

AN UNUSUAL CASE OF PERICARDIAL EFFUSION WITH IMPENDING TAMPONADE IN A YOUNG FEMALE.

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Sincerely,

Abstract

A pericardial effusion refers to the accumulation of excess fluid in the pericardial sac
surrounding the heart. The causes of pericardial effusion can be infectious or non-infectious.
Viral pericarditis leading to effusion and tuberculous pericardial effusion are the most
common causes in the developed and developing countries respectively. Bacterial and
parasitic etiologies are less common. We report an interesting case of pericardial effusion in a

young female without any history of previous comorbidities who was diagnosed as T cell lymphoblastic leukemia after further investigations.

Introduction

A pericardial effusion refers to the accumulation of excess fluid in the pericardial sac surrounding the heart. Fluid accumulated can be transudative, exudative or sanguineous and may contain infectious organisms or malignant cells. Hence, Causes of pericardial effusion can be infectious or non-infectious. Infectious causes include viral, bacterial, fungal and even parasitic pathogens. Viral pericarditis leading to effusion and tuberculous pericardial effusion are the most common causes in the developed and developing countries respectively.¹ One of the non infectious causes include the neoplastic including both metastatic disease and primary cardiac tumours. In patients who have pericarditis and pericardial effusion coexisting, malignancy is more prevalent, ranging between 12% and 23%² Among the causes of malignant pericardial effusions, the most common is that of lung cancer and very rarely leukemias present as pericardial effusions or cardiac tamponade. Hematological malignancies have wide range of presentations. The most common presentations include leukemia, hypercalcemia, lymphadenopathy, hepatosplenomegaly and skin lesions. We report an interesting and an unusual case of pericardial effusion in a young female without any history of previous comorbidities who was diagnosed as T cell lymphoblastic leukaemia after further investigations.

Case presentation

27 year old young female presented to the Emergency Department(ED) with complaints of shortness of breath and chest pain since one month. She reported that her shortness of breath had been gradually progressed over the 2-3 days and was worse with exertion. She also complained of mild cough relieved on sitting position. She had no complaints of fever, palpitations, bleeding or and bruises over the body. She was admitted in a private hospital for the same initially and later on shifted to our hospital. On presentation in the ED, her Blood pressure was 90/70 mm hg, Heart rate was 140 beats per min, saturation was 98% on 4 litres of oxygen mask and respiratory rate was 34 breaths per minute. She was conscious and well oriented. Respiratory system examination revealed decreased air entry on the right side whereas all other systems were normal on examination. Patient had right sided pneumothorax and cardiomegaly on Chest x ray (Figure A and B shows the Xray findings on presentation and after treatment respectively). Intercostal drainage tube was put for pneumothorax.



Fig A : On Presentation

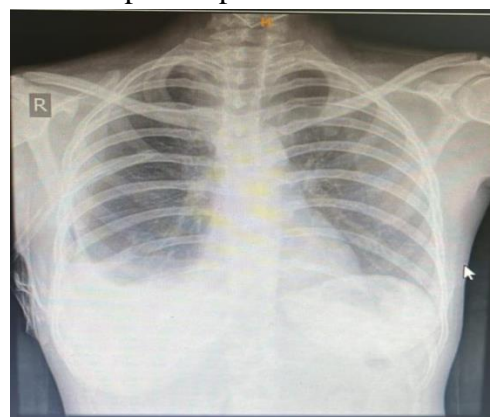


Fig B : After Treatment

An electrocardiogram revealed low-voltage complexes. 2D-echocardiography was suggestive of massive pericardial effusion with impending tamponade. Pericardiocentesis was done and 550ml of hemorrhagic fluid was removed and sent for histopathological, routine microscopic and culture examination. Haemogram showed – hemoglobin – 10.7 , TLC -88400 , DLC – Lymphocytes(11) metamyelo+neutrophils+band cells(2) , platelet count - 77000 , Peripheral smear revealed marked leucocytosis with presence of approximately 85% blast cells suggestive of acute leukemia. Cytology of pericardial fluid revealed high cellularity comprising predominantly of monomorphic large atypical cells with a large number of leukemic cells in a hemorrhagic background. Bone marrow examination confirmed the diagnosis (replacement by neoplastic round cells resembling large lymphocytes) of acute lymphoblastic leukemia. Figure C and D shows the cells of normal myeloid series that are suppressed and replaced by neoplastic round cells resembling large lymphocytes. The cytoplasm of cells is agranular and the nuclei showed 1-2 nucleoli and clefting.

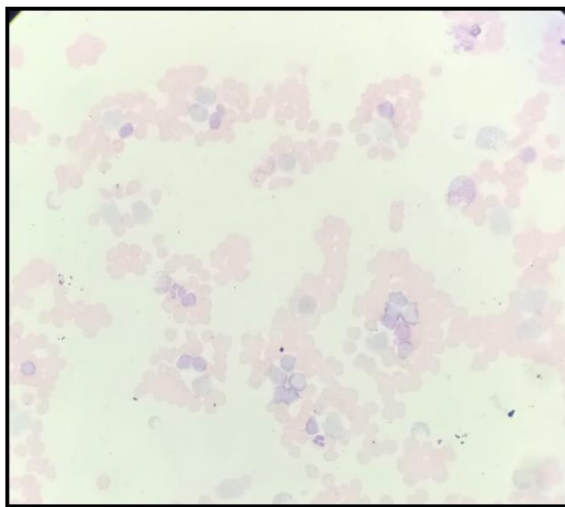


Figure C

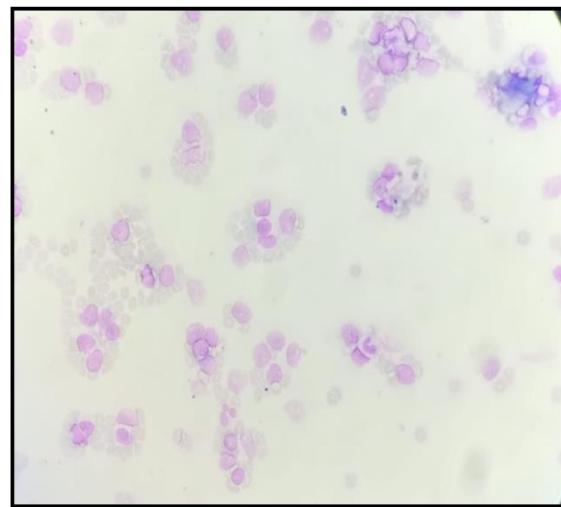


Figure D

A diagnosis of T-cell acute lymphoblastic leukemia (FAB L1) was made on flowcytometry. The patient was started on the ALL chemotherapy induction phase (Steroids + intrathecal methotrexate + Vincristine + Daunorubicin + L-asparaginase). Patient's general condition improved and repeat 2D-Echo showed non-tappable pericardial effusion and the hemogram became normal. The patient is currently in the Consolidation phase of the chemotherapy regimen and is doing well.

Discussion

Pericardial effusion is an acute or chronic accumulation of fluid within the pericardial space and it can be seen in all ages and populations. The main etiology varies by age, geography and comorbidities.¹ The clinical presentation of pericardial effusion varies from an incidental finding to life threatening cardiac tamponade. The pericardium due to its limited elasticity causes cardiac tamponade in acute stages even if the fluid is 100 ml to 150 ml. The presence of Beck's triad (muffled heart sounds, hypotension and jugular venous distension) should raise the suspicion for cardiac tamponade.³ Pericardial effusion leading to pericardial tamponade should be considered as a differential for patients presenting with hemodynamic instability.

Pericardial effusion has a broad spectrum of etiology including infectious, inflammatory, neoplastic, trauma, cardiac, vascular and idiopathic. The prevalence of pericardial involvement in malignant neoplasms in various clinical studies and autopsy series ranges from 5% to 20% and carries poor prognosis.⁴ Leukemias presenting as a pericardial disease is a very rare.

In a study of Sampat et al; which was conducted in 2009 to know the overall prevalence and therapeutic relations of pericardial effusions in leukemias. The overall prevalence was 21.7%, 21.1% and 19.9% in patients with Acute Myeloid Leukemia (AML), Acute Lymphoblastic Leukemia (ALL) and Myelodysplastic Syndrome (MDS) respectively.⁵ ALL is a neoplasm of B cell or T cell and the diagnosis is confirmed by peripheral blood smear and bone marrow biopsy. Flowcytometry further provides the confirmed diagnosis about the type of ALL (B cell or T cell). Most common type of ALL is the B cell type (about two third). In a study conducted in United states, showed that B cell ALL had a higher survival rate as compared to T cell ALL among the young and converse occurred at the older ages.⁶ Hence, we reported a rare case of a patient who presented with symptoms of pericardial effusion with impending cardiac tamponade and was diagnosed as T cell ALL after the necessary investigations and tests.

Conclusion

Hematolymphoid malignancies presenting with only pericardial effusion as an initial sign are rare. Both clinicians and cytopathologists need to be aware of rare instances in which ALL may present with a pericardial effusion. The abnormal lymphoid cells found in the pericardial fluid in such situations need to be interpreted cautiously, as their presence is of clinical significance.

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