Unusual Male Breast Involvement in Burkitt Lymphoma Detected on Fluorine-18 Fluorodeoxyglucose Positron Emission Tomography/ Computed Tomography

Abstract

Burkitt lymphoma (BL) is a poorly differentiated, aggressive form of B-cell non-Hodgkin's lymphoma. The clinical presentation of this disease is varied and may be nodal, extranodal, or both. BL of the breast, either primary or secondary, with bilateral breast involvement, is extremely rare. Herein, we present a case of BL in a 27-year-old male with unusual bilateral breast involvement.

Keywords: *Bilateral breast lymphoma, Burkitt lymphoma, fluorine-18 fluorodeoxyglucose positron emission tomography/computed tomography, male breast*

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A 27-year-old male patient presented elsewhere for complaints of progressive abdominal distention for 3 months. A contrast-enhanced computed tomography scan was subsequently performed. It demonstrated a mass lesion in the region of the pancreatic tail, with omental thickening, moderate ascites, and bilateral pleural effusion raising a high index of suspicion for malignancy. Ultrasonography-guided ascitic fluid analysis with flow cytometry was suggestive of Burkitt lymphoma (BL). The patient was subsequently administered three cycles of R-DA-EPOCH chemotherapy. Following chemotherapy, the patient consulted the medical oncology outpatient department of our institute. Physical examination revealed multiple nodular swellings in the region of the skull and left abdomen raising the suspicion of disease progression. The patient has then referred for a fluorine-18 fluorodeoxyglucose positron emission tomography/computed tomography (F-18 FDG PET/CT) scan [Figure (1A, a-d)]. The scan revealed extensive metabolically active cervical, mediastinal, and abdominopelvic lymph nodes with extranodal involvement of the pleura, liver, kidney, omentum, and muscles. Ascites and bilateral pleural effusion were also present. In addition, unusual FDG uptake was noted in bilateral breasts. This was deemed to be due to lymphomatous involvement given the extensive systemic involvement. The overall scan features were suggestive of disease progression. Following the scan, the patient was switched to salvage chemotherapy with rituximab gemcitabine dexamethasone cisplatin (R-GDP). F-18 FDG PET/CT scan was performed after two cycles of salvage chemotherapy [Figure 1 (B, e-h)]. There was a decrease in the extent of disease involvement with complete metabolic resolution of bilateral breast lesion.

BL is a fast-growing, aggressive form of B-cell non-Hodgkin's lymphoma characterized by hallmark translocation *t* (8;14). The resulting downregulation of c-Myc oncogene expression leads to the uncontrolled proliferation of medium-sized monomorphic cells with prominent nucleoli and a classical starry sky appearance on histology. Three variants of BL have been described by the World Health Organization – endemic (seen in areas with malaria endemicity and associated Epstein–Barr virus infection), immunodeficiency (associated with HIV), and sporadic.[1] Significant differences exist in clinical presentation across BL variants. However, regardless of the clinical presentation, biopsy and essential laboratory and imaging evaluation of BL should be carried out in an expedited

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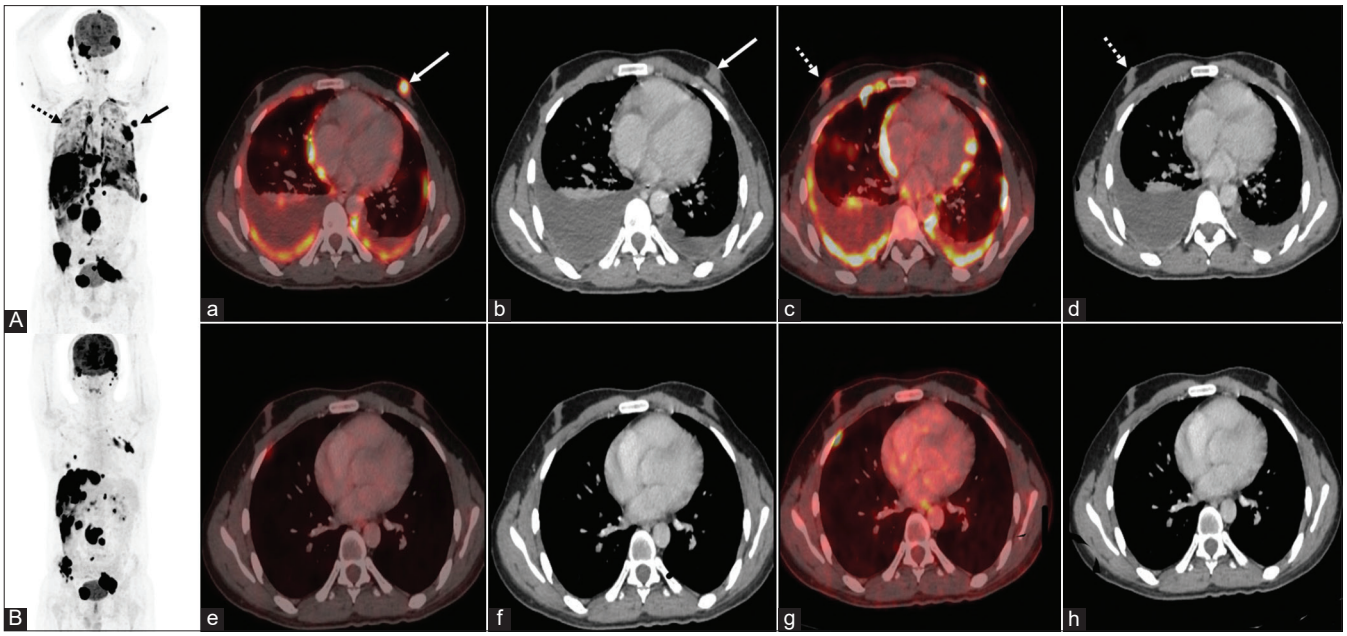

Figure 1: (A) MIP image showing an increased FDG uptake in bilateral breasts (black dashed and solid arrow), (B) MIP image showing resolution of FDG uptake in bilateral breasts. Top row: Axial fused PET/CT images (a and c) and CT images (b and d) show focal increased FDG uptake in the left breast parenchyma (white solid arrow) and right breast parenchyma (white dashed arrow). Bilateral pleural and pericardial deposits are also noted with bilateral pleural effusion. Bottom row: Axial fused PET/CT images (e and g) and CT images (f and h) show complete resolution of FDG uptake in both breast parenchyma. Resolution of the previously seen bilateral pleural and pericardial deposits with bilateral pleural effusion. FDG: Fluorodeoxyglucose, PET/CT: Positron emission tomography/computed tomography, MIP: Maximum intensity projection

manner given the highly chemosensitive nature of the disease and the benefit of early therapy initiation.[2] The abdomen is the most common site of involvement in sporadic cases of BL. Common diagnostic imaging features include bowel involvement, lymphadenopathy, ascites, and peritoneal nodules. Less commonly, solid organs such as the liver, spleen, pancreas, kidneys, and gonads may be involved. Thoracic involvement may be seen as pleural effusion, lymphadenopathy, lung parenchymal and endobronchial lesions, pericardial and myocardial involvement, and chest wall masses. Head and neck involvement can be seen in the form of jaw mass (most common in the endemic form), lymphadenopathy, and thyroid enlargement. Nervous system involvement may present as a discrete mass, meningeal, or nerve thickening. Bone marrow involvement in BL may be seen in up to 30% of the cases.[3] Rare cases of primary muscle involvement have also been described.[4]

There has been an emerging role of PET/CT in staging, response assessment, and detection of recurrence/relapse in BL.[3] Breast uptake in BL is a relatively rare phenomenon with very few articles describing the same on F-18 FDG PET/CT.[5-7]

Declaration of patient consent

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

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Conflicts of interest

There are no conflicts of interest.

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