

Case Report

## Cardiac Tamponade - As an Initial Presentation of Adenocarcinoma of Lung

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### ABSTRACT

Cardiac Tamponade is a life threatening condition. Most common cause of cardiac tamponade in India is tuberculosis and malignancies. Primary tumours of pericardium are rare compared to metastatic malignancies. Adenocarcinoma of lung is the most common cause of malignant cardiac tamponade. We here with present a case of cardiac tamponade as an initial manifestation of metastatic adenocarcinoma lung in a 37 year old female.

**Key words:** Cardiac tamponade, adenocarcinoma.

### INTRODUCTION

Cardiac Tamponade is a life threatening condition, rarely seen with metastatic malignancies. Compared to primary malignancy of pericardial cavity, secondary malignancies are more common. [1] Lung, Breast, Ovary are the important primaries which should be looked for. [1] Aspiration of pericardial fluid and its cytological examination for malignancy plays a crucial part in diagnosis; we here with report a case of cardiac tamponade secondary to metastatic adenocarcinoma of lung.

### CASE REPORT

A 37 year old female presented with complaints of chest pain, breathlessness, cough without expectoration since last two months. Patient was asymptomatic 2 months back and gradually developed all the symptoms. Patient was also having facial puffiness, bilateral pedal oedema since last 15 days.

On general examination, patient was having pallor, clubbing, facial & pedal edema, engorged jugular veins. There were no clinically palpable lymph nodes all over the body. There was no history of chest trauma, palpitations, fever or any bleeding tendency. There was no history of hypertension, TB, asthma or seizure disorder.

On systemic examination, pulse is 132/min, BP 130/80mmhg, O2 saturation 90%, S1 S2 not clearly audible; breath sounds were decreased on right lower zone. Fine crepts were heard on bilateral lower zones of lungs. Abdomen was soft with mild to moderate epigastric tenderness. Mild hepatomegaly was noted. On chest auscultation, pericardial rub was heard. Based on these findings, chest X-ray, ECG, Echocardiography and CECT of Thorax was advised. ECG revealed low voltage QRS complexes with sinus tachycardia. Echocardiography revealed effusio constrictive pericarditis with pericardial

effusion compressing the right atrium and right ventricle (Fig.5). So the diagnosis of cardiac tamponade was made. Pericardiocentesis was done; approximately 850 ml of reddish coloured fluid was removed and sent for cell cytology and ADA levels.

**On gross examination –**

Fluid was 850 ml, hemorrhagic. There was no obvious clot. Centrifuged smears were prepared and stained with hematoxylin & eosin and giemsa stain.

**On microscopic examination -**

Many clusters, 3D balls, acini as well as singly scattered neoplastic cells were noted (Fig.1). Neoplastic cells had round to oval contour, coarse, irregular chromatin with prominence of 1 to 2 eosinophilic nucleoli (Fig 2). Moderate to severe nuclear pleomorphism was noted. Giemsa stain revealed cytoplasmic vacuolations (Fig.3). Based on morphology of cells, diagnosis of metastatic adenocarcinoma was offered. Closest differential diagnosis was malignant mesothelioma. Mucicarmin and PAS with diastase were done. The cells characteristically showed cytoplasmic positivity. So diagnosis of malignant mesothelioma was ruled out.

A search for the primary was lead to CECT thorax and USG abdomen.

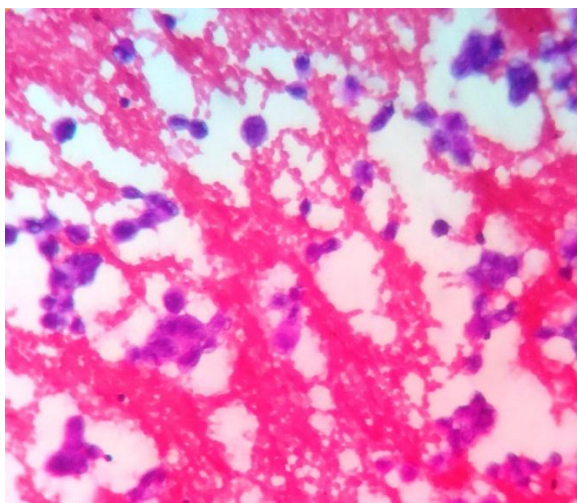


Fig 1 : Clusters as well as singly scattered neoplastic cells. (H & E, 400X )

CECT thorax revealed a well defined, round, heterogenous lesion in right

lower lung field suggestive of carcinoma of lung (Fig. 4).

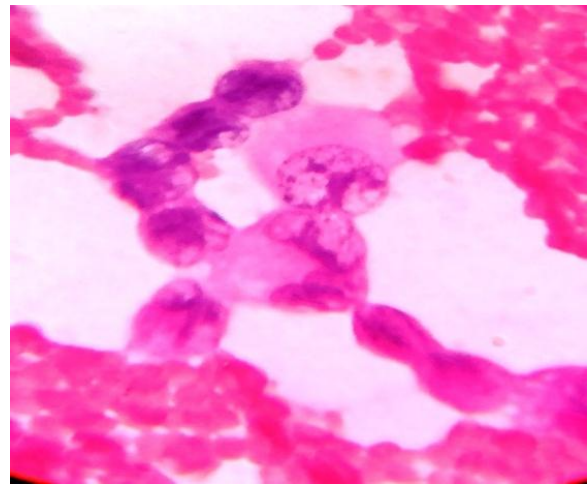


Fig 2 : Acinus of neoplastic cells. ( H & E, 1000X )

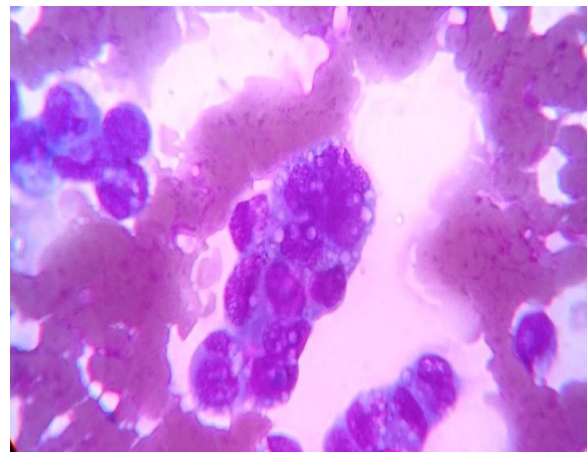


Fig 3 : Neoplastic cells showing cytoplasmic vacuolations. ( Giemsa, 400X )

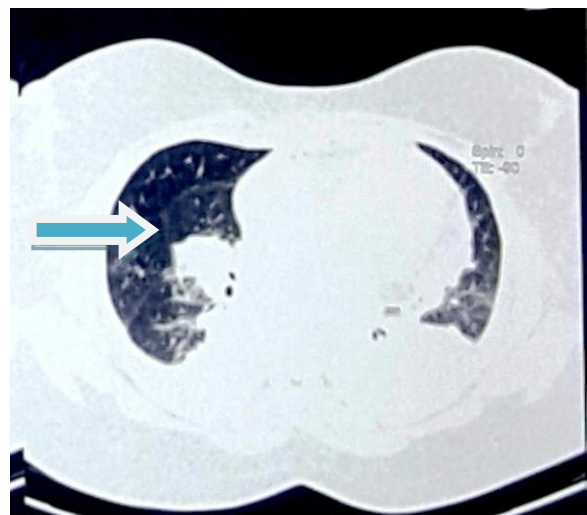


Fig 4 : CECT : Irregular mass lesion at lower zone of Right lung.

USG abdomen revealed congested hepatomegaly with no other specific

abnormality. ADA levels were 42.36 which was non conclusive and it ruled out Tuberculosis. So, final diagnosis of metastatic adenocarcinoma of lung to pericardium leading to pericardial effusion and cardiac tamponade was made.

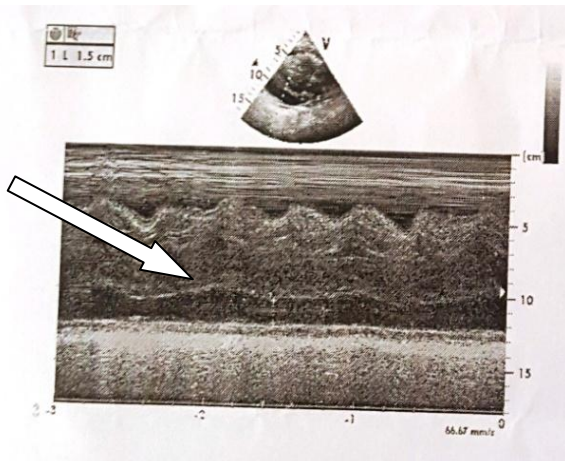


Fig 5: ECHOCARDIOGRAPHY: Arrow is showing fluid accumulation within pericardium.

## DISCUSSION

Muir and Rodger reported 5 cases of cardiac tamponade due to undiagnosed malignancy. [1]

Yazdi et al reviewed cytological findings in 72 patients with positive malignant cells in pericardial effusions in which they found 80% epithelial and 20% non epithelial malignancies like lymphoma, leukemia and mesothelioma. [2]

Fraser et al in 1974 also reviewed 29 isolated cases of pericardial effusion as the initial manifestation of malignancy. [3]

Reports of cardiac tamponade as an initial presentation of malignancy were not so common. Non cardiac tumors invade the heart and pericardium by means of lymphatic or hematogenous dissemination, local extension or transvenous route. Tumors that are most likely to involve the heart and pericardium include cancers of the lung, breast, melanoma and lymphoma. [4]

In our case patient presented with cough, rapidly progressing dyspnoea, facial puffiness and bilateral pedal oedema lead to echocardiography which confirmed the diagnosis of Cardiac Tamponade. Malignant mesothelioma, lymphoma, leukemia, always

come in the closest differential diagnosis. We had done PAS and mucicarmine stain which showed characteristic cytoplasmic positivity. Mesothelioma does not show any cytoplasmic positivity for PAS and mucicarmine.

Neoplastic cells were seen forming acini, clusters, 3D balls. They were not entirely singly scattered that rules out lymphoma and leukemias. Because of the financial constraint immunohistochemistry was not carried out on cell block preparation of fluid material. CT scan of lung characteristically showed mass in the right lower lobe of lung.

The gross appearance of mass does not reveal any cavitations. Mass is also located at the periphery that again suggests the diagnosis of adenocarcinoma of lung. Patient was put on cardiac stent for continuous drainage of fluid. Since rapid recurrence is very frequent if pericardiocentesis alone is performed as acute therapy for cardiac tamponade. A kind of long term management should be considered. Barbetakis et al have described the usage of intra pericardial installation of cisplatin with minimal side effects to prevent pericardial effusion. [5] Maher ER, Buckman R. Intrapericardial installation of bleomycin in malignant pericardial effusion. *Am Heart J.*1986; 111:613-4.

Surgical resection of pericardium can provide relief from tamponade and extend life but the survival is limited. Thoracoscopic pericardiectomy may offer a good alternative in some cases. Pericardial window is an option but it requires subxiphoid incision or thoracotomy under GA which may cause a great deal of morbidity or even mortality in patients with advanced cancer. [6]

The clinical suspicion of cardiac tamponade is crucial for the identification of the cardiac tamponade despite non specific symptom and signs because chest X-ray, ECG and even echocardiographic findings are not 100 % sensitive or specific as well.

## **CONCLUSION**

Thus, to conclude we present this case not only for its rarity of presentation but also for highlighting the importance of cytology as the 1<sup>st</sup> line investigation for serous effusions.

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