasive adenocarcinoma and is characterized radiologically by consolidation, groundglass opacity, and nodules. Here, we report the case of a young lady with multiple cavitory disease presented with respiratory failure and mimicking as tuberculosis, pneumonia, vasculitis but initial laboratory investigations and bronchoscopy couldn't clinch the diagnosis. Later on, CT-guided biopsy confirmed the diagnosis of mucinous bronchoalveolar carcinoma. Immunohistochemistry for TTF-1, EGFR, ALK, ROS mutation had been sent but the patient requested to discharge, have been put on EGFR inhibitor Gefitinib 250 mg once a day considering adenocarcinoma, female, Asian origin but couldn't turn-up to review further details. The clinician should be aware of the cavitory presentation of adenocarcinoma of lung even in younger patients where the most common differential is tuberculosis.

Keywords: Adenocarcinoma, Cavity, Lung, Tuberculosis, Young.

A cavity has been defined as “a gas-filled space within a pulmonary consolidation, a mass, or a nodule, produced by the expulsion of necrotic part of the lesion via the bronchial tree [1]. Cavitory lesion is a very common finding in chest X-ray with broad differential ranging from infection to noninfectious etiology [2]. Cavitory lesions can be due to various etiologies, and accurate diagnosis of such lesions is often challenging because the non-malignant cavitory lesions frequently mimic malignant cavitory lesions.

Lung cancer commonly occurs as a solitary, thick-walled cavity in elderly patients. Squamous-cell carcinoma is the most common histological type of lung cancer to cavitate (as 82% of the lung cancer constitutes cavitory primary lung cancer, followed by adenocarcinoma and large cell carcinoma) [3,4]. The frequency of cavitory lung adenocarcinoma in the various case series ranges from 5.7% to 14.9% [3]. Multiple cavitory lesions in primary lung cancer occur rarely; however, multifocal bronchoalveolar cell carcinoma can occasionally have multiple cavitory lesions [5]. We are reporting here multiple cavitory mucinous adenocarcinoma in a young lady mimicking as tuberculosis.

CASE REPORT

A 35-years-old lady, non-smoker admitted to the hospital with complaints of productive cough and breathlessness which was present even at rest from the last 2 months. There was also a history of recurrent cold and cough from the last two and a half

years. The patient denied any history of fever, hemoptysis, chest pain etc. She received two courses of anti-tubercular treatment with six-month duration each time in 2016 and 2018 on a clinico-radiological basis with partial improvement.

Chest X-ray performed in 2016 (Fig. 1a) showed heterogeneous opacity in the right mid-zone. Repeat chest X-ray performed in 2017 showed no improvement (Fig. 1b). On examination, her pulse was 102/min, respiratory rate was 24/min, blood pressure was 129/93 mm-Hg and oxygen saturation was 97% at 2 litre/min oxygen by a nasal mask. Chest auscultation showed bilateral wheeze and coarse crepitation in infra-axillary area.

A chest radiograph obtained on admission revealed bilateral patchy consolidation with cavitation (Fig. 2). Computerised tomography (CT) chest showed bilateral nodule with a confluent shadow with thick-walled cavity prominent more in mid to lower

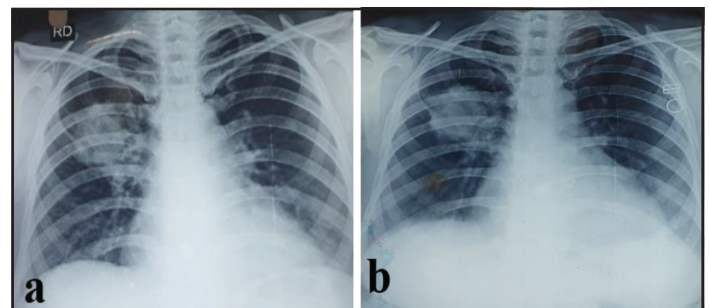


Figure 1: (a and b) - Chest X-ray PA view shows heterogeneous opacity in the right mid zone.

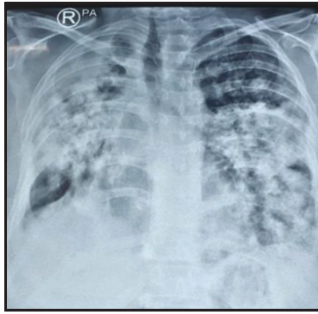


Figure 2: Chest X-ray PA view reveals bilateral consolidation, nodule with cavitations.

lobe (Fig. 3). Based on these features, differentials of bacterial or fungal pneumonia, allergic bronchopulmonary aspergillosis (ABPA), granulomatous polyangiitis and non-tubercular mycobacterium infection were kept. Laboratory investigations showed a normal blood count. Liver function test and renal function test were normal. The patient also underwent a blood test like ABPA panel, autoimmune and vasculitis panel which were negative.

The patient was initially managed with O₂ inhalation, injectable antibiotic amoxiclav, parenteral voriconazole and nebulization with bronchodilator keeping the possibility of bacterial or fungal pneumonia. On 2nd day of admission, a videobronchoscopy was performed which showed mucoid secretion coming from the right lower lobe. Bronchoalveolar lavage was taken and sent for bacterial culture and sensitivity, fungal culture, acid-fast bacillus (AFB) culture and Genexpert which all came out as negative. There was no clinical radiological response found after seven days of antimicrobials. The patient was put on tab septran keeping the possibility of Nocardiosis but without any response. CT-guided biopsy revealed features of mucinous adenocarcinoma (Fig. 4).

The patient was finally diagnosed as mucinous adenocarcinoma of the lung. A sample was further processed for Immunohistochemistry (IHC) and Target mutation analysis considering the advanced disease. TTF-1, EGFR, ALK, ROS mutation had been sent but the patient requested to discharge. So, the patient has put on EGFR inhibitor Gefitinib 250 mg once a day considering adenocarcinoma in a female of Asian origin but couldn't turn-up to review for further details.

DISCUSSION

The spectrum of cavitory diseases ranges from acute to chronic infections, systemic causes, and malignancies. Cavitation in primary lung cancer is not rare. Cavitation detected on plain chest radiographs has been reported in 2% to 16% of primary lung cancers [6], and it is detected with CT in 22% of primary lung cancers [7]. Squamous-cell carcinoma is the most common histological type of lung cancer to cavitate [3-4]. The frequency of cavitory lung adenocarcinoma in the various case

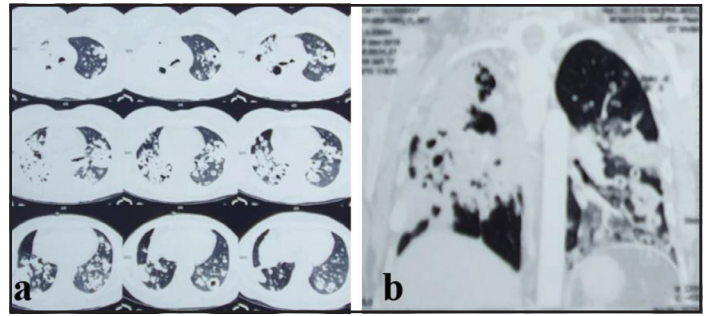


Figure 3: CT chest showed bilateral nodule with confluent shadow with thick-walled cavity prominent more in mid to lower lobe.

series ranges from 5.7% to 14.9% [3,6]. One of the largest case series of 149 cavitory adenocarcinoma patients, found a median age of 63 years and a male predominance (67%) [8]. In our case, the patient was a female and younger as compared to the above-mentioned case series. Multiple cavitory lesions in primary lung cancer are rare; however, multifocal bronchoalveolar cell carcinoma can occasionally have multiple cavitory lesions [7]. Our case has multifocal masses with cavitation which is a rare presentation of bronchoalveolar carcinoma.

Previous studies revealed that approximately 70% of cavitory lung adenocarcinoma tumors were located in the lower lobe [9-10]. Our patient also has cavitation predominantly in the lower lobe. Bronchioloalveolar cell carcinoma accounts for about 4% of all non-small cell lung cancers. They exhibit a lepidic growth pattern (growth along intact alveolar septae), arogenous and lymphatic spread, but without vascular invasion.

Bronchoalveolar carcinoma differs from other lung cancers as there is a female preponderance (53%), and a significant number of lifelong non-smokers (37%) are affected. Clinical symptoms include cough, shortness of breath, hemoptysis and bronchorrhea (>100ml/24hrs). This patient also presented with productive cough and dyspnea but deny for hemoptysis.

There are several mechanisms have been proposed to explain the cavitory appearance of a lesion on CT scans, that is, so-called pseudocavitation. One theory postulates that multiple oval areas of low attenuation mimic small cavities. Others suggest that the cavitory appearance results from a process analogous to that seen on an air bronchogram: a proliferation of tumor cells along the alveolar walls without disruption of lung architecture and with the maintenance of alveolar patency [11].

Radiologically, three patterns are reported for bronchoalveolar carcinoma: (a) solitary pulmonary nodules or mass, (b) consolidative changes resembling pneumonia, or (c) multifocal nodules or masses. The solitary nodule is the most frequent radiographic presentation (56%) and can be a ground-glass opacity or more solid with ill-defined margins. Intratumoral radiolucencies in the form of air bronchograms, pseudocavitation, heterogeneous attenuation, and pleural tags are often present. Diffuse consolidative changes are present in 30% of the patients making it difficult to differentiate from bacterial

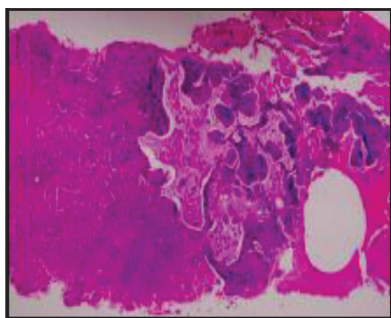


Figure 4: Lung biopsy suggestive of mucinous adenocarcinoma.

pneumonia. The multifocal disease is seen in the form of ground-glass opacities, solid nodules or masses and occurs frequently with the mucinous subtype. Cavitory forms of bronchoalveolar carcinoma are exceedingly rare. Differentiating pseudocavitory bronchoalveolar carcinoma from other causes of solitary cavitory nodules is not easy.

The differential diagnosis includes tuberculosis, fungal infections, other lung cancers, metastases, necrotic rheumatoid nodules, and Wegener granulomatosis. Many patients initially treated as tuberculosis, fungal infection or bacterial pneumonia before getting diagnosed as malignancy and so our patients also received two courses of anti-tubercular treatment, anti-fungal, and several antibiotic courses. The suspicion of malignancy in our case was lower considering age, no smoking history and long duration of illness.

CONCLUSION

Lung cancers should be considered in the differential diagnosis of cavitory lung disease. Bronchoalveolar carcinoma can mimic infective or inflammatory etiology and it should be always kept in the differential of non-resolving cavitory pneumonia.

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