ABSTRACT
Primary non-Hodgkin lymphoma of breast is a rare pathology, representing 0.5% of malignant breast tumors. We report a case of 52 year old female presenting with a large painful mass in left breast with ipsilateral axillary lymph node diagnosed on fine needle aspiration cytology as non-Hodgkin’s lymphoma. Breast lymphoma should be differentiated from other breast malignancies because of the differences in their treatment modalities. When breast lymphoma presents as a lump with axillary node, it clinically mimics breast carcinoma. Ultrasonogram and mammogram shows no characteristic features that can distinguish it from other breast malignancy. In such cases, FNAC becomes an important diagnostic tool that can differentiate PBL from other breast malignancy and avoid unnecessary surgery.

Key words: Breast lymphoma; diffuse large B-cell lymphoma (DLBCL); fine needle aspiration cytology (FNAC); primary breast lymphoma (PBL)

Introduction
Primary non-Hodgkin lymphoma (NHL) of the breast is rare, representing 0.5% of all malignant breast tumors, 1% of all NHLs and 2% of all extranodal lymphomas.[1] As for the lymphoid lineage, B-cell lymphomas of the breast are more common than T-cell lymphomas.[2] Currently, for diagnosing primary breast lymphomas (PBLs), the histologic criteria proposed by Wiseman and Liao (1972)[3] are accepted as the “standard” for differentiating a PBL from the secondary form.[4] The close anatomic proximity of mammary and lymphomatous tissue, absence of a previous diagnosis of an extra-mammary lymphoma, lack of evidence of a disseminated disease (except for the ipsilateral axillary nodal involvement) and an adequate quality of the histopathological specimen are the four accepted criteria.

Case Report
Clinical summary
A 52-year-old woman presented with a painful left breast mass of 3 months’ duration and left axillary lymph node enlargement of 10 days’ duration. The breast mass measuring 8 cm in its maximum dimension was mobile, tender and firm to hard in consistency. The overlying skin, nipple and areola were unremarkable. Hematological findings were within normal limits. No organomegaly or any other lymph node involvement (except for the palpable ipsilateral axillary node) was detected on ultrasonogram. Clinically, there was a suspicion of breast carcinoma. FNA of the breast mass and the axillary lymph node was performed by the standard procedure.
Cytologic findings
Aspirates from both the sites, revealing a similar cytomorphologic picture, were cellular with predominantly sheets and a few clusters of polymorphous population of lymphoid cells lacking typical reactive spectrum in a background displaying many lymphoglandular bodies. The cells comprised predominantly large cells admixed with some intermediate-sized cells and small lymphocytes. The large cells showed a scanty basophilic cytoplasm, round nuclei having a fine chromatin and small nucleoli; some of the nuclei were cleaved. Cytologic smears were interpreted as “suspicious of NHL” [Figure 1].

Histologic findings
An incisional biopsy was performed that showed a diffuse monotonous population of predominantly large lymphoid cells [Figure 2]. On immunohistochemistry (IHC), these cells showed a diffuse cytoplasmic positivity for CD20 and negative expression of cytokeratin. A final diagnosis of “Primary NHL of breast” was rendered.

Discussion
The breast is an uncommon site of malignant lymphomas. The secondary form of the disease is more common than PBL. The small amount of lymphoid tissue in the breast is attributed to the rarity of PBL compared with the other extranodal sites.

According to the World Health Organization classification system for breast tumors, malignant lymphomas of the breast are subdivided into diffuse large B cell lymphoma (DLBCL), Burkitt’s lymphoma, extranodal marginal zone B-cell lymphoma of mucosa-associated lymphoid tissue (MALT) type and follicular lymphoma. PBLs are usually NHLs of the B-cell lineage.

The age incidence of PBL varies. It occurs between 9 and 85 years. The median age of onset of PBL is 58 years. A few cases have been reported in males. A painless mass is the most common presentation of PBL (approximately 61% of cases). Other symptoms and signs include local pain (12%), local inflammation (11%) and palpable lymph nodes (25%). Almost always, the breast lymphomas are diagnosed by an excisional biopsy or FNAC. Our case of PBL was diagnosed by FNAC on excluding an extranodal spread of lymphoma elsewhere to the breast by a detailed clinico-radiologic examination. The presence of lymphoglandular bodies in the smear background is a useful indicator of the lymphoid nature of the cells. Thus, despite the uncommon occurrence of breast lymphomas, their presence along with atypical lymphoid cells suggested a possibility of NHL. Considering the breast location of the lesion, IHC with pan-cytokeratin (pan-CK) was performed to exclude breast carcinoma, which was negative.

Clinically, palpable hyperplastic intramammary lymph nodes often mimic mammary carcinoma. However, aspiration cytology in such cases shows a mixed population of lymphocytes, indicative of a reactive process. In the present case, despite the mixed population of cells, the lack of a classic reactive spectrum suggested a possibility of NHL and the monoclonal B cell population on IHC confirmed the diagnosis of NHL. The breast can be a site for “granulocytic sarcoma” or “chloroma,” the tumorous form of chronic myelogenous leukemia. The chloromas are recognized by the presence of mature myeloid cells, which were absent in our case. Further, the blood counts, peripheral blood smear and IHC findings were also not indicative of a chloroma.

The management of PBL is not yet standardized. However, similar to the nodal/gastrointestinal lymphomas, a diagnostic
biopsy or a limited surgery followed by chemotherapy accompanied by radiotherapy is recommended.[3] One of the recent studies emphasized the importance of differentiating PBL from breast carcinoma, which is important for avoiding unnecessary mastectomy in PBL.[3] Although there was a clinical suspicion of breast carcinoma, an appropriate pre-therapeutic clinical workup with an FNA suspicion of NHL and IHC confirmation on the needle biopsy specimen avoided an unnecessary mastectomy in our patient. Attention to features such as atypical lymphoid cells lacking reactive spectrum and the presence of lymphoglandular bodies served as “useful clues” to FNA diagnosis of breast lymphoma in our case.

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