

# Role of Imaging in a Case of Primary Breast Lymphoma

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## ABSTRACT

This case report highlights the important imaging findings in a case of primary breast lymphoma; encountered in an elderly lady who noticed a painless progressive swelling of her left breast in the absence of any skin or nipple changes.

As Clinical and Imaging features of this rare entity are non-specific, it must always be considered as a possible differential. Although Immunohistochemistry confirms the diagnosis of lymphoma, only after the whole body imaging can other lesions be ruled out and primary breast lymphoma be truly labeled.

**Key Words:** Primary Breast Lymphoma, Imaging, Radiology, Pathology, Mammography

## INTRODUCTION

Primary Breast Lymphoma is a condition in which only breast out of the entire body is affected by lymphoma [1]. It is a rare entity and accounts for only 0.15% of all the malignant breast lesions [2, 3]. In breasts, the B-cell lymphoma is reported to be more prevalent than the T-cell lymphomas [4, 5, 6]. Secondary Breast Lymphomas are those lymphomas in breast that are detected after initial diagnosis of lymphoma anywhere else in the body [7].

Although the exact aetiology is still understood [8], chronic infection, immune suppression, environmental exposures to ionizing radiation and hereditary traits are the proposed risk factors [8, 9]. The rarity of primary breast lymphoma (PBL) when compared with other organs [10, 11] is believed to be due to the fact that there is only small amount of lymphoid tissue in the breasts.

PBL being a rare entity, the imaging features in one such case are presented here for the benefit of one and all.

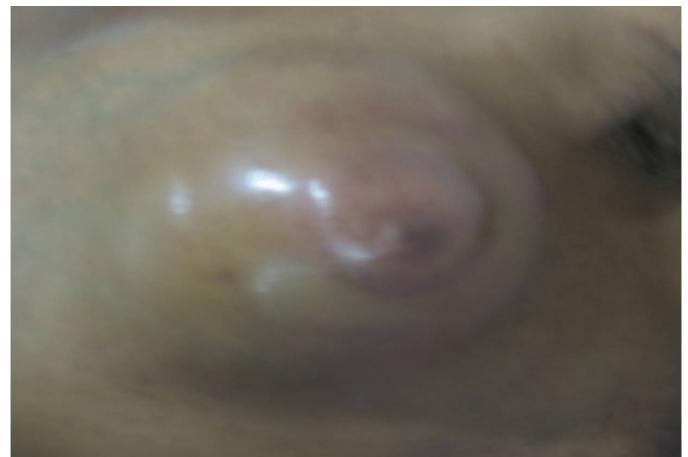
## CASE DETAILS

A 70-year-female was referred for mammography. She had complaints of painless progressive swelling in entire left breast since the past 6 months. The involved breast appeared diffusely swollen on inspection [Table/Fig-1]. The overlying skin was shiny and few prominent vessels could be seen over it. The nipple was not retracted. No secretions could be expressed from this breast. On palpation the entire left breast was firm and non tender.

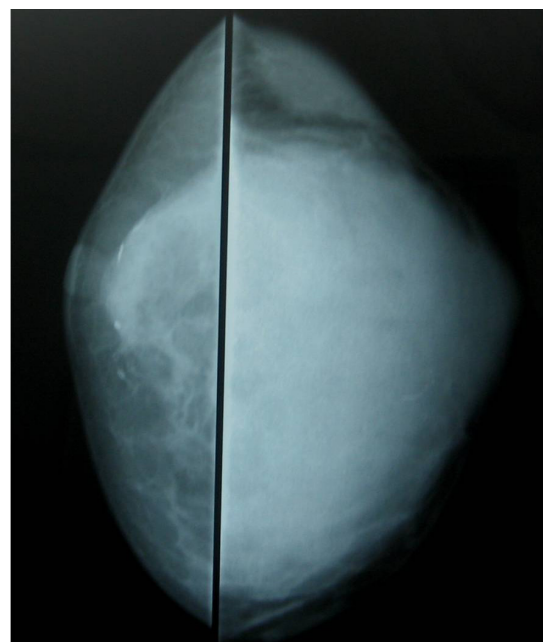
X- ray mammography [Table/Fig-2] showed a large radio-opaque mass occupying the left breast. Another smaller radio-opacity was also seen along the left axillary tail. The skin was not thickened.

Sonomammography [Table/Fig-3] demonstrated diffuse, a well-defined hypoechoic mass having distinct echogenic margins and without any posterior acoustic shadowing. An enlarged axillary node was also seen. Color Doppler showed prominent vessels coursing through this mass [Table/Fig-4]. No necrosis or calcifications were seen. The ducts were not dilated.

Mammographic features of this mass were not specific for any single aetiology and a provisional diagnosis of suspicious neoplastic mass (BIRADS category 3) was put forth.



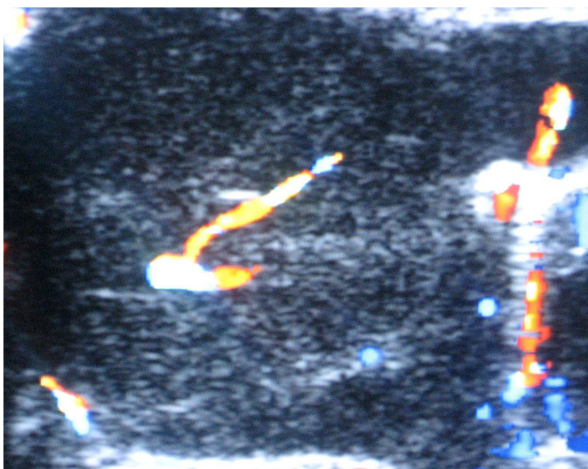
**[Table/Fig-1]:** Diffusely swollen left breast with shiny overlying skin and few prominent vessels in a 70 years female. The nipple is not retracted



**[Table/Fig-2]:** X- ray mammography shows a large radio-opaque mass occupying the left breast. Another smaller radio-opacity was also seen along the left axillary tail.



**[Table/Fig-3]:** Sonomammography demonstrates diffuse, well-defined hypoechoic mass involving the left breast having distinct echogenic margins and without any posterior acoustic shadowing

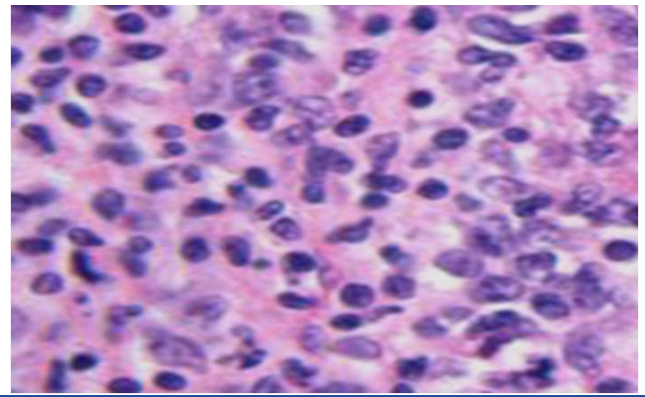


**[Table/Fig-4]:** Color Doppler showed prominent vessels coursing through enlarged left axillary node

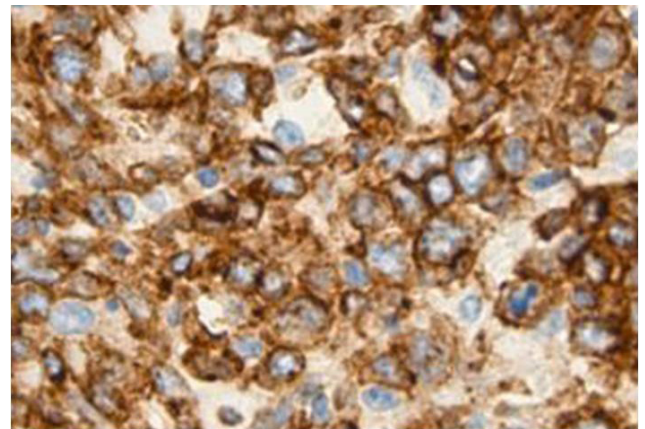


**[Table/Fig-5]:** Whole body Magnetic Resonance Imaging (MRI) did not demonstrate any other mass lesions in the body, apart from the abnormal hyper intense signal in left breast on coronal short tau inversion recovery (STIR) image

Wholebody Magnetic Resonance Imaging (MRI) did not demonstrate any other mass lesions in the body, apart from the abnormal hyper intense signal in left breast [Table/Fig-5] as demonstrated on coronal short tau inversion recovery (STIR) image.



**[Table/Fig-6]:** Histopathology – The Haematoxylin and Eosin stained breast biopsy section demonstrated mitotic pleomorphic round cells with vesicular nuclei. Sheets of lymphoid cells, few showing mitoses are scattered throughout



**[Table/Fig-7]:** Immunohistochemistry showed CD 20 marker expression typical of B-cell lymphomas. The membranes of the pleomorphic round lymphoid cells demonstrate the positive staining

Histopathological imaging [Table/Fig-6] showed sheets of lymphoid cells few showing mitoses. The Haematoxylin and Eosin stained breast biopsy section demonstrated mitotic pleomorphic round cells with vesicular nuclei.

Immunohistochemistry [Table/Fig-7] showed CD 20 marker expression typical of B-cell lymphomas. The membranes of the pleomorphic round lymphoid cells demonstrate the positive staining.

The diagnosis of B-cell lymphomas was thus established. PBL was finally labeled as whole body MRI imaging did not demonstrate any other mass lesions in the body.

## DISCUSSION

It is a challenge to diagnosis primary versus secondary extranodal lymphoma [12]. Wiseman and Liao in 1972 originally suggested following criteria for labeling PBL [13] which are now accepted as the standard [11]:

1. The availability of adequate pathology material.
2. Both mammary tissue and lymphomatous infiltrate are present.
3. No widespread disease or preceding extramammary lymphoma.
4. Ipsilateral axillary node involvement is considered acceptable.

On the contrary, secondary breast lymphomas are more common and usually present with simultaneous disease in the breast and extra mammary organs or as multiple breast lesions in a diagnosed case of lymphoma [12].

WHO classifies malignant lymphomas of the breast as diffuse large B-cell lymphoma, Burkitt lymphoma, extranodal marginal-zone-

B-cell lymphoma of MALT type, and follicular type [12]. PBL are usually non-Hodgkin with a B-cell lineage [14].

Although PBL is seen between 9-85 years [15], for non-Hodgkin breast lymphoma the median age of onset is 58 years [16, 17]. Males as well as females are reported to suffer from it [18]. The upper outer quadrant of breast is the most commonly affected site [12, 15]. It is usually unilateral, and bilateral presentation is reported in up to 10 % [12, 15] cases. There is a right sided predominance [12, 15]. Our patient was an elderly female and had diffuse unilateral breast involvement.

Patients usually present with a painless breast mass, a quarter of which are painful [19]. Inflammatory skin change and overlying skin fixation may be encountered [12, 20]. Nipple or skin retraction or discharge is uncommon [19]. Although axillary lymphadenopathy may be seen in PBL, it should arouse suspicion of the presence of a secondary lymphoma [14]. The case reported by us presented with painless progressive swelling without any overlying skin or nipple changes.

Mammographic findings of PBL are not characteristic and diagnostic [19]. Presentation may either be as well circumscribed mass or as diffuse infiltration [14, 17]. On X-ray mammogram they are of high density [21]. Diffusely increased parenchymal density with or without skin thickening may also be seen [12, 14, 19]. Micro-calcification and spiculation are rare [17]. In the case described by us, a radio-opaque density was seen to involve entire left breast. No calcifications were present.

Sonographic features are non-specific and are limited to confirming the presence of a solid mass [19]. On sonomammography the lesions may be focal or diffuse, well-defined or poorly defined, and hypo or hyperechoic. Hypervascularity may be demonstrated in it [12, 21]. Echogenic margins are reported [12, 21]. No posterior acoustic shadowing is seen [12]. The patient reported by us had diffuse hypoechoic mass without any posterior acoustic shadowing and it had echogenic margins. Vascularity was demonstrated in it.

Radiation therapy can be used to provide effective local control or may be adjuvant to chemotherapy. Surgical treatment ranging from biopsy to radical mastectomy is often not indicated [17, 20]. As PBL is rare, treatments have varied. PBL is not a surgical disease and can be treated successfully with combined chemotherapy and radiation therapy [21]. Therefore exact prognosis is difficult to determine [19].

## CONCLUSION

PBL is a very rare disease. Clinical and Imaging features are non-specific and hence PBL must be considered as a possible diagnosis when dealing with non specific breast masses. Biopsy for Histopathological analysis and Immunohistochemistry along with whole body imaging to rule out any other lesions is essential for final confirmation.

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