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CASE REPORT: MALIGNANT TRANSFORMATION OF LUNG BULLA

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ABSTRACT

Cases of malignant transformation in bullous lung disease are not infrequent, and most of these cancers turn out to be non small cell lung cancer. However, they are often difficult to diagnose because of their uncertain appearance. Here we report a case of bullous lung disease, now presenting with an air – fluid level, in which a diagnosis of malignancy was made by ultrasound, guided fine needle aspiration cytology. Hence this possibility has to be kept in mind when a known case of bullous lung disease presents with worsening symptoms or new radiological shadows which is often treated as secondary infection of a preexisting bulla.

Key words: Malignant transformation, Bullous Lung Disease.

INTRODUCTION

Case report

A Fifty four year old male, rubber tapping by profession, who was a chronic smoker presented to us with fever, haemoptysis and left sided chest pain of one month duration and progressive breathlessness of five years duration. The illness started off as low grade fever, cough and blood tinged sputum with no much expectoration or purulence. He was at times having about 75-100ml of haemoptysis and was initially managed at the local hospital with antibiotics and other supportive measures and his fever, cough and haemoptysis subsided. But he had progressive dyspnoea on exertion which was initially MMRC Grade II for the past 5 years and now got worsened to Grade III dyspnoea over a period of one month. There was no history of paroxysmal nocturnal dyspnoea or orthopnoea. He gave history of left sided chest pain which was of dull aching nature and there was no referred

pain or associated autonomic events to suggest the possibility of a coronary disease. He gave history of recent onset loss of appetite and loss of weight.

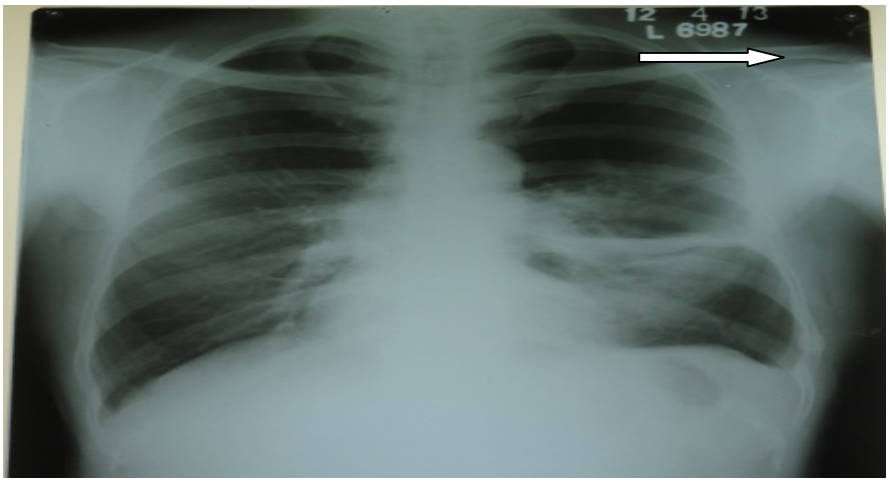

Fig 1 Chest X-ray PA view

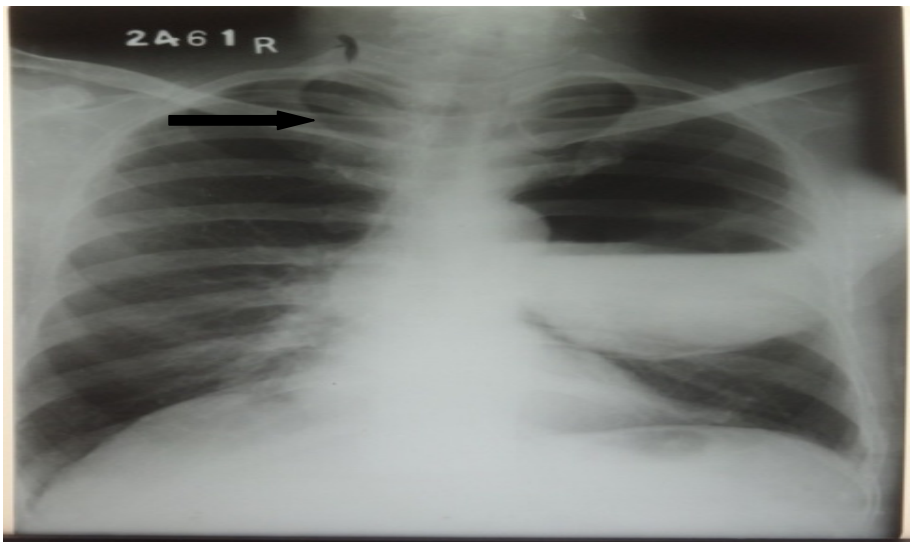

Fig 2 Chest X-ray PA view

There was no previous history of hypertension, diabetes mellitus, coronary artery disease or pulmonary tuberculosis. He was diagnosed as having bullous disease of lung about five years back. His previous chest x- ray revealed evidence of bullous emphysematous changes with a large bulla in the left upper lobe with irregular thickening of the inferior wall of the bulla (white bold arrow) (Fig 1).

Another Chest X-ray available with the patient showed evidence of air fluid level (black bold arrow) (Fig 2) which suggested the possibility of infection of the bulla at an earlier date.

About five months back when he developed the present symptoms, he was subjected to a fresh chest x-ray fig (3) and CT chest fig (4). The Chest X-ray clearly showed bullous areas over the right upper zone, Left upper and mid zones with a prominent inferior wall which appeared thickened. CT revealed bullous emphysematous changes involving both upper lobes and a collapse consolidation of the superior segment of the left lower lobe.

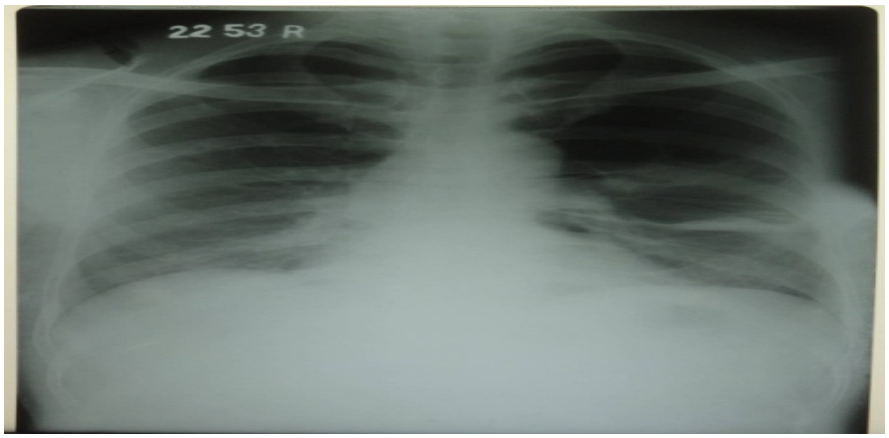

Fig 3 Chest X-ray PA view (5 months back)

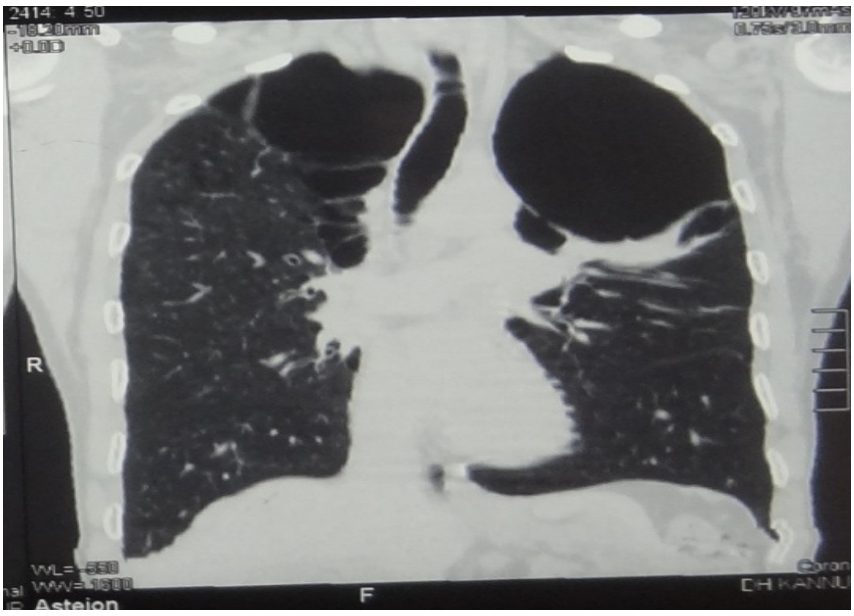

Fig 4 CT Chest Coronal cut

He was managed from the local hospital with antibiotics and other conservative measures with which he had partial resolution of his illness. However, his breathlessness progressed over a period of five months and he presented to us with left sided chest pain. On examination, he was dyspnoeic at rest but maintaining adequate saturation at room air. He was having clubbing. Respiratory movements were decreased on left side with a decreased vocal fremitus and dull note on percussion on left infraclavicular area. There was no local rise in temperature, visible chest wall swelling or tenderness over the left hemothorax. His routine blood investigations were within normal limits.

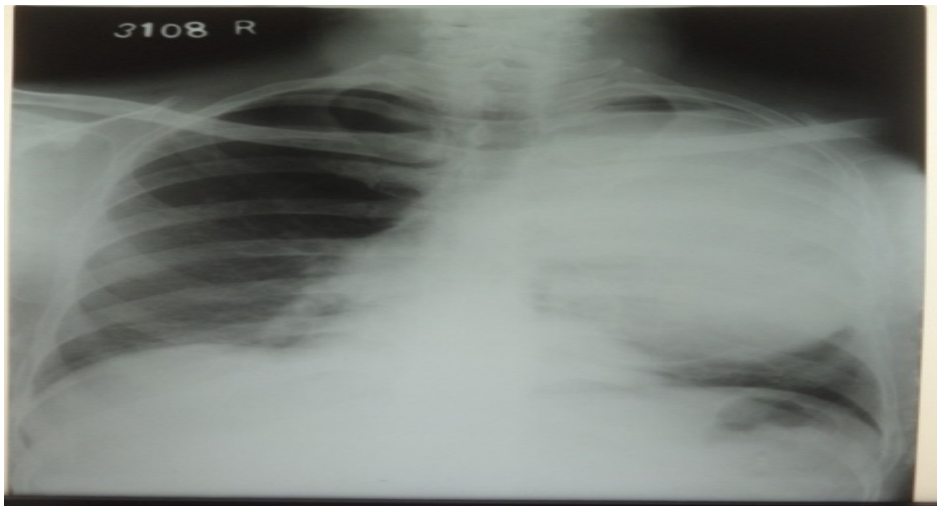

Fig 5 Chest X-ray PA on admission

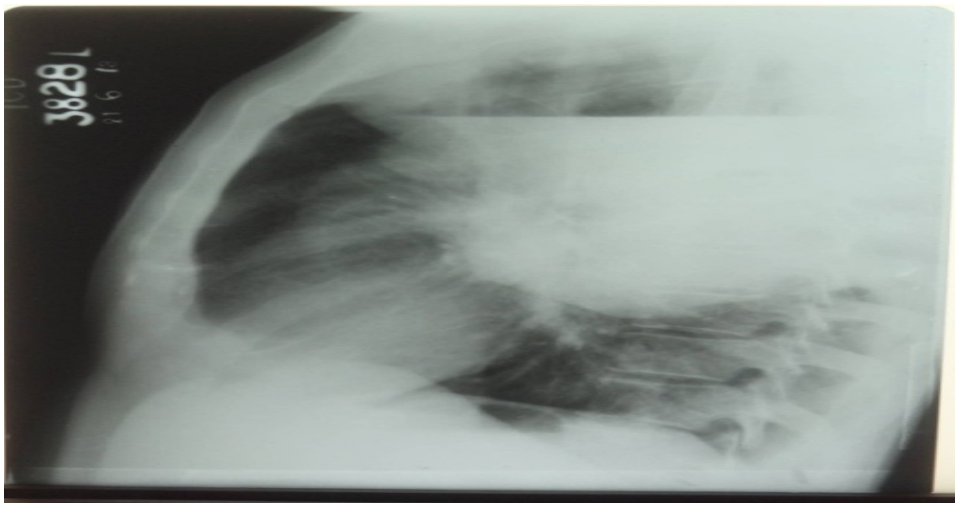

Fig 6 Chest X-ray Lateral view

Sputum AFB was negative, sputum culture revealed normal flora, sputum cytology showed no malignant cells. His Chest X ray revealed a large homogenous opacity involving left upper, mid and lower zone with an upper horizontal level and a well defined lower border Fig (5 & 6). As the appearance of new air fluid level usually suggest infected bulla/aspiration he was again started on antibiotics and after a course of intravenous antibiotics his symptoms subsided. But the presence of hemotysis along with loss of weight, loss of appetite and clubbing raised the suspicion of a malignant change in bulla. So a fibreoptic bronchoscopy was done for the patient which revealed intraluminal bulge on right upper lobe anterior segment and left lower lobe segments. As there was a strong suspicion of malignant change an ultrasound guided fine needle aspiration was done and the histopathology report came as squamous cell carcinoma.

DISCUSSION

The first report of lung cancer associated with bullous lung disease was published in 1951 by Bass and Singer. In 1968, Goldstein et al. described the incidence of bulla associated carcinoma as 3.8%. Although the carcinogenic mechanism of bullous lung disease remains uncertain, a number of possible hypothesis have been postulated. Pulmonary bulla is made up of cystic air space and conducting bronchioles. Attenuated and compressed parenchyma and connective tissue make up a wall of bulla. Limited air flow in this area may cause deposits of microorganisms on the wall of the bulla. Consequently, repeated infection will occur. Repeated inflammatory process may cause a fibrous scar to form around the bulla. This may cause accumulation of carcinogen in the bulla. These processes may cause younger candidates to get cancer [1]. In our case the patient is only fifty four years old and he gives history of repeated infection of the bullous area which supports the postulate of carcinogenesis. It is also thought that inhibition of anti-elastase enzyme by carcinogens leads to inter alveolar septal destruction, which results in the formation of bulla [4] [5]. Hence it could lead on to a vicious cycle and progressive worsening of lung function.

Radiological diagnosis of these tumors may be difficult owing to the architectural remodeling and scar formation adjacent to the bulla [2]. Radiologic features to suggest malignant transformation of a bulla includes, three major patterns i) nodular opacity within or adjacent to the bulla ii) partial or diffuse thickening of the bulla wall iii) secondary

changes in bulla (change in diameter, fluid retention, and pneumothorax). It is easy to suspect a malignant lesion of the nodular opacity type. However it is difficult to suspect in other types, because it cannot be determined whether a lesion is due to cancer when it presents as growing along the bulla wall or developing multifocally in the wall (a giant bulla may have a thickened wall due to compressed lung tissue and inflammatory reactions of the adjacent lung tissue) and few patients have secondary signs [3]. In suspected cases, many authors have concluded that ultrasound guided FNAC proved to be more sensitive and useful than needle core biopsy in the diagnosis of radiologically detected pulmonary lesions due to high diagnostic yield and reduced complication rate. This observation applies to our case also.

Physicians should be aware of the potential development of lung cancer in patients with pulmonary bullae, even in asymptomatic patients. If the initial workup does not reveal malignancy, these patients should probably have annual chest radiographs to screen for the potential development of lung cancer within or close to the bullous disease.

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