Breast lymphoma- a report of 7 cases and a review of the literature

Poster No.: C-2068
Congress: ECR 2013
Type: Educational Exhibit
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Keywords: Breast, Lymph nodes, Mammography, Ultrasound, Staging, Biopsy, Chemotherapy, Lymphoma, Cancer
DOI: 10.1594/ecr2013/C-2068

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Learning objectives

To present a series of 7 cases of breast lymphoma, to describe the mammographic and ultrasonographic appearances found and to discuss the particularities of these cases and the matches with previously published data.
Background

Lymphoma represents malignant proliferation of lymph tissue. They might be Hodgkin or non-Hodgkin lymphomas.

The staging system for lymphomas in the *Ann Arbor system*. It was initially developed for Hodgkin’s, but has some use in non-Hodgkin lymphomas also. The principal stage is determined by location of the malignant tissue:

- *Stage I* indicates that the cancer is located in a single region, usually one lymph node and the surrounding area.

- *Stage II* indicates that the cancer is located in two separate regions, and both affected areas are confined to one side of the diaphragm.

- *Stage III* indicates that the cancer has spread to both sides of the diaphragm, including one area near the lymph nodes or the spleen.

- *Stage IV* indicates diffuse or disseminated involvement of one or more extralymphatic regions (including liver, bone marrow or lungs).

*Hodgkin lymphomas* represent 40% of the cases, and are characterized by the orderly spread of disease from one lymph node group to another and by the development of systemic symptoms in advanced disease. The characteristic histopathological findings at microscopical examination are multinucleated Reed-Sternberg cells. They can be classified into four pathological subtypes: nodular sclerosing Hodgkin lymphoma, mixed-cellularity, lymphocyte rich and lymphocyte depleted.

*Non-Hodgkin lymphomas* are classified using World Health Organisation system, based on their microscopical aspect, on the chromosome features of the lymphoma cell and on the presence of certain proteins on the surface of the cells. The more common types are: B-cell lymphomas (diffuse large B-cell lymphoma, follicular lymphoma, chronic lymphocytic leukemia, Burkitt lymphoma, lymphoplasmacytic lymphoma, hairy cell leukemia and primary central nervous system lymphoma) or T-cell lymphomas (precursor T-lymphoblastic lymphoma and peripheral T-cell lymphomas).

Breast lymphomas are rare tumors, accounting about 1% of all breast malignancies[1] and 2,2% of extranodal sites. They are classified by Wiseman and Liao in 1972 into primary and secondary. Primary is a less common form than secondary lymphoma and both are most regular B cell type non-Hodgkin’s lymphomas.

*Primary* breast lymphomas are strictly intramammary lesions and in the homolateral close-by lymph nodes.[2] Primary breast lymphoma can also exhibit features typical of MALT (mucosal associated lymphoid tissue) lymphoma. Burkitt-like lymphoma is typically thought to be associated with pregnancy.[1]
Secondary forms appear during the evolution of a systemic lymphoma or after a remission period.

Breast location is presumed to originate in pre-existing inflammatory lymph nodes (that explains the frequent upper-outer quadrant location) or in the mesenchymal connective tissue located around the acinar cells (lymphocytes, plasmocytes, macrophages, histiocytes).

Breast lymphoma appears at ages of 30-60 years. It rarely appears in teenagers because of the small amount of lymphoid tissue at this stage. It is predominant at geminine gender at the right breast (60% of cases).

Clinical diagnosis criteria are represented by: large tumours (bigger than 4.5 cm), sometimes multiple, with rapid growth and inflammatory reaction, that rarely modifies skin structure, and presents big axillary adenopathy.

Mammographic findings are: big, homogeneous, un/circumscribed tumours, sometimes multiple, with skin thickening and diffusely increased density of surrounding tissue, located in upper-outer quadrant of the right breast and big axillary adenopathy (with low or medium intensity, loss of central transparency and diffuse edges).

The ultrasound criteria are represented by hypoechoic masses, with diffuse or irregular boundaries, no posterior acoustic shadowing, sometimes with an anechoic center and large adenopathy.

Breast lymphoma is confirmed based on a histological report. It is recommended large needle aspiration biopsy or tru cut needle biopsy.

Treatment may be local (surgical, with poor prognosis [4]) or general (chemotherapy and radiotherapy, with a survival of 50-60% at 5yrs [5]). Prognosis depends on clinical stage and histological subtype.

Differential diagnosis is made with cancer, phyllodes tumour, fibroadenoma, metastases.
The first case (Fig. 1) is a 59 years old male on his first admission with superior vena cava syndrome, multiple axillary, supraclavicular and laterocervical adenopathies, bilateral gynecomastia with local inflammatory signs and endured tissues. Chest radiography showed mediastinal and hilar lymph nodes. Mammography revealed lipomatous breasts with diffusely increased densities, skin thickness and nipple inversion. Histopathological diagnosis was non-Hodgkin lymphoplasmacytic lymphoma.
Fig. 2

References: Department of Radiology, Coltea Clinica Hospital, Bucharest 2012
Fig. 3

References: Department of Radiology, Coltea Clinica Hospital, Bucharest 2012
Fig. 4

References: Department of Radiology, Coltea Clinica Hospital, Bucharest 2012

The second case (Fig. 2,3,4) is of a 24 years old female with lymphoma recurrence. Mammography revealed increase density of the breast and in upper-outter quadrant of her right breast a big, opaque lesion, with rapid growth. The ultrasound findings were of a hypoechoic lesion, with clear-cut, polycyclic edges and posterior acoustic shadowing. Abdominal ultrasound revealed a hypoechoic lesion, with clear edges in the liver.
The third case (Fig.5) is of a 31 years old female with a right breast mass (noticed by the patient within the last 5 months) and skin inflammatory signs. Mammographic: dense tumour, 7 cm diameter with regular outline and no axillary adenopathies. Ultrasound showed big hypoechoic mass with posterior acoustic shadowing. Laboratory exams were normal and needle aspiration biopsy showed an inflammatory tumour, possible lymphoma. The tumour is excised and the diagnosis is non-Hodgkin centroblastic lymphoma, stage IA.
Fig. 6

*References:* Department of Radiology, Coltea Clinica Hospital, Bucharest 2012

The fourth case (Fig.6) is a 38 yrs old female that came for a mammographic exam for right axillary adenopathies. The examination doesn't reveal any malignant changes, only fibrotic structure of the breast and big axillary lymph nodes. Needle aspiration biopsy from modified lymph nodes showed a possible mammary cancer metastasis. Is performed lumpectomy with lymph nodes ablation and the histopathological diagnosis is follicular non-Hodgkin lymphoma. No further locations except the axillary lymph nodes were found.
The fifth case (Fig. 7) is a female patient with non-Hodgkin lymphoma presenting an intramammary enlarged lymph node with diffuse edges, located in upper-outer quadrant of the breast. Surgical ablation is performed in order to determine the histological subtype, being the only peripheral lymphadenopathy found. Patient has a benign pre-existing pathology.

**Fig. 7**

**References:** Department of Radiology, Coltea Clinica Hospital, Bucharest 2011
The sixth case (Fig.8) is a woman in IIB stage non-Hodgkin lymphoma with dense breast and a big opaque tumour located in upper outer breast quadrant. Ultrasound disclose a hipoechoic- transechoic septated mass, heterogenous, with acoustic posterior shadowing. It was suspected a benign mass despite the fact that patient said mass was recently formed. No surgery or biopsy was performed. After six months, the tumour is excised and the diagnosis is that of a breast determination in lymphoma.
Fig. 9

References: Department of Radiology, Coltea Clinica Hospital, Bucharest 2012
Fig. 10

References: Department of Radiology, Coltea Clinica Hospital, Bucharest 2012
The seventh case (Fig. 9,10,11) is a 83 years old woman, having a history of left foot ulceration who described the apparition of a palpable mass in the left breast with progressive growth. A year later she presented with another palpable mass in the right breast, two retromaleolar subcutaneous masses and multiple pelvic adenopaties from which biopsy was taken. Chest radiography revealed large thoracic masses in both hemithoraxes. Abdominal ultrasound was normal. Breast ultrasound showed hypoechoic lesions, with clear-cut, polycyclic edges, rich vascularity and posterior acoustic shadowing. It also revealed significant perilesional oedema. Mammography showed bilateral, lobulated, opaque masses, with clear edges. Pathological exam revealed an identical morphological substrate: non-Hodkin centroblastic B-cell lymphoma.
Conclusion

Breast lymphoma is uncommon and its radiological appearance is non-specific. The patients should be investigated if they present enlarged, solid mammary tumours, with rapid growth, axillary adenopathies and inflammatory reaction.
References


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