



Chest Wall Mass as the Dominant Presentation of Low-Grade B-Cell Non-Hodgkin's Lymphoma: A Case Report

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Abstract

Low-grade B cell non-Hodgkin's lymphoma with dominant presentation of chest wall mass is presented in this report. The patient, a 65-year-old woman, presented with pain, rising skin temperature and redness, and swelling on the right lower chest wall. The histopathological examination revealed non-Hodgkin's lymphoma; the staging fluorodeoxyglucose-positron emission tomography/computed tomography demonstrated stage IVE disease, with hypermetabolic active disease in the right anterolateral chest wall in the form of large soft tissue mass and subcutaneous tissue with underlying bony erosion with extension into right anterior cardiophrenic space and superiorly up to right second costosternal region along the right internal mammary vessels. This was along with hypermetabolic active right axillary, right supraclavicular and left inguinal lymphadenopathy, and thickened hypermetabolic posterior right pleura with amebolic right-sided pleural effusion. Bone marrow biopsy revealed uninvolved bone marrow. On follow-up after eight cycles of R-CHOP chemotherapy, the mass had completely resolved on contrast-enhanced computed tomography.

Keywords

- ▶ B cell non-Hodgkin's lymphoma
- ▶ FDG
- ▶ PET/CT
- ▶ staging
- ▶ primary extranodal lymphoma

Introduction

While the main lesions in non-Hodgkin's lymphoma (NHL) usually originate from lymph nodes, NHL can occur in any extranodal tissues or organs. Thomas et al described the extranodal manifestations of lymphoma in the trunk and extremities and reviewed the imaging features that aid in the diagnosis.¹ Primary extranodal (PE)-NHL is defined as the first occurrence of NHL in extranodal organs, when systemic lymphoma is ruled out by imaging. The most commonly involved extranodal organs in NHL are gastrointestinal tract, Waldeyer's ring, and nasal cavity, while

PE-NHL arising from the spleen, soft tissue, mediastinum, and other tissues is reported to be relatively rare.² Li et al reported an extremely rare PE-NHL arising in buttock soft tissue.³ A timely, accurate diagnosis of extranodal involvement of NHL can clarify the course of treatment and improve the prognosis of these patients. Fluorodeoxyglucose-positron emission tomography/computed tomography (FDG-PET/CT) is vital for improving staging accuracy, including the extranodal sites and disease aggressiveness of NHL, and for re-staging following treatment and can help in determining that the patients are neither under- nor over-treated. Staging following treatment and

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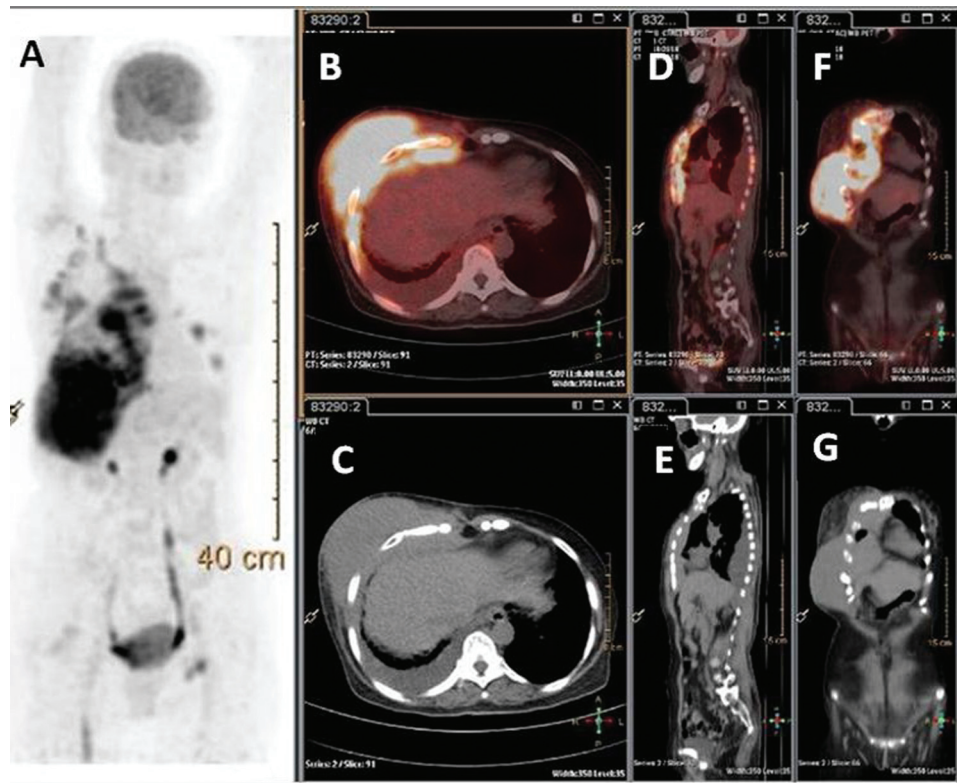


Fig. 1 (A) Maximum intensity projection positron emission tomography (PET) image, (B, C) fused positron emission tomography/computed tomography (PET/CT) and noncontrast CT axial images, (D, E) fused PET/CT and noncontrast CT coronal images, (F, G) fused PET/CT and noncontrast CT sagittal images showing metabolically active lesions in large soft tissue mass seen involving the right anterolateral chest wall and subcutaneous tissue extending overlying skin surface and underlying bony erosion with extension into the right anterior cardiophrenic space and superiorly along the right internal mammary vessels up to the level of right second costosternal region. Few hypermetabolic right axillary and right supraclavicular nodes and infradiaphragmatic left inguinal nodes were also noted along with hypermetabolic active disease in thickened posterior right pleural with amebiotic right pleural effusion.

can ensure that patients are neither under- nor over-treated.

Case Report

A 65-year-old postmenopausal female patient presented with a gradually worsening right lower chest wall pain and swelling for 7 weeks associated with rising skin temperature and skin redness. Pain worsened with deep breathing and partially improved on pain suppressor medications. She had a history of weight loss, night sweats, fever, and change in appetite. There was no recent trauma to the chest and no positive past medical history. There was no history of any underlying immunocompromised status. On physical examination, patient's vitals were stable with blood pressure of 110/78 mm Hg and pulse of 78/minutes. General examination was not remarkable and there were only just palpable few right axillary lymph nodes. Chest examination revealed a swelling of approximately 10×13 cm in size originating from the anterolateral chest wall just below the right breast. Swelling on palpation seemed fixed, firm, and nontender with smooth regular margins, with no overlying erythema, ulcer, or discharge. Fresh biopsy scar mark was visible. There was no organomegaly on palpation of abdomen. The rest of

the systemic examination was unremarkable. All routine blood parameters (i.e., complete blood count) and biochemistry were within normal limits. A contrast-enhanced computed tomography (CT) chest demonstrated multiple well-defined right-sided chest wall lesions with epicenter at ribs and costal cartilage: one lesion of $8 \times 5.3 \times 8.1$ cm at around first to fifth anterior ribs and cartilage on right side, another lesion of $8.9 \times 4.8 \times 5$ cm was seen with epicenter at right sixth rib anterior, and its subcutaneous extension in adjacent anterolateral chest wall was of $14 \times 10 \times 6$ cm. There were multiple areas of consolidation with one showing calcification and right pleural effusion. The differential diagnosis made was infective etiology or lymphoma. There were few enlarged right axillary and mediastinal nodes. The patient underwent axillary lymph node and chest wall mass biopsy that revealed atypical lymphoid proliferation with evidence of follicular lysis and prominence of marginal zone. Reed Sternberg like cells or granulomas were not seen. On immunohistochemistry, these atypical lymphoid cells were positive for CD20. The biopsy of chest wall mass revealed features suggestive of hematolymphoid malignancy (reported to be low-grade B cell type NHL). On immunohistochemistry, tumor cells expressed CD20 with focal clusters of plasma cells highlighted CD138, while negative for AE1/

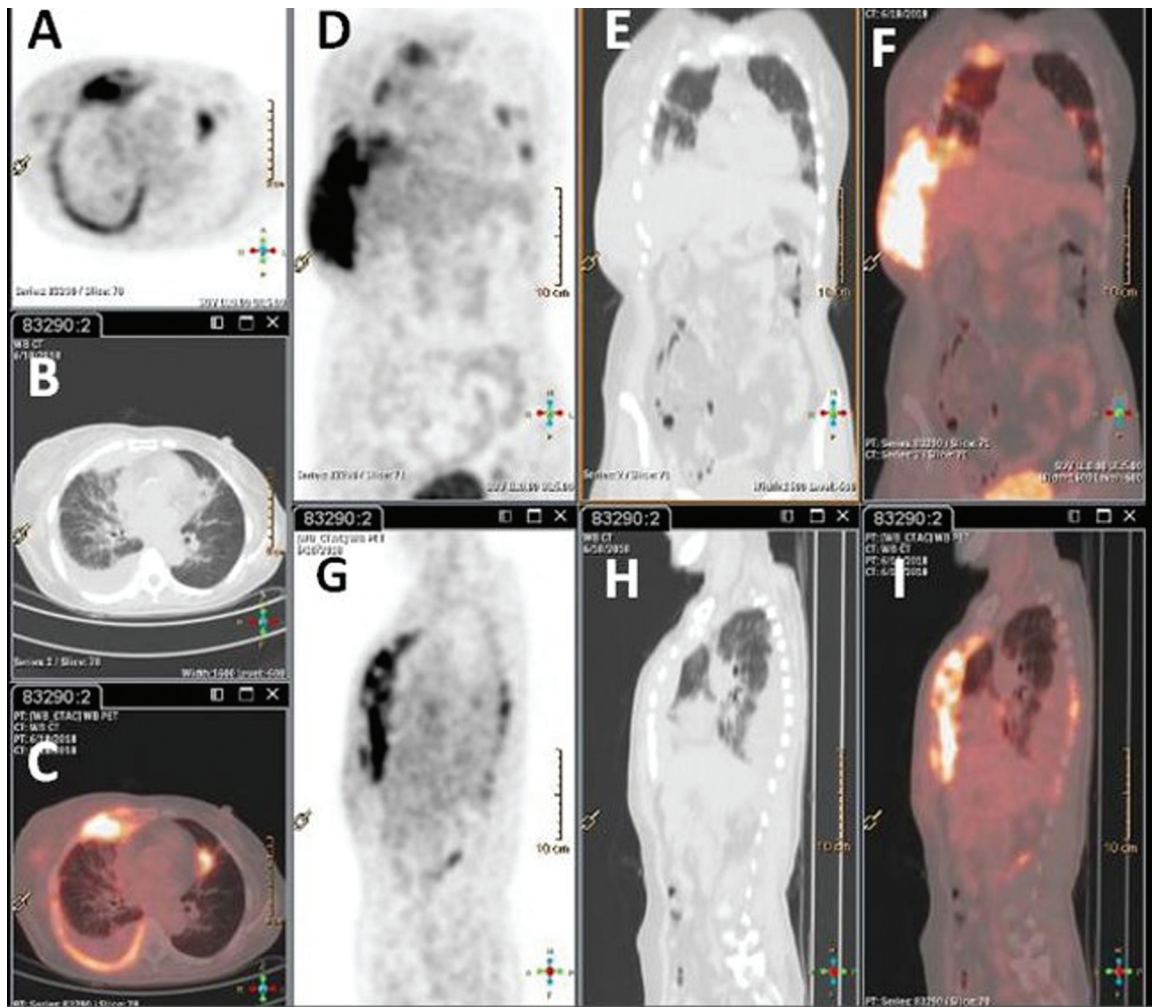


Fig. 2 (A–C) positron emission tomography (PET), computed tomography (CT) (lung window), and fused PET/CT axial images and (D–F) PET, CT (lung window), and fused PET/CT coronal images showing metabolically active lesions in large soft tissue mass seen involving the right anterolateral chest wall and subcutaneous tissue extending to overlying skin surface and underlying bony erosion; (G–I) PET, CT (lung window), and fused PET/CT sagittal images showing metabolically active lesions in thickened posterior right pleura with amebiotic right pleural effusion.

AE3, CD56, CD30. Mib1 labeling index was 5 to 10%. The bone marrow biopsy revealed no involvement of bone marrow.

A whole body ^{18}F -FDG PET/CT was referred for baseline staging. The scan was performed 60 minutes after intravenous injection of 6.7 mCi of ^{18}F -FDG, using a whole-body full-ring dedicated three-dimensional PET/CT scanner covering vertex to mid-thigh region. A whole-body noncontrast CT scan was acquired for attenuation correction and anatomical colocalization. Images were reconstructed using standard iterative algorithm (RAMLA). Images were reformatted into transaxial, coronal, and sagittal views. The ^{18}F -FDG PET/CT (–Figs. 1 and 2) revealed metabolically active FDG-avid large soft tissue mass involving the right anterolateral chest wall and subcutaneous tissue (measuring $11.9 \times 6.6 \times 14.7$ cm, maximum standard uptake value [SUV_{max}]: 9.72) (transverse \times antero-posterior \times cranio-caudal [$\text{TA} \times \text{AP} \times \text{CC}$]), extending to overlying skin surface and underlying bony erosion. Diffuse FDG uptake was noted in the irregular posterior pleura (SUV_{max} : 4.59) with wedge-shaped pleural thickening and right-sided pleural involvement (SUV_{max} : 5.28). FDG-avid multiple enlarged nodes

were noted involving right axillary node (largest size measuring 1.5×1.3 cm, SUV_{max} : 4.88), subcentimeter right supraclavicular node (SUV_{max} : 3.4), and left inguinal nodes (SUV_{max} : 5.29). Non-FDG avid few subcentimeter right upper paratracheal and subcarinal nodes were also noted. FDG avid subsegmental patchy consolidation was seen in the left lingula abutting the pericardium (SUV_{max} : 3.98), with non-FDG avid right moderate pleural effusion. Non-FDG avid diffuse ground glass densities were noted in the right middle and lower lobe with patches of consolidation. Rest of the whole-body survey shows unremarkable tracer distribution. Stage of NHL based upon the imaging findings was IVE. The patient received chemotherapy only. After eight cycles of R-CHOP chemotherapy, the mass had completely resolved on CT.

Discussion

The key features of the case were rarity of large volume extranodal chest wall B cell type NHL, especially as the presenting manifestation. The most common causes of

the chest wall lesions were usually metastasis or an invasion from adjacent malignancies.⁴ A study from Mayo Clinic showed that 79% of the chest wall tumors were malignant, only one out of ninety patients had lymphoma.⁵ The etiology of such presentation remains unknown. There is no correlation with epidemiology or prevalence.⁵⁻⁸ When a PubMed search for primary chest wall lymphoma was made, a total of four articles were retrieved. Shah et al in their report of a 52-year-old female patient of primary chest wall diffuse large B cell lymphoma (DLBCL) mentioned primary chest wall tumor is uncommon.⁹ In a study by Hsu et al, only 7 out of 157 patients presenting with isolated chest wall mass had NHL.⁴ Of the seven patients with NHL, five had DLBCL. Another study that evaluated the chest wall involvement by lymphoma showed that only 4 of 250 patients had chest wall involvement as the only site of disease.⁸ A rapid growth pattern and destructive masses that invade adjacent structures on CT are key findings of DLBCL. The treatment of DLBCL includes combination chemotherapy with or without radiotherapy.⁹ The presented case received chemotherapy only and responded well.

We explored the varied presentations in chest wall lymphomas. Nishiyama et al reported 60-year-old man complaining of right chest mass who revealed osteolysis and a surrounding soft tissue mass in the sixth right rib, and biopsy revealed diffuse, B cell-type NHL, measuring $7.5 \times 4.8 \times 3.0$ cm. En block resection of the tumor and chest wall was performed.⁹ Jain and Gupta presented nodular sclerosis Hodgkin's lymphoma in the sternum in a 30-year-old lady of Indian origin. The patient was treated with chemotherapy and responded well.¹⁰

We also reviewed the chest wall and spinal primary bone lymphoma in connection to this report. Both categories together represented 3 to 5% of all primary bone neoplasms and 5% of all extranodal NHL.^{11,12} DLBCL comprised the majority of cases.^{11,12} The patients of all ages were affected, with the most cases occurring in the 50 to 70-year age range.¹¹ Our case was also in line with the other case reports with age range of 50 to 70 years. It was reported that secondary chest wall involvement of bone and muscle is far more common than primary NHL and often occurs by direct extension of pleural, pulmonary, or mediastinal disease. This is more likely with aggressive NHL subtypes such as DLBCL. On rare occasions, suspected primary chest wall disease may actually originate as pleural lymphoma.

Conclusion

The unusual presentation of large sized chest wall mass as a dominant presentation of NHL was unique of the case, and in view of its rarity contributes to the existing literature of extranodal chest wall NHL.

Conflict of Interest

None declared.

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