Case Report

Lung cancer presented as hydro-pneumothorax: A rare radiological masquerade

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ABSTRACT

Herein, we report a case of lung cancer presented initially as hydro-pneumothorax and has undergone intercostal tube drainage, received repeated courses of antibiotics and even antitubercular drugs without any improvement. Without a confirmatory diagnosis, patient was referred to our institution. Based on initial and follow-up chest X-rays, it was suspected to be either an encysted empyema or lung abscess. But on computed tomography (CT) thorax the thick walled cavitary mass was seen, and CT guided fine- needle aspiration cytology proved the diagnosis. Thus, it's a rare presentation of lung cancer as hydro-pneumothorax.

Key words: Hydro-pneumothorax, lung carcinoma, squamous cell carcinoma

INTRODUCTION

Lung cancer is the most common cancer worldwide today. It has a varied presentation. The symptoms may be chest complaints like cough and hemoptysis or may be due to distant metastasis. Common roentgenological findings in lung malignancy are solitary pulmonary nodule, thick wall cavity, hilar prominence, mediastinal widening, pleural effusion and recurrent pneumonitis in a particular lobe. A majority of the lung cancers are diagnosed while investigating some new respiratory symptom or worsening of a preexisting respiratory condition.[1] Pleural involvement in the form of malignant pleural effusion is very common in case of lung cancer. Aspiration of pleural fluid may subsequently give rise to pneumothorax or hydro-pneumothorax. 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] Thus, pneumothorax or hydro-pneumothorax, is a rare presentation. In our case, initial radiological presentation was of hydro-pneumothorax, but later on diagnosis of lung cancer was made. Very fewer case reports are available in which *de novo* hydro-pneumothorax was the initial manifestation of lung cancer.

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CASE REPORT

A 40-year-old smoker and alcoholic male was presented to our institution with a history of cough with purulent expectoration of about 1 cup/day since last 3 months and recurrent episodes of hemoptysis since last 3 months. These were associated with intermittent fever with chill and rigor for same duration and chest pain in left hemi thorax radiating to the back of left chest. With these symptoms patient was initially visited local physician and chest X-ray was done along with routine blood and sputum examinations. Initially, blood picture was suggestive of the neutrophilic leukocytosis with mild anemia and sputum examination was negative for acid-fast bacilli (AFB). Initial chest X-ray was suggestive of left-sided hydro-pneumothorax [Figure 1]. Based on the clinico-radiological findings, pleural fluid was aspirated. Pleural fluid report was the following:

Appearance: Hazy, turbid, straw color
Total cells: 4700, N64%, L36%
Protein 5 mg/dl, sugar 24 mg/dl
Adenosine Deaminase Level (ADA) 131
Gram-stain and c/s – no growth
AFB stain – negative.

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Based on this pleural picture, a diagnosis of pyo-peumothorax was made and intercostal tube was given and the patient was put on injectable antibiotics. As there were no clinico-radiological improvements with antibiotics, patient was empirically put on antitubercular drugs and was discharged with intercostal tube drainage (ICTD). After 20 days, when the amount of discharge in drain bag was decreased ICTD was removed, and the patient was continued on antitubercular drugs making a diagnosis of left-sided tubercular encysted hydro-pneumothorax. But, there was no improvement in the cough and chest pain and was referred to our institution. Reviewing as past records, we planned ultrasonography (USG) hemi thorax and computed tomography (CT) thorax. After admission, his blood leukocyte count was raised; and neutrophilic and sputum Gram-stain revealed methicillin-resistant *Staphylococcus aureus*. Thus, we thought of a provisional diagnosis of either lung abscess or encysted empyema. USG hemi thorax was done in this time, and the report was suggestive of left lung mass or organized lung abscess. CT thorax was done, and the imaging cuts were suggestive of a thick walled cavitary mass [Figure 2]. CT guided fine-needle aspiration cytology was done from the lesion, and it showed keratin pearl with cells with high NC ratio, nuclear atypia and hyper chromatic nuclei suggestive of squamous cell carcinoma lung [Figure 3].

DISCUSSION

In our case, the possibility of iatrogenic pneumothorax was ruled out in our case as pleural fluid aspiration was not done before the 1st chest X-ray. Wright reported that it was 0.05% of the lung cancer cases which were complicated with pneumothorax.[6] It is more common to find pneumothorax in patients with secondary metastatic deposits in lungs, particularly from osteogenic sarcoma.[7] 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, the necrosis of the sub-pleural metastasis or secondary infection due to obstruction by tumor itself.[8] Though case reports of pneumothorax as a presenting feature of lung cancer were reported before this current report, very fewer cases of hydro-pneumothorax as a presenting manifestation of lung cancer were reported in the literature. Thukral *et al*. reported a similar case in Journal of the Association of Physicians of India, April 2012 issue where endobronchial adenocarcinoma obstruction the middle lobe bronchus was initially presented as hydro-pneumothorax.[9] Maji reported a similar case in Journal of Pioneering Medical Sciences in 2013 where adenocarcinoma lung was initially presented as hydro-pneumothorax.[10] But in none of those cases, the initial pleural fluid report was suggestive of a pyo-pneumothorax.

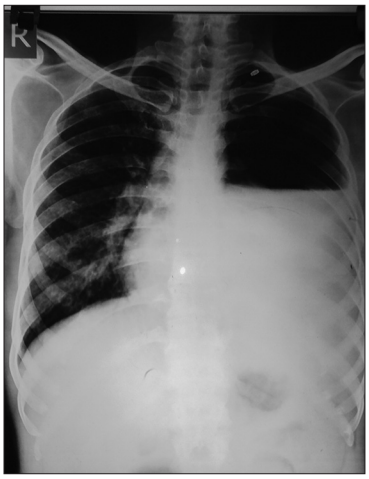

Figure 1: Left sided hydro-pneumothorax

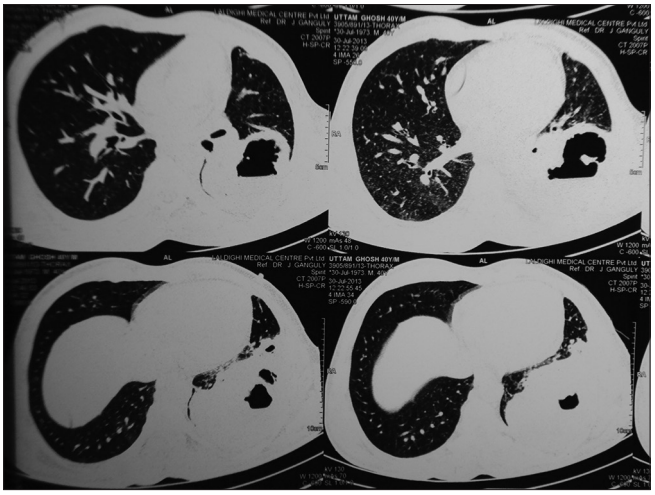

Figure 2: Computed tomography thorax cut showing thick wall cavitary lung mass

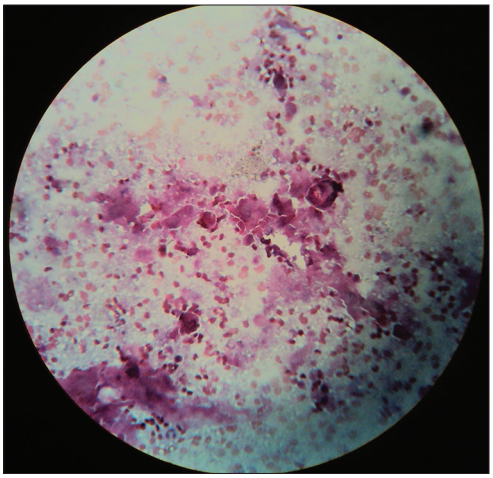

Figure 3: Computed tomography fine needle aspiration cytology showing keratin pearl with malignant cell suggestive of a squamous cell carcinoma

Thus, this case is unique from the other two similar cases. A delay in diagnosis in this case is due to rare presentation of lung cancer by itself and also delay in advising CT thorax.

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