



BILATERAL MALIGNANT PLEURAL AND PERICARDIAL EFFUSION AS AN INITIAL MANIFESTATION OF ACUTE LYMPHOBLASTIC LEUKEMIA: A RARE PRESENTATION

Immunohematology

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ABSTRACT

Acute lymphoblastic leukemia rarely manifests with pericardial and pleural effusion as an initial presentation of the disease. It is imperative to diagnose these type of cases promptly and accurately in order to start timely therapy. We present a case of a 27-year-old-male who presented to the emergency department with severe respiratory distress. Chest X-ray and CT thorax showed massive pericardial and bilateral mild pleural effusion. Cytological examination of the pericardial fluid led to the diagnosis of underlying acute lymphoblastic leukemia. Further, hemogram, bone marrow aspirate, and flow cytometry analysis confirmed the diagnosis of T-lineage acute lymphoblastic leukemia. The patient responded dramatically to the induction chemotherapy with the complete resolution of the pericardial and pleural effusion. The patient is on follow up at present and doing well. This case highlights the importance of the early diagnosis of acute leukemia by cytopathological analysis of body cavity fluids.

KEYWORDS

Pleural, effusion, pericardial, leukemia, chemotherapy.

CASE REPORT

A 27-year-old male presented with chief complaints of progressively increasing breathlessness, dry cough, chest pain, and low-grade fever for 10 days. Physical examination revealed muffled heart sounds, decreased breath sounds inferiorly on the bilateral chest wall and mild splenomegaly. Chest X-ray revealed mild bilateral pleural effusion, mediastinal widening and increased cardiac silhouette (Figure 1). CT thorax showed massive pericardial effusion and moderate right and mild left-sided pleural effusion (Figure 2).

Immediately, the pericardial sheath was inserted and 500ml pericardial fluid was aspirated. The pericardial fluid sent for biochemical and cytological analysis (Figure 3) demonstrated exudative effusion and the Total Leucocyte Count (TLC) of 10100/cumm with 98% immature lymphocytes/blasts and 2% granulocytes. The CBC revealed mild anemia (Hb: 11.3 gm%), leukocytosis (27700 cells/mm³) and mild thrombocytopenia (platelets: 98000/mm³). The peripheral smear showed the presence of 90% blasts, 6% lymphocytes and 4% neutrophils. Bone marrow examination illustrated a blast population with mirror-hand appearance. Further, flow cytometric analysis confirmed the diagnosis of T-cell ALL. Immediately, BFM-90 chemotherapy protocol for acute lymphoblastic leukemia was started to which the patient responded well with a resolution of his pericardial and pleural effusion leading to significant improvement in his respiratory distress.



(Figure 1): Chest X-Ray

(Figure 2): CT Thorax

(Figure 3): Cytopathology

DISCUSSION

Acute lymphoblastic leukemia commonly presents with the constitutional symptoms and the symptoms due to anemia, neutropenia, and thrombocytopenia. Very rarely, acute lymphoblastic leukemia can present with malignant effusion as an initial presentation (1). The malignant effusion is commonly observed in solid tumors and lymphomas (2). In acute leukemias, the effusion can occur due to infection, the extramedullary infiltration of serosal surfaces by blasts and sometimes during therapy related to the use of drugs.

Extramedullary infiltration by leukemic cells lead to hepatosplenomegaly, lymphadenopathy, bone pain, granulocytic sarcomas, leukemia cutis, gingival and central nervous involvement.

In literature, a very few case reports of malignant pleural and pericardial effusion that have led to the diagnosis of ALL are available. Faiz et al., in the series of 111 cases of pleural thoracentesis in leukemic patients showed acute myeloid leukemia (69 cases), acute lymphoblastic leukemia (7 cases) and myelodysplastic syndromes (15 cases) as the etiology of effusions. Amongst these cases bacterial or viral infections associated effusions were observed in 47% and underlying malignancy was found in 36% of cases (3). Other possible causes are attributed to secondary malignancies, associated autoimmune diseases and treatment toxicities due to chemotherapy, radiation or bone marrow transplant. Dasatinib, a tyrosine kinase inhibitor is associated with exudative pleural effusion in approximately 20%.

The prognostic significance of pleural involvement in leukemia is interpreted differently by different authors. Few are of the opinion that it does not affect the rate of remission and survival, while others report a dismal prognosis. Beside this, an isolated relapse of leukemia without bone marrow recurrence can occur at these extramedullary sites (2).

These effusions usually respond well to induction chemotherapy for primary malignancy. However, few patients may deteriorate and land into respiratory failure (4). Such situations may sometimes warrant intrapleural chemotherapy and chemical sclerosis (3).

Proper cytological and biochemical analysis of any accumulated body cavity fluid is necessary to diagnose an unsuspected malignancy which will aid in the early introduction of an appropriate treatment.

CONCLUSION

It is difficult to diagnose an unsuspected malignancy in absence of typical presenting features of the disease. Although, most of the times cases of malignant pleural or pericardial effusion have a known underlying etiology but sometimes such effusions can be the first manifestation of an underlying undiagnosed hematological malignancy.

Conflict of Interest:

No conflict of interest is declared.

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