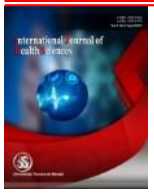

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Cardiac Tamponade as the Initial Presentation of T-Cell Lymphoblastic Lymphoma in a Young Female: A Case Report

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cardiac tamponade;
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mediastinal mass;
case report;
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Abstract

T-cell lymphoblastic lymphoma (T-LBL) is a rare and aggressive subtype of non-Hodgkin lymphoma. It often presents with mediastinal masses, but its initial manifestation, cardiac tamponade, is exceedingly uncommon. We report the case of a 24-year-old female presenting with progressive dyspnea due to large pericardial effusion with tamponade physiology, leading to the diagnosis of T-LBL. The patient underwent partial pericardiectomy followed by immunophenotyping that confirmed the diagnosis. Chemotherapy was initiated with a favorable response. This case highlights the importance of considering lymphoma in young patients with unexplained pericardial effusion and emphasizes the need for prompt diagnostic workup.

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Contents

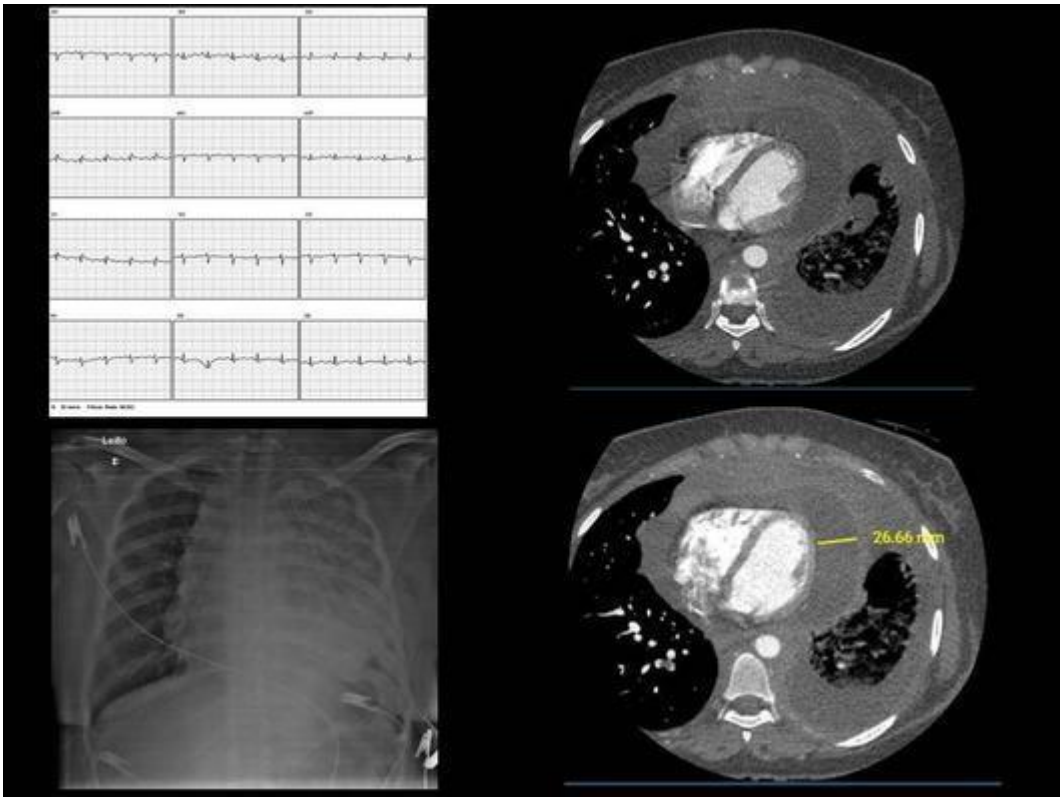
1 Introduction

T-cell lymphoblastic lymphoma (T-LBL) is a high-grade malignancy derived from immature T-lymphocytes. Although it accounts for a minority of adult lymphomas, it is notable for its rapid progression and frequent involvement in the mediastinum. Cardiac tamponade as a presenting feature of T-LBL is rarely documented in the literature. Kapur & Levin (2014) and Chaves et al. (2004), reported rare cases of T-cell neoplasms presenting primarily with pericardial effusion or tamponade, without classical signs of advanced disease. These reports emphasize the importance of maintaining a high index of suspicion in atypical presentations. Herein, we describe a case where tamponade physiology prompted investigation, leading to the diagnosis of T-LBL in a young adult.

2 Case Presentation

A 24-year-old previously healthy female presented to the emergency department with progressive dyspnea over two months. The condition worsened significantly in the week before admission, with associated dry cough, intermittent fevers, and night sweats. She denied chest pain or weight loss. On evaluation, she was tachycardic, tachypneic, and exhibited jugular venous distention. An urgent transthoracic echocardiogram revealed a large circumferential pericardial effusion with a maximum diameter of 26 mm and evidence of right ventricular diastolic collapse, consistent with cardiac tamponade.

Chest computed tomography confirmed the effusion and revealed a mediastinal mass. She underwent surgical partial pericardiectomy with drainage of hemorrhagic pericardial fluid. Laboratory investigations for tuberculosis, autoimmune conditions, and infections were negative. Pericardial fluid showed elevated adenosine deaminase and was exudative. Histopathology of the pericardium demonstrated atypical lymphoid cells with necrosis. Bone marrow immunophenotyping confirmed T-cell lymphoblastic lymphoma. The patient was referred to hematology and initiated on chemotherapy with a favorable initial clinical response (Levy & Tanaka, 2003).



(Top left) 12-lead electrocardiogram showing sinus tachycardia with low QRS voltage; (bottom left) chest X-ray demonstrating an enlarged, globular cardiac silhouette suggestive of pericardial effusion; (right) contrast-enhanced axial chest CT revealing a large circumferential pericardial effusion (maximum thickness: 26.66 mm) and an anterior mediastinal mass, consistent with T-cell lymphoblastic lymphoma. These findings supported the diagnosis of cardiac tamponade.

3 Discussions

Cardiac tamponade is a medical emergency caused by the accumulation of pericardial fluid under pressure. While it typically occurs in infections or metastatic disease, hematologic malignancies such as lymphoma are increasingly being recognized as culprits. T-LBL predominantly affects adolescents and young adults and is characterized by mediastinal masses, pleural and pericardial effusions, and systemic symptoms (Yamasaki et al., 2009).

The review by Shareef et al. (2021), demonstrated that pericardial involvement by lymphoma most commonly occurs after diagnosis, but in a subset, it may be the first manifestation. Other reports, including Kapur & Levin (2014) and Yamasaki et al. (2009), support this rare but significant presentation of precursor T-cell LBL as initial tamponade. Chaves et al. (2004) also described an ATLL case with initial pericardial effusion absent typical systemic signs. Histopathologic and immunophenotypic analysis remain essential for diagnosis. Precursor T-cell lymphomas often express cytoplasmic CD3, TdT, and CD7, as noted in both our case and in prior studies (Quadros et al., 2022; Ozdemir et al., 2015; Chaves et al., 2004).

Recognition of this entity is crucial as it requires prompt initiation of aggressive chemotherapy, often following protocols similar to those used for T-ALL (Thomas et al., 2004; Marks et al., 2009). Early intervention improves survival, especially when CNS involvement is excluded and intensive regimens like hyper-CVAD are employed.

4 Conclusion

This case reinforces the need to include lymphoma in the differential diagnosis of pericardial effusion and cardiac tamponade in young patients, especially when accompanied by mediastinal widening. Timely diagnosis through imaging, histology, and immunophenotyping, followed by urgent therapeutic intervention, is crucial to improving outcomes.

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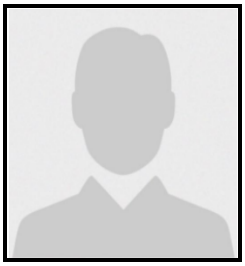

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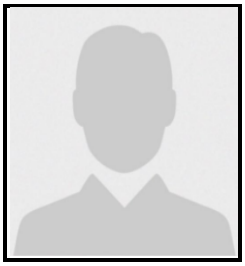

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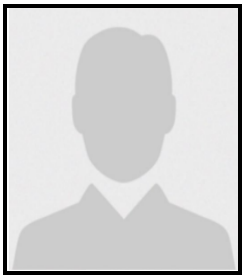

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