Breast lymphoma: a rare breast malignancy mimicking benign breast disease and carcinoma

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In July 2020, a 52-year-old woman presented with a 1-month history of palpable right breast lump. Clinical examination revealed a hard mass at the upper inner quadrant of the right breast. No skin changes or nipple retraction were evident. Ultrasonography confirmed multiple oval circumscribed hypoechoic masses at the upper right breast measuring up to 2 cm that were considered likely benign (Fig 1). The lesions were mammographically occult (Fig 2).

The patient also reported non-specific abdominal pain and distension for a few weeks. Positron emission tomography–computed tomography (PET-CT) showed multiple hypermetabolic masses at the right breast (maximum standardised uptake value [SUVmax] 19.0, 16 mm) and abdominal lymphadenopathy (Fig 3). Ultrasound-guided core biopsy of the right breast mass confirmed diffuse large B-cell lymphoma (Fig 4). The patient was diagnosed with stage IV lymphoma with diffuse extranodal involvement of the right breast. Reassessment PET-CT showed progressive disease despite R-CEOP chemotherapy with enlargement and increased metabolic activity of the right breast lymphoma (SUVmax 23.7, 41 mm) and abdominal lymphadenopathy (Fig 5). Second-line chemotherapy and radiotherapy of the breast was administered.

The breast is an uncommon extranodal site of involvement by lymphoma because of the lack of lymphoid tissue. Breast lymphoma is a rare malignancy of the breast that accounts for <1% of all breast malignancies and <2% of all extranodal non-Hodgkin lymphoma.[1] Diffuse large B-cell lymphoma is the most common histological type in both primary and secondary breast lymphoma with a median age at presentation of 60 to 70 years.[1]

The clinical presentation of breast lymphoma is highly variable, so diagnosis is challenging. It

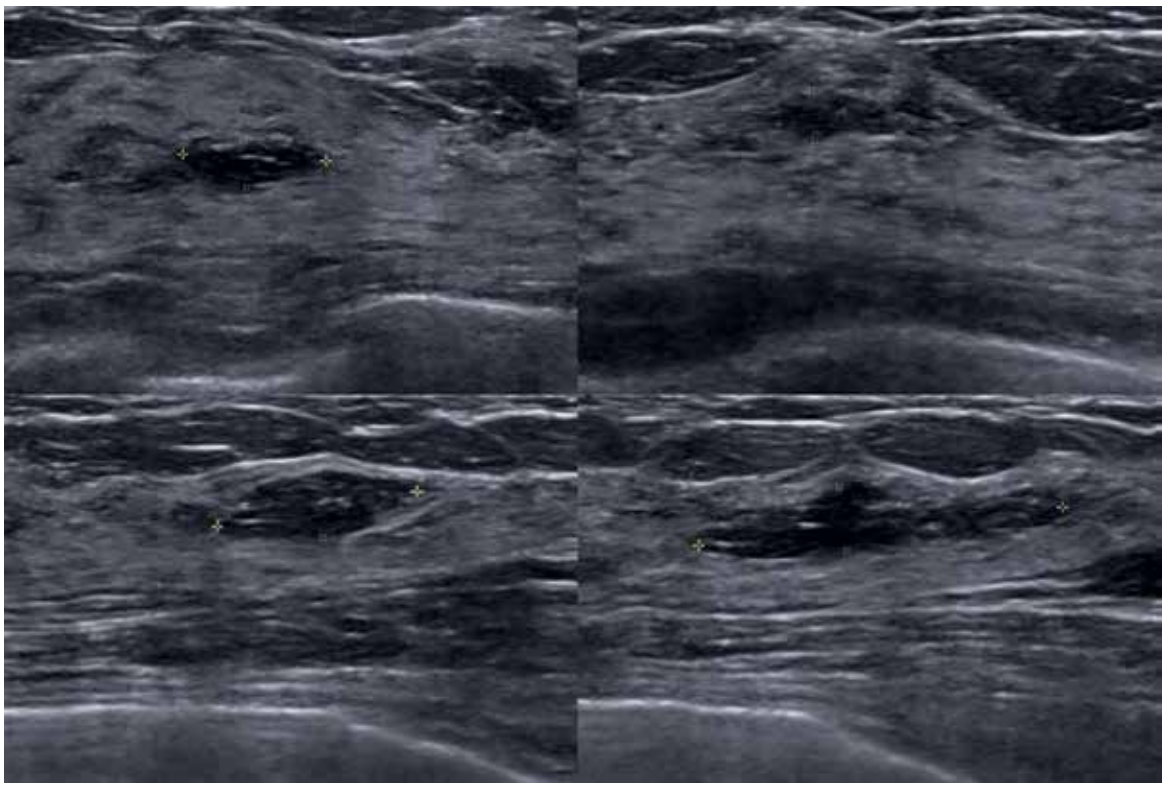

FIG 1. Breast ultrasonogram showing multiple benign-looking lobulated and oval circumscribed hypoechoic masses measuring up to 2 cm at the upper inner and upper outer quadrants of the right breast

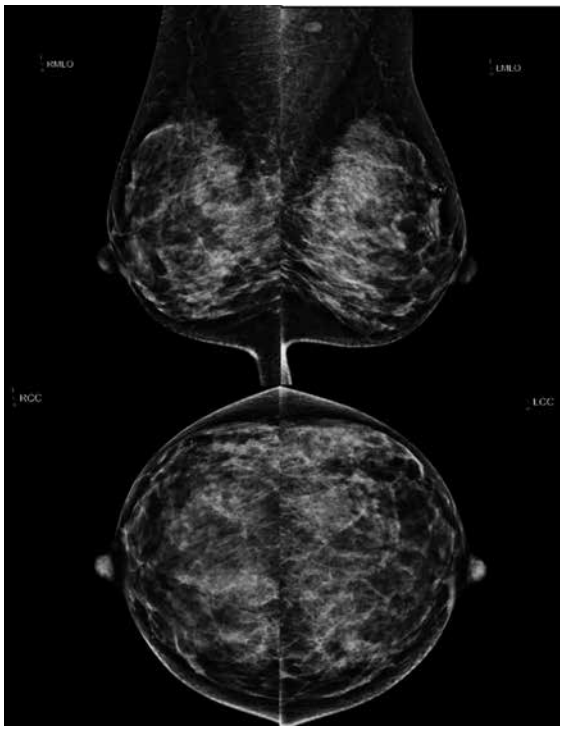

FIG 2. Bilateral mammograms are unremarkable. No focal mass or architectural distortion. No axillary lymphadenopathy

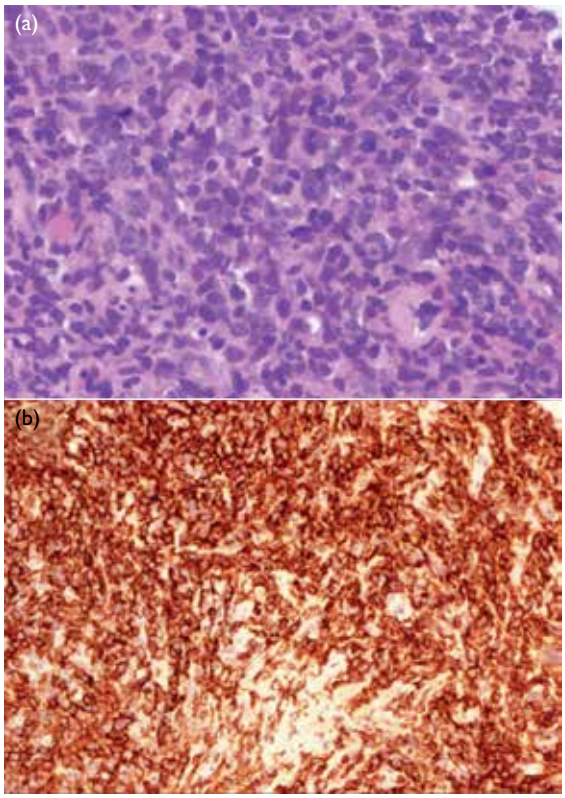

FIG 4. (a) Haematoxylin and eosin stain, 400× magnification: dense sheets of medium-to-large-sized and mitotically active atypical lymphoid cells that overrun breast parenchyma. (b) CD20 immunostain, 400× magnification: The atypical lymphoid cells are diffusely positive for CD20

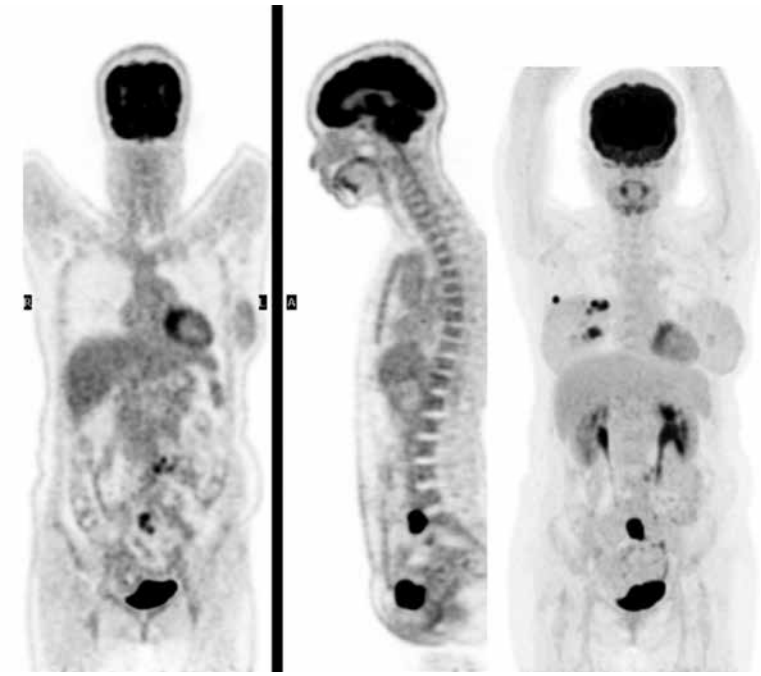

FIG 3. Positron emission tomography–computed tomography showing multiple hypermetabolic soft tissue masses at the upper outer, upper inner and lower inner quadrants of the right breast measuring up to 16 mm, with maximum standardised uptake value 19.0; and multiple hypermetabolic abdominal lymphadenopathies

commonly presents as a mass that mimics carcinoma, or skin inflammatory changes that mimic benign inflammatory breast disease or inflammatory breast cancer.[1,2] Axillary lymphadenopathy is uncommon.[1] However, unlike with breast carcinoma, nipple retraction or discharge and other skin changes are rare with breast lymphoma.[1,2]

Mammographically, breast lymphoma commonly presents as a solitary mass (69%-76%) and asymmetry (20%). It may also present as skin thickening, architectural distortion or lymphedema.[3,4] In contrast to breast carcinoma, spiculations, architectural distortion and microcalcifications are distinctively absent with breast lymphoma. Sonographically, breast lymphoma commonly presents as a parallel benign-looking hypoechoic mass without malignant features.[3,4] Ultrasonography alone cannot distinguish breast lymphoma from breast carcinoma or benign breast lesions such as fibroadenoma. However, it can guide tissue diagnosis when mammogram is negative. This is particularly helpful in Asian patients with dense breast tissue that lowers mammogram sensitivity.

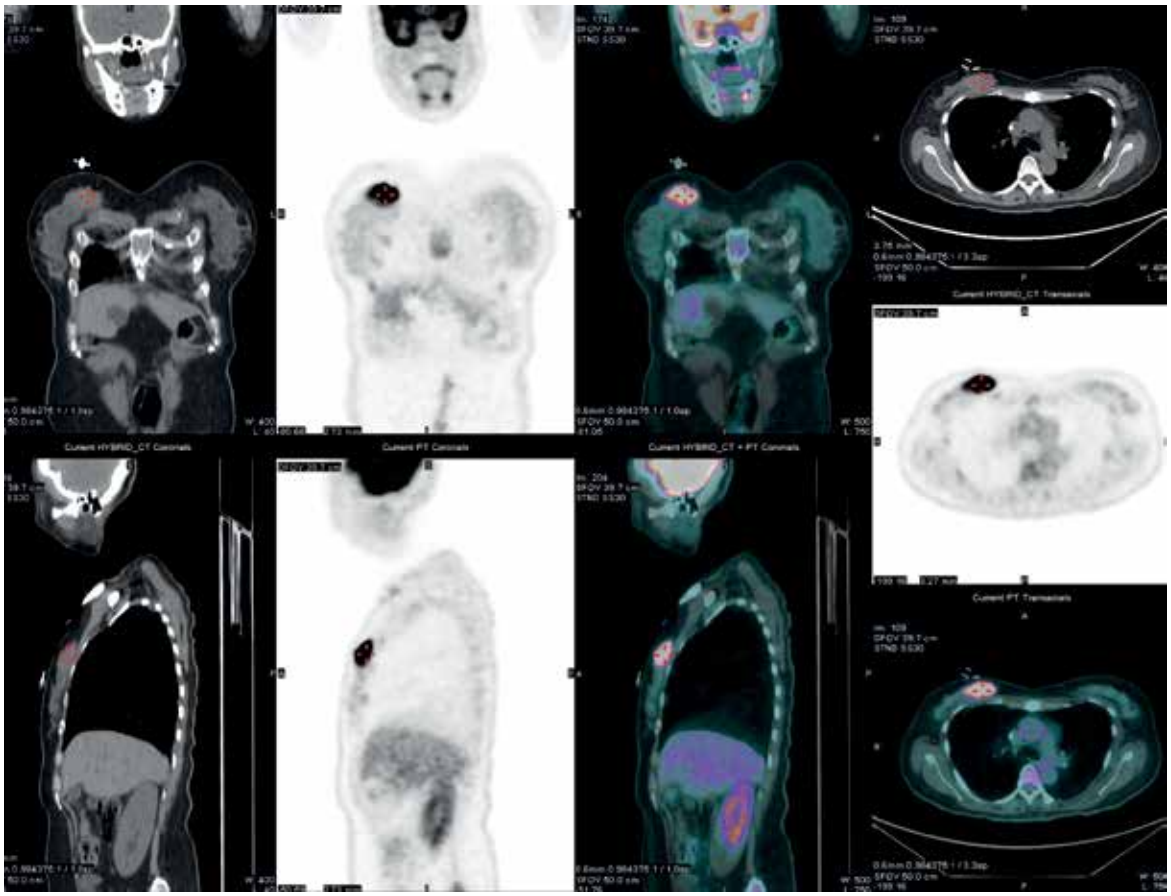

FIG 5. Reassessment positron emission tomography–computed tomography showing enlargement of biopsy-confirmed lymphoma at the upper inner quadrant of the right breast, with increased metabolic activity (maximum standardised uptake value 23.7, 41 × 21 mm)

A recent study has demonstrated that ^{18}F-fluorodeoxyglucose PET-CT can potentially differentiate between breast lymphoma and carcinoma.[5] The authors found that the median SUVmax for breast lymphoma (10.96) was significantly higher than that for breast carcinoma (4.76; specificity up to 96.3%).[5] Although the sonographic features of breast masses in our patient were absent, an SUVmax of 19.0 was unusually high for breast carcinoma. This raised the suspicion of secondary breast lymphoma rather than primary breast carcinoma with distant metastases. Histological diagnosis was required to guide appropriate treatment.

In conclusion, PET-CT can potentially differentiate between breast lymphoma and breast carcinoma. Increased awareness of breast lymphoma and correlation with radiological and pathological findings are essential for diagnosis.

Author contributions

Concept or design: All authors.
Acquisition of data: CPY Chien.
Analysis or interpretation of data: CPY Chien.
Drafting of the manuscript: CPY Chien.
Critical revision of the manuscript for important intellectual content: All authors.

All authors had full access to the data, contributed to the study, approved the final version for publication and take responsibility for its accuracy and integrity.

Conflicts of interest

All authors have disclosed no conflicts of interest.

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Ethics approval

The patient was treated in accordance with the Declaration of Helsinki and provided informed consent for all investigations and procedures, and publication.

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