Case Report

Primary Breast Lymphoma: a rare case report with emphasis on role of cytology, cell block and tru-cut biopsy in diagnosis

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Keywords: Lymphoma, Breast, Extranodal Lymphoma, FNAC, Cell-block, Immunohistochemistry

Abstract

Primary breast lymphoma (PBL) is a rare tumour of breast and constitutes <0.6% of all breast malignancies and 2.2% of extranodal lymphomas. More than 80% of the PBL are B-cell Lymphoma, the most frequent being diffuse large B cell lymphoma.

A sixty seven year old female presented with a 5X4 cm, firm, non-tender, mobile mass in lower-inner quadrant of left breast for last one month. Mammography suggested it to be a case of fibroadenoma. FNAC from the swelling diagnosed it as a case of Non-Hodgkin’s Lymphoma (NHL), with poorly differentiated ductal carcinoma as differential diagnosis. Cell block and tru-cut biopsy corroborated the FNAC findings. Immunohistochemistry definitely proved it to be a case of Primary Breast NHL.

PBL can present as an innocuous lump. Early diagnosis is important for better prognosis. FNAC along with cell block, tru-cut biopsy with immunochemistry can diagnose a case and unnecessary surgical intervention can be avoided. We are reporting this case because it is a rare case and to emphasize on the role of FNAC, cell-block and tru-cut biopsy in diagnosis to prevent unnecessary mastectomies.

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Introduction

The term “Primary breast lymphoma” (PBL) is used to define a malignant lymphoma primarily occurring in the breast in the absence of previously detected lymphoma localizations elsewhere in the body [1]. Primary breast lymphoma (PBL) represents 2.2% of extranodal lymphomas. It accounts for less than 0.6% of breast malignancies [2]. Although the origin of the lymphocytes within the breast giving rise to lymphoma is unclear, these tumors may arise from mucosal-associated lymphoid tissue (MALT) [2]. PBL might also originate in lymphatic tissue present within the breast adjacent to ducts and lobules, or from intramammary lymph nodes [3].

We report a case that was diagnosed as primary breast lymphoma and discuss the role of FNAC, cell block and tru-cut biopsy in diagnosis.

Case Report

A 67 year old female presented with a painless, mobile swelling in left breast for last one month. There was no prior trauma to the breast, pain or discharge from the nipples. Clinically a 5x4 cm firm, non-tender, mobile mass in left lower-inner quadrant was noted. Both axilla and opposite breast were normal. Systemic examination was also normal. Mammography suggested it to be a case of fibroadenoma [Fig. 1.1].

FNAC from the swelling was done by 23G needle and smears were stained with Leishman-Giemsa and Pap Stain. FNAC revealed sheets of large to intermediate round to oval cells in small clusters and also singly [Fig.1.2]. Cells had coarse chromatin, high N:C ratio, prominent central nucleoli and scanty cytoplasm [Fig. 1.2A,B]. Lymphoglandular bodies were present in the aspirate. No duct epithelial cells could be seen. Cytomorphological features were suggestive of Non-Hodgkin’s Lymphoma. Our differential diagnosis was poorly differentiated ductal carcinoma. A cell block was prepared with formalin fixation of needle aspirated sample and tru cut biopsy was also done from the lump using 18G Tru-cut gun. Cell block demonstrated similar picture as FNAC [fig.1.3]. Tru cut biopsy specimen showed linear tissue fragment having sheets of atypical cells with nuclear hyperchromasia, high N:C ratio and occasional nucleoli, with no evidence of tubule formation [Fig. 1.4]. FNAC, cell block along with tru-cut biopsy reports definitely prove it to be a case of Non-Hodgkin’s Lymphoma.

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To search for other sites of involvement Chest X-Ray and USG Abdomen were done and both were normal. Peripheral blood picture was also normal except mild anemia. To further prove our diagnosis the following immunochemistry panel was suggested from both cell block and tru-cut biopsy specimen: CD 20, CD 45, BCL6, ER, PR. CD 20, CD 45 and BCL6 were positive in both specimen and ER, PR were negative [Fig. 2]. These findings conclusively proved it to be a case of Primary Breast Lymphoma- Large B cell Variety. Patient was then put on chemo-radiation and is now doing well.

**Discussion**

Primary breast lymphoma is a rare tumor and often present as an innocuous lump. PBL shows a wide age distribution with a bimodal peak; with younger population showing bilateral involvement and older population showing unilateral involvement [4]. The diagnostic criteria for PBL, described by Wiseman and Liao [5], remain the standard definition for this disease. The specific criteria for the diagnosis of PBL include:

1. The clinical site of presentation is the breast.
2. A history of previous lymphoma or evidence of widespread disease are absent at diagnosis.
3. Lymphoma is demonstrated with close association to breast tissue in the pathologic specimen.
4. Ipsilateral lymph nodes may be involved if they develop simultaneously with the primary breast tumor.

More than 80% of PBL are B-cell lymphomas, mostly CD20+. The most frequent histopathologic types are: diffuse large B-cell lymphoma (DLBCL) which accounts for up to 50% of all PBL, follicular lymphoma (FL) – 15%, MALT lymphoma – 12.2%, Burkitt’s lymphoma (BL) and Burkitt-like lymphoma 10.3%. Other histological types of PBL include marginal zone lymphoma (MZL), small lymphocytic lymphoma (SLL), and anaplastic large cell lymphoma (ALCL). These lymphomas have been shown to be of a non-germinal centre B-cell phenotype with a high proliferation index and are thought to be associated with a poor outcome. Although less common than breast carcinoma, PBL is often clinically indistinguishable from other breast tumors.

Our case was an elderly female with unilateral lump. It was clinically and also radiologically thought to be a case of

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**Fig. 2.** Cell Block preparation and Tru-cut Biopsy: Neoplastic cells show strong positivity for CD20, CD45, BCL6 and negative for ER, PR.
fibroadenoma. But FNAC, cell block along with tru-cut biopsy proved it to be a case of Non-Hodgkin’s lymphoma. Thorough search for other site of involvement came negative. The patient was not diagnosed with similar condition in the past. So, as per Wiseman and Liao criteria it was definitely a case of primary breast lymphoma. We demonstrated that FNAC and Cell Block preparation can be similarly effective as Tru-cut Biopsy in the diagnosis. When they are combined with immunochemistry, further categorization of the lesion is possible.

As for treatment, in case of large B cell lymphoma chemotherapy along with radiation is the main stay of treatment and extensive surgery is rarely done [6]. Hence FNAC, cell block preparation and tru-cut biopsy can definitely prevent extensive surgery for diagnosis, which is cost-effective as well as lessens morbidity of the patient.

**Conclusion**

In conclusion, the present case should serve as a reminder to the clinician that a benign looking, well defined breast lump may turn out to be malignant growth like Non-Hodgkin’s Lymphoma. Surgeons and pathologists must consider the role of FNAC, cell block preparation and tru cut biopsy in the diagnosis of primary breast lymphoma, so that unnecessary mastectomies can be avoided.

**Acknowledgements**

None.

**Funding**

None.

**Competing Interests**

None declared.

**References**