Adenocarcinoma of Lung Presenting as Hydropneumothorax: A Rare Presentation

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ABSTRACT

Lung cancer can present in a wide variety of ways on radiological examination. Hilar prominence, solitary or multiple pulmonary nodules, obstructive pneumonitis, mediastinal widening and pleural effusion are the common presentations. Pneumothorax or hydropneumothorax is a very rare presenting feature of lung cancer. Here we report a case which presented as left left sided hydropneumothorax and was subsequently found to have lung cancer.

Keywords: Adenocarcinoma, Lung cancer, Hydropneumothorax

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INTRODUCTION

Lung cancer is the most common cancer worldwide today. It has a varied presentation. The symptoms may be chest complaints like cough and haemoptysis or may be due to distant metastasis. The common radiological findings in these patients are the presence of a hilar prominence, solitary or multiple pulmonary nodule, obstructive pneumonitis, mediastinal widening and pleural effusion. Pneumothorax or hydropneumothorax, as a presenting finding, is rare. Less than 0.5% of lung cancer cases have been reported to be complicated with pneumothorax and 1.4% cases of pneumothorax had underlying lung cancer approximately. But no definite data of pneumothorax with lung cancer has been found in literature. Here we report a case of adenocarcinoma of lung which presented as pneumothorax.

CASE REPORT

A 62-year old man presented with chief complaints of left sided heaviness of chest and exertional dyspnea for 5 days. He was a non-smoker, non-diabetic, non-hypertensive and a farmer by occupation. On examination, pulse rate was 112/min, respiratory rate 20/min, and blood pressure 130/70mmHg. There was no evidence of clubbing or peripheral lymphadenopathy. Examination of respiratory system revealed absent breath sound in the left hemithorax, hyper-resonant percussion note in left supra scapular region, inter-scapular region, axillary region and dull percussion note in left infra scapular region, infra-axillary area and anteriorly in the left mid-clavicular line from 5th intercostal space downwards. Succusion splash and shifting dullness were also present. Routine investigations investigations revealed hemoglobin: 8.0 g%, white blood cell count: 9700/uL, neutrophils 62%, lymphocytes 38%, and sedimentation rate of 29 mm in the first hour. Blood urea, creatinine and glucose were normal. Sputum smear examination for acid fast bacilli was negative. Smear examination of sputum was negative for acid fast bacilli Cytological examination for sputum malignant cell was also negative. Chest x-ray showed presence of left sided hydropneumothorax with lung collapsing towards towards left hilum [Figure 1a]. Intercostal tube thoracostomy was done . Pleural fluid was aspirated and sent for cell type, cell count, adenosine deaminase level, protein, glucose and malignant cell. On day 3 of tube thoracostomy, repeat chest x-ray revealed almost complete expansion of the left lung with evidence of left sided pleural thickening and subcutaneous emphysema [Figure 1b]. A contrast enhanced computed tomography (CECT) scan of thorax showed a 2-3 cm mass lesion in left middle lobe of lung [Figure 2]. Pleural fluid cytology was positive for malignant cell. A CT guided fine-needle aspiration cytology (FNAC) revealed features consistent with adenocarcinoma [Figure 3]. Immunohistochemistry was positive for thyroid transcription factor (TTF-1), Leu M1and epithelial membrane antigen (EMA). An immunohistochemical staining was applied to the case and tumor showed immunoreactivity with TTF -1, Leu M1and EMA. The

Figure 1a: Left sided hydropneumothorax with lung collapsing towards left hilum.
Figure 1b: Complete expansion of left lung with evidence of left sided pleural thicken -ing and subcutaneous emphysema and left hilar opacity

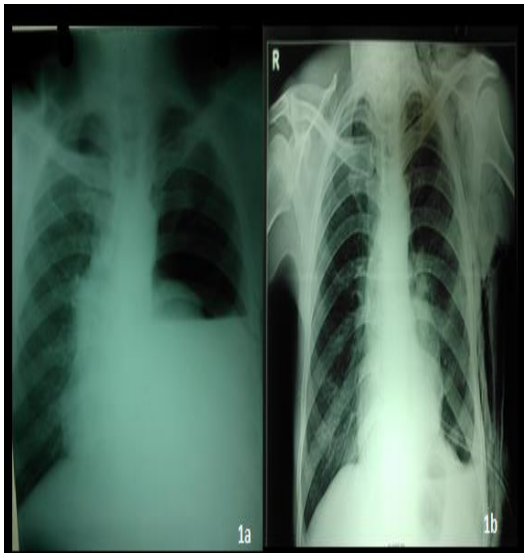
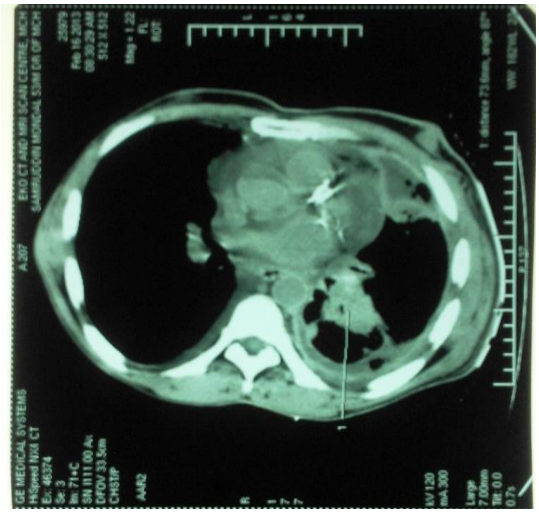


Figure 2: 2-3 cm mass lesion in left middle lobe of lung with FNA needle in-situ



ruled out the possibility of a squamous and small cell carcinoma and established the diagnosis of a adenocarcinoma.

DISCUSSION

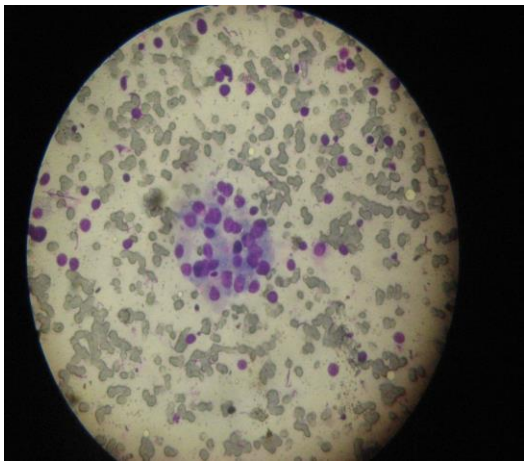
A majority of the lung cancers are diagnosed while investigating some new respiratory symptom or worsening of a pre-existing respiratory condition [1]. Pleural effusion is common in lung malignancy. Malignant pleural effusions are usually hemorrhagic, recurrent, and massive with or without mediastinal shift. Aspiration of pleural fluid may subsequently give rise to pneumothorax or hydropneumothorax. But de-novo occurrence of both air and fluid or air only in the pleural cavity is rarely seen in lung cancer [2,3]. Lung cancer is present in around 1.4% cases of pneumothorax, whereas spontaneous pneumothorax develops in approximately 0.05% patients with lung cancer [4,5]. Steinhauslin et al., reported that 0.46% of the lung cancer cases were complicated by pneumothorax [6]. Wright et al., reported that it is 0.05% of the lung cancer cases which were complicated with pneumothorax [7]. It is more common to find pneumothorax in patients with secondary metastatic deposits in lungs, particularly from osteogenic sarcoma [8]. This is probably because of the lesser degree of necrosis in peripheral primary bronchogenic tumors as compared to necrotic lesions of metastatic osteogenic sarcoma.

The present case revealed a centrally placed growth in left lung which is unlikely to involve the pleura directly. The possibility of iatrogenic pneumothorax was ruled out as the patient denied history of pleural aspiration before presenting to us. Definite mechanism of producing pneumothorax by lung cancer is not well understood. Several mechanisms have been proposed like rupture of the necrotic neoplastic tissue in the pleural cavity, rupture of the necrotic tumor nodule or the necrosis of the sub-pleural metastasis. Another possibility is that cancer with the check valve mechanism: a tumor at the lung periphery can obstruct the bronchioles and lead to a local over distension and rupture of the lung [9]. Most of the patients with lung cancer have chronic bronchitis or emphysema bullae and that these bullae may rupture following the disturbance of the lung architecture due to bronchial cancer [10]. Though quite a few case reports of pneumothorax as a presenting feature of lung cancer were reported before this current report, only two cases of hydropneumothorax as a presenting manifestation of lung cancer were reported in the literature [11,12].

CONCLUSION

De-novo hydropneumothorax in lung cancer is rare but may occur. If an elderly smoker with hydropneumothorax does not respond adequately with intercostal tube drainage, radiological or

Figure 3: FNAC of lung mass showing cells with moderate cytoplasm, nuclear pleomorphism and acinar pattern- features suggestive of adenocarcinoma of lung



bronchoscopic evaluation should be done to exclude the underlying lung malignancy.

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