

Extensive Pleural Involvement in Pediatric T-Cell Lymphoblastic Lymphoma

Abstract

Lymphoblastic lymphoma (LBL) is the common non-Hodgkin lymphoma in childhood and adolescence. T-cell LBL (T-LBL) usually manifests with an anterior mediastinal mass and disseminated disease. We present a 12-year-old girl with progressive neck swelling and dyspnea for 1 year. Fluorodeoxyglucose positron-emission tomography/computed tomography done for pretreatment staging unveiled hypermetabolic lymph nodes on both sides of the diaphragm with splenic and bone marrow involvement. Apart from these, there was the extensive involvement of the left pleura. Biopsy and immunohistochemistry revealed T-LBL. The extensive secondary pleural involvement in pediatric T-LBL is rarely seen and needs to be reported.

Keywords: Fluorodeoxyglucose positron-emission tomography/computed tomography, Pediatric non-Hodgkin lymphoma, pleural lymphoma, T-cell lymphoblastic lymphoma

Introduction

Lymphoblastic lymphoma (LBL) is the second-most common non-Hodgkin lymphoma (NHL) in childhood and adolescence, accounting for 25%–35% of all cases. About 70%–80% of the majority is of T-cell lymphoblastic origin, whereas 20%–25% arise from B-cell lymphoblasts.^[1] Molecular imaging with 18-F fluorodeoxyglucose positron-emission tomography/computed tomography (FDG PET/CT) is widely accepted and recognized as the highly sensitive and specific imaging modality for lymphoma patients. It does baseline staging, evaluates treatment response, and helps in restaging in patients with both NHL and HL. In this case, FDG PET/CT unveiled disseminated stage IV NHL that diffusely involved left-sided pleura.

Case Report

A 12-year-old girl presented with intermittent fever, progressive neck swelling, and dyspnea for 1 year. Biopsy and immunohistochemistry from the cervical lymph node (LN) revealed T-cell LBL (T-LBL). Chest X-ray was suggestive of left-sided pleural effusion (not shown). A pleural effusion analysis did not reveal

malignant cells. Pretreatment FDG PET/CT staging unveiled hypermetabolic LNs on both sides of the diaphragm with pleural, splenic, and bone marrow involvement (Figure 1). Bone marrow biopsy was positive for lymphomatous infiltration. After FDG PET/CT, she was given a BMF-95 chemotherapy regimen. However, she was lost to follow-up during the COVID-19 pandemic.

Discussion

T-LBL is the second-most common pediatric NHL.^[1] It manifests with an anterior mediastinal mass that may lead to airway compression or superior vena cava syndrome. Pleural or pericardial effusions often accompany it.^[2] Primary pleural lymphoma is rare. All cases are due to two distinct NHL subtypes: primary effusion lymphoma or pyothorax-associated lymphoma.^[3] Primary pediatric pleural lymphoma is extremely uncommon.^[4] Secondary pleural involvement is familiar. It occurs through hematogenous or lymphatic dissemination or, by extension, from pulmonary or nodal disease. The pleural involvement presentation reflects pleural irritation (chest pain or cough) or lung compression (dyspnea).^[5] On CT, involvement of pleura can be seen as pleural effusion, plaques, and discrete pleural nodules.^[6] Although imaging features are

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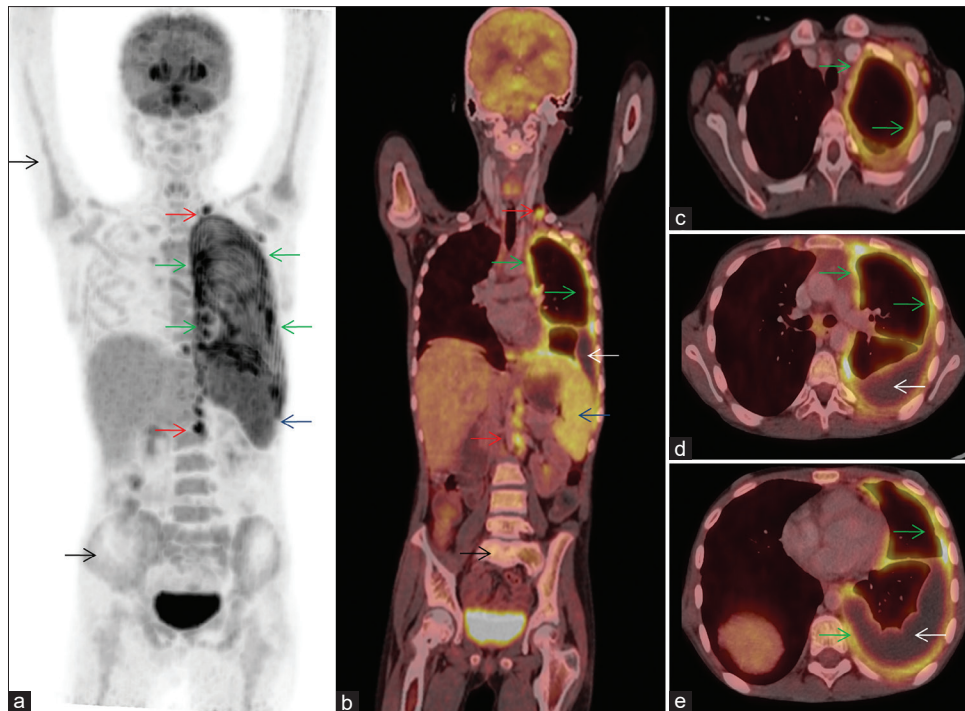


Figure 1: (a) F-18 fluorodeoxyglucose positron-emission tomography/computed tomography MIP image showing abnormal fluorodeoxyglucose avid lesions involving left cervical (red arrow), left hemithorax (green arrow), and upper abdominal regions (red arrow). Diffuse increased uptake is noted in the splenic region (blue arrow) and visualized bone marrow (black arrow). (b) Fused coronal positron emission tomography/computed tomography image showing fluorodeoxyglucose avid lymph nodes on both sides of diaphragm involving left cervical and upper abdominal region (red arrow). The left pleura has diffused involvement, including costal, mediastinal, and diaphragmatic pleura (green arrow). Left-sided pleural effusion is also noted (white arrow). Diffused increased fluorodeoxyglucose avidity is noted in the spleen (blue arrow) and visualized bone marrow system (black arrow). (c-e) Axial fused positron emission tomography/computed tomography images show fluorodeoxyglucose avid circumferential left pleural thickening with fissural involvement (red arrow) and moderate pleural effusion (white arrow). Lung parenchyma or thoracic wall were unremarkable

nonspecific and diagnosis may require a biopsy. LBL is an aggressive tumor with a poor prognosis. FDG PET/CT is a promising imaging modality for evaluating the disease extent of T-LBL.^[7] However, lymphomatous involvement of pleura is uncommonly reported.^[8] FDG PET/CT discloses visceral involvement and, therefore, helps determine appropriate treatment and prognostication.^[9] It noninvasively provides insight into the disease burden in cases such as this, thus avoiding pleural biopsy.

Conclusion

This uncommon case illustrates the role of FDG PET/CT in pediatric T-LBL with extensive secondary pleural involvement.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient (s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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