

# Primary Breast Lymphoma Masquerading As Lobular Carcinoma Breast on Fluid Cytology- An Interesting Case

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## Abstract

Primary lymphoma of breast is an uncommon tumour that constitutes 0.04% to 0.5% of malignant breast neoplasms [1]. Here, we present an interesting case of a 28 years old lady who presented with ascites alongwith past history of lumpectomy breast. Her ascitic fluid cytology showed monomorphic malignant tumour cells of poorly preserved morphology. Being suspicious of tumour type, we reviewed the clinical details and past histopathology records of the patient.

**Keywords:** Primary breast lymphoma, peritoneal dissemination.

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## INTRODUCTION

Primary lymphoma of breast is a lymphoma occurring primarily in the breast with absence of previously detected lymphoma localization. It is a rare entity accounting to 0.4 to 0.5% of breast malignancies. Diffuse large B Cell lymphoma is the commonest subtype.

## Case Report

A 28 years old lady presented to the Department of Gynaecology, King George's Medical University with the history of amenorrhoea, pain in abdomen, abdominal distension, low grade fever, loss of appetite and loss of weight for the past 2 months. She also had a history of lumpectomy breast right side 2 years back. As a part of routine work up, her peritoneal fluid was sent for cytology which showed clusters of monomorphic malignant tumour cells of poorly preserved morphology in a haemorrhagic background (Figure-1). No further comments were possible on those scant and poorly preserved cells.

Being suspicious of the tumour type, we procured the past histopathological records of the breast lumpectomy done 2 years back. The histopathology report of breast lump suggested tumour morphology as monomorphic, small round cell tumour forming solid, loosely cohesive sheets alongwith single cell cords. Background stroma was scanty to absent. Individual

tumour cells were round to polygonal with scant eosinophilic cytoplasm. Brisk mitotic activity with areas of degeneration, necrosis and haemorrhage alongwith infiltration of surrounding fatty tissue was seen. And the final impression of High Grade Malignancy was given and immunohistochemistry for tumour typing was advised. Patient did not have any further immunohistochemistry work up. So, considering both the description of the histopathology report of the breast lump as well as the ascitic fluid cytology, the two differential diagnoses were made. First being the peritoneal metastasis from lobular carcinoma breast and the second of lymphoma breast.

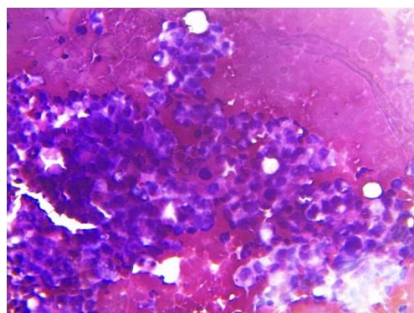
Meanwhile we procured the blocks of breast lump from outside (Figure-2) laboratory for immunohistochemistry at our centre. The breast tumour was found to be Cytokeratin negative, LCA positive and E-Cadherin positive (Figure-4). Thus, concluding it to be Lymphoma Breast.

Patient's ultrasonography abdomen was subsequently done which showed ascites alongwith a right ovarian mass measuring 9x7x6.5cm which was solid hypoechoic with irregular outlines. Left ovary was unremarkable. Rest of the investigations were unremarkable except CA-125- 211.7 U/ml was found to be significantly high.(Normal levels <35U/ml). Based on the above radiological findings, patient's right

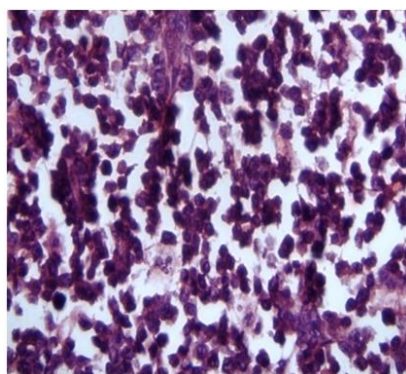
ovarian mass was excised and sent for histopathological examination.

Right ovarian mass showed the tumour morphology consistent with Non-Hodgkins Lymphoma (Figure-3) which was further confirmed by immunohistochemistry. It was Cytokeratin negative, LCA positive and E- Cadherin positive. Further subtyping of lymphoma was done by immunohistochemical panel of CD 10, CD 20, CD 5, CD 23, CD 43, Bcl-6, CD 30, CYCLIN D1 and, Ki67 index was determined. The final diagnosis of Non-Hodgkins lymphoma – Diffuse large B cell Type High Grade type (CD 20+, Bcl-6-, CD 30, CD 10-, CD5-, CD23-, CD43-, CYCLIN D1- and Ki67- 70%) was made. And the ascitic fluid was concluded to be peritoneal dissemination of Non-Hodgkins lymphoma with primary from the breast.

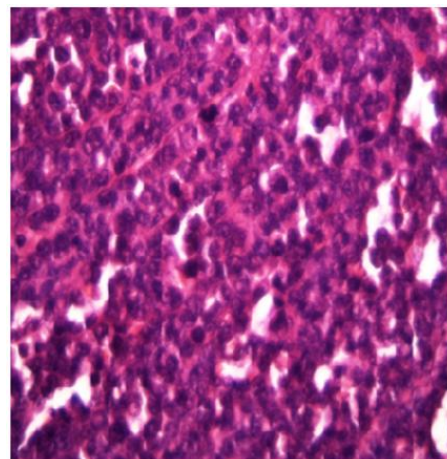
After the complete work up of patient's past and present histopathology and cytopathology samples, we revised the history of patient. As 2 years survival of NHL breast without chemotherapy is rare in medical literature. On further review, she revealed that she had completed 6 cycles of CHOP therapy based on review report of breast lump 2 years back by some other center. For staging and prognostication, her bone marrow aspiration and biopsy was also done and it was reported to be negative for lymphoma dissemination. Thus, we revised our final diagnosis to be Peritoneal and Right ovarian dissemination of High grade Non Hodgkins Lymphoma (Diffuse Large B cell type) primary from breast 2 years post chemotherapy.



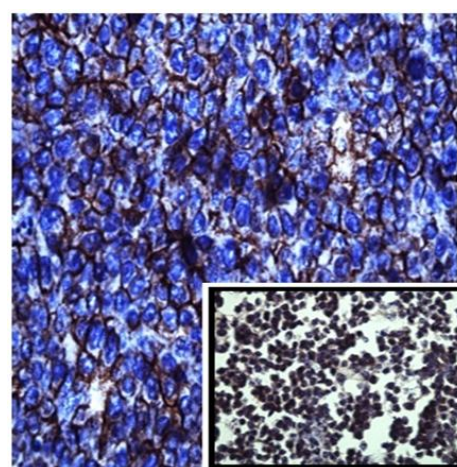
**Fig-1: Peritoneal Fluid Cytology**



**Fig-2: HPE of Breast Lump**



**Fig-3: HPE of Ovarian Mass**



**Fig-4: IHC of breast lump: LCA+ and E- Cadherin**

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## DISCUSSION

Breast lymphoma both primary as well as secondary are rare entities. They constitute 0.04% to 0.5% of malignant breast neoplasms. However, primary breast lymphoma is the most frequent haematopoietic tumour of the breast. Primary breast lymphomas are classified according to the REAL classification and the most common histological subtype is Diffuse large B cell type [2]. Other less common subtypes are Burkitts lymphoma which is usually seen in young females, MALT subtype and follicular subtype. Commonest clinical presentation is a painless mass in the upper outer quadrant of the breast. However, one case of primary breast lymphoma presenting as inflammatory breast mass is also reported in literature [3]. Majority of the cases are unilateral, while few cases of bilateral involvement have been reported in the literature [4]. Radiological investigations such as mammography or ultrasonography generally show non specific findings in lymphoma breast and cannot differentiate epithelial malignancy from lymphomas. Though fine needle aspiration cytology is the usual first step in any breast lump, it is difficult to differentiate lymphoma from lobular carcinoma breast and pseudolymphoma on fine needle aspiration cytology (FNAC) [5]. So, histopathological evaluation including

immunohistochemical panel is mandatory for the diagnosis of such a rare entity. As per Wiseman and Liao [6], to label a case as primary breast lymphoma; the tumour mass should be confined to the breast with or without axillary lymph node involvement and there should be no evidence of systemic involvement which should be confirmed by bone marrow aspiration and/or biopsy and no prior diagnosis of non breast lymphoma should be present in the patient. Differentiation of epithelial malignancy of breast from lymphoma is essential so as to avoid unnecessary surgery; as lymphomas usually respond to chemotherapy and radiotherapy. Immuno-histochemistry of Lobular carcinoma breast shows E-cadherin loss, Cytokeratin (CK) + that too high molecular weight CK such as 34βE12 and Leucocyte common antigen (LCA)- while lymphomas are CK-, LCA + and E- Cadherin +. Chemo-radiation is the mainstay of treatment and role of surgery is still controversial.

## CONCLUSION

Our case was a diagnostic challenge on peritoneal fluid cytology without the help of past medical records. Incomplete details instead; would have misled us to Metastasis from lobular carcinoma breast. It was only after the procurement of previous lumpectomy block for immunohistochemistry along with review of complete treatment history, we could reach to this rare entity. This was subsequently confirmed by immunohistochemical analysis of recent oophorectomy specimen too. So, we conclude that, commenting on small round cell tumour on breast cytology without histopathological and immunohistochemical evaluation can be misleading;

especially, when we know that Lobular carcinoma breast and lymphoma are close look alike to each other. Moreover, it is essential to differentiate between these two entities so as to avoid unnecessary mastectomies in a chemosensitive and radiosensitive tumour such as lymphoma of the breast. Lastly, in a small round cell looking monomorphic tumour with single cell cords on breast cytology, differential diagnosis of breast lymphoma should always be kept in the mind in addition to the commoner lobular carcinoma of breast.

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