

Cardiac Tamponade due to Malignant Pericardial Effusion In Breast Cancer: A Case Report

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Abstract:

We present a case of 35 years old women who presented to our institution with a history of bilateral infiltrating duct cell carcinoma of breast, chest pain with heaviness, severe respiratory distress and hypotension. Echocardiography revealed massive pericardial effusion with features of cardiac tamponade. The patient was treated with urgent pericardiocentesis followed by subxiphoid pericardial window drainage of 500ml of haemorrhagic pericardial fluid. Cytological examination confirmed the previous suspicious of malignancy. The patient tolerated the procedure very well, immediate symptomatic relief was observed.

Key word: Pericardial effusions, cardiac tamponade, pericardiocentesis, duct cell carcinoma of breast.

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Introduction:

Cardiac tamponade resulting from malignant pericardial effusion is an uncommon presentation of various extra cardiac malignancies. Lung carcinoma leads the most common malignancy involved, followed by carcinoma of stomach, pancreas, kidney, ovary, mediastinal rhabdomyosarcoma, malignant lymphoma and leukaemia¹. This report describes a case of bilateral infiltrating duct cell carcinoma of breast in 35 years old lady who presented with cardiac tamponade. Here we will focus on management of the patient with a diagnosis of massive pericardial effusion with cardiac tamponade and outline of treatment plan.

Case report:

A 35 year old woman presents with a five days history of progressively worsening diffuse chest pain radiating to back with heaviness. The pain was described as dull ache and had been associated with shortness of breath and productive cough with white frothy sputum. There was an

additional history of orthopnoea. She was a diagnosed case of bilateral ductal cell carcinoma of breast. She did not receive any specific treatment regarding her malignancy. She was normotensive, nondiabetic, non smoker and there was no history of drug allergy. She gave family history of breast carcinoma. Clinical examination revealed a Jugular venous pressure raised at 6 cm, wheeze audible through the left side of chest, muffled heart sound and bilateral crepitation in the lungs.

Electrocardiogram showed a sinus tachycardia at 120 bpm and low voltage Electrocardiogram (figure-1).

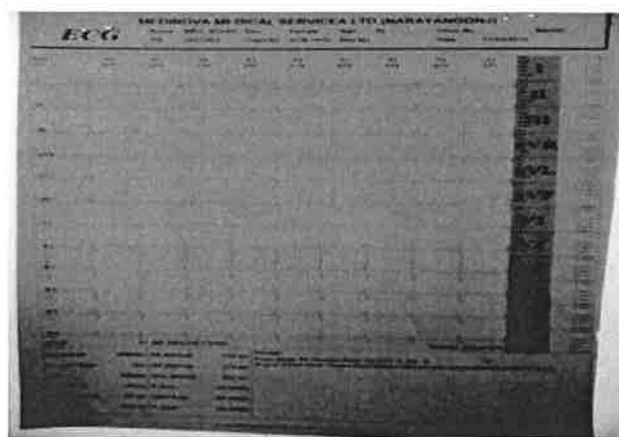


Fig-1: Showing low voltage ECG.

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Chest x-ray demonstrates a large globular heart (figure-2).

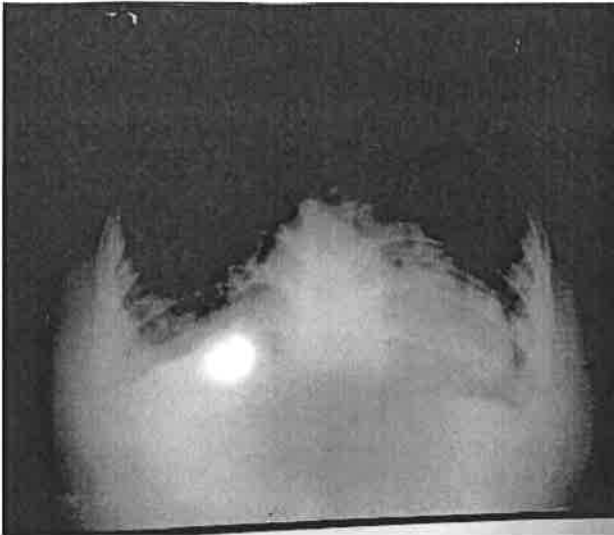


Fig-2 : *Pericardial Effusion (large globular heart)*

The clinical impression formed was of a pericardial effusion and an echocardiogram performed urgently confirmed the presence of 30 mm large pericardial effusion with evidence of cardiac tamponade- diastolic collapse of right atrium and ventricle, respiratory phasic variation present in Inferior-venacava.

An urgent pericardiocentesis was carried out and a subxiphoid drain was inserted under direct vision. After tube insertion five hundred (500) ml blood stained fluid was drained (Figure-3).



Fig-3: *Pericardial fluid (Haemorrhagic)*

The fluid was sent for biochemistry, microbiological analysis and cytology. Over the following 5 days a further 550ml of pericardial effusion was drained via the drain tube. Fluid sent for cytology and cytological report was numerous lymphocytes together with the malignant cells consistent with ductal cell carcinoma.

A subxiphoid pericardial window drainage was done without any complication (figure-4).



Fig-4: *Subxiphoid pericardial window*

The patient and patients party was informed about procedure and prognosis of disease. Patient was referred to oncology department for further management.

Discussion:

The development of malignant pericardial effusion with disseminated malignancy is not uncommon, particularly in patients with lung cancer, breast cancer, lymphoma, leukaemia². They account for approximately 75 percent of malignant pericardial effusion that are clinically diagnosed³. Nevertheless, any tumour can potentially involve the pericardium and result in effusion⁴. Recogniz-

ing its presence is particularly important because of its life threatening potential of cardiac tamponade. Further more in a review of 55 patients with cancer who had pericardial disease, Thurber and co-workers found the pericardial involvement resulted in or contributed significantly to the cause of death in 85% patients⁵. Thus, therapeutic interventions directing at controlling this complication of malignancy, if successful, result in prolonging survival. Malignant pericardial effusion sufficient to require drainage is a poor prognostic factor, with reported median survival of 6 months⁶.

Other common causes of pericardial effusions include acute myocardial infarction, PCI, uraemia, tuberculosis, infection, connective tissue disorder and trauma. The aetiology is unknown in 40-85 percent of cases⁷. Patient's presentation and development of symptoms depend on three principle factors-the volume of pericardial effusion, the rate of accumulation of fluid and the elasticity of the pericardium. Larger volume of effusion is better tolerated if rate of accumulation is slow and pericardium elasticity is high.

Patients do infrequently present in a state of hemodynamic embarrassment secondary to pericardial tamponade from their effusion. Clinical parameters suggesting this include hypotension, tachycardia, elevated JVP, muffled heart sound, oliguria and pulsus paradoxus. ECG changes include low voltage complexes and ST segment changes that can mimic those seen in pericarditis. The diagnosis is confirmed by Echocardiography and findings indicating tamponade include diastolic collapse of right atrium or ventricle with respiratory Doppler variation in transvalvar flow⁸. Most of this findings correlate with our patient.

The treatment of cardiac tamponade is drainage of the effusion. Medical measures should only be utilized whilst arrangements for this are made and should not be viewed as alternatives. Intravenous resuscitation in the volume deplete patient may boost right heart filling pressures, whilst mechanical ventilation increases intra thoracic pressure thus impeding right sided filling pressure and can therefore be counter-productive^{9,10}.

The major indications of pericardiocentesis are to relieve an impending cardiac tamponade and to palliate symp-

oms. It also provides important information in patients without a confirmed diagnosis. Pericardiocentesis should be carried out in a cardiac catheter laboratory by experienced staff with appropriate nursing and technical support. Rarely clinical urgency will necessitate 'blind' intervention in less than ideal facilities. This should be regarded as only being indicated in an absolute emergency. A 15 cm 18 gauge pericardiocentesis needle should be inserted just left of the xiphoid process until just behind the bony cage. It should then be angled at about 20° to the abdominal wall, aiming for the left shoulder tip. Lignocaine should be infiltrated as the needle is advanced and repeated aspirations should be rewarded with a feeling of 'give' once access to the pericardial sac is achieved¹¹. Here we pericardiocentesis was done by subxiphoid pericardial window formation under local anaesthesia. There was no use of any inotropic support. Post operative period was uneventful.

This procedure may be associated with significant morbidity and mortality including arrhythmia, damage and perforation of myocardium, damage to coronary, pericardium, haemothorax, arterio-venous fistula, pneumothorax and more rarely damage to the liver and leakage of blood and bile¹². In this patient these type of complications were not developed.

Pericardial window formation prevents pericardial fluid reaccumulation following the removal of a pericardial drain tube. This can be done by thoracoscopy or by subxiphoid approach. where thoracoscopy is unavailable a minithoracotomy may be used instead. The thoracoscopic technique permits visualization of the pericardium and pleura to allow adequate tissue to be sampled for histology when the underlying cause of pericardial effusion is uncertain and is generally preferred for when pleural drainage is needed as well. However in malignant pericardial effusion it risks contamination of pleural space with cancerous cell and a subxiphoid approach is utilized. A retrospective analysis comparing subxiphoid and thoracoscopic techniques found they had similar recurrence rates, portoperative complications, length of stay and need of intensive care unit admission¹³.

Conclusion:

Pericardial effusions are recognized complication of malignancy. Echocardiography plays a fundamental role in its diagnosis. Recognizing its presence is particularly important because of life threatening potential of cardiac tamponade. Subxiphoid Pericardial window drainage is a safe and life saving procedure in expert hands for treatment of cardiac tamponade.

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