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## MAMMOGRAPHIC AND SONOGRAPHIC APPEARANCES OF NON-HODGKIN'S LYMPHOMA OF THE BREAST

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### ABSTRACT

#### PURPOSE ;

Secondary non-Hodgkin's lymphoma is uncommonly encountered in the breast. This paper aims to demonstrate mammographic and sonographic findings of non-Hodgkin's lymphoma of the breast.

#### MATERIALS AND METHODS :

From August 1996 to July 1997, three patients (mean age 42.3 years, range 19-78 years) with NHL of the breast were diagnosed. Two patients had both mammography and sonography while one patient had sonography alone. Histologic confirmation was obtained in all cases.

#### RESULTS :

All three patients had secondary NHL of the breast. One of them had AIDS-related lymphoma. Mammography revealed multiple, circumscribed uncalcified masses in one patient and diffuse increased parenchymal density with skin thickening in the other. Sonography showed multiple hypoechoic masses in two patients and diffuse inhomogeneous echoes in one patient. Histologic examination showed diffuse NHL in all patients.

#### CONCLUSION :

In patient with a history of NHL, the diagnosis of secondary breast NHL should be considered when multiple masses or diffuse lesions are observed.

NHL = Non-Hodgkin's lymphoma

### INTRODUCTION

Non-Hodgkin's lymphoma (NHL) of the breast is rare. It can originate as a primary breast tumor, but most often it occurs in conjunction with

extramammary disease with the breast involved secondarily as part of a disseminated process<sup>1</sup>. We reviewed our experience with NHL of the breast

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in three women with the aim of determining the imaging characteristics.

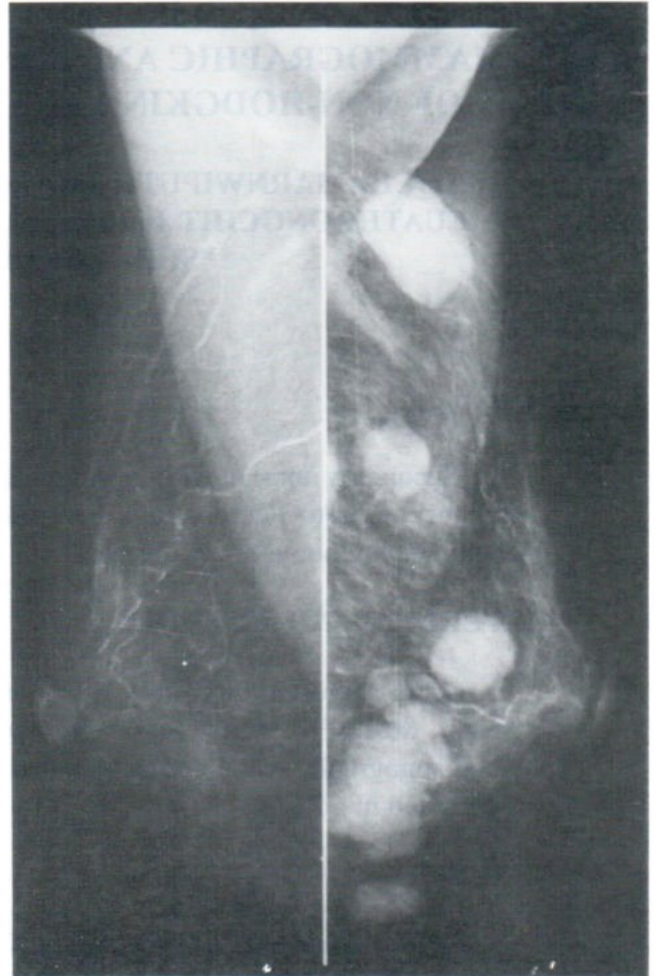
## MATERIALS AND METHODS

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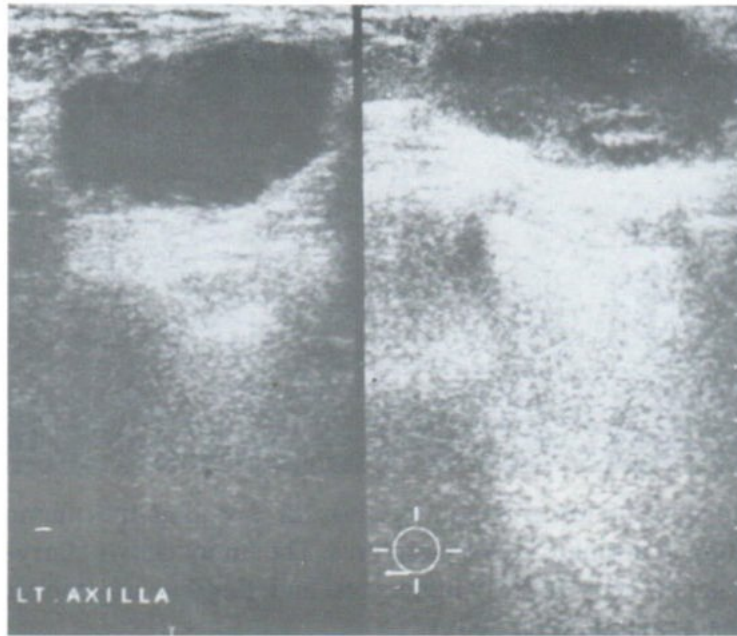
## RESULTS

**CASE 1 :** A 78-year-old woman had multiple palpable masses in the left breast, left axilla and left side of the anterior abdominal wall that continued to enlarge for 3 months after they had been identified. Mammography showed multiple, well-circumscribed masses without calcification in the left breast associated with enlarged left axillary lymph nodes (Fig. 1). The right breast was normal. Ultrasound revealed multiple well-defined hypoechoic masses in the left breast (Fig. 2), a large solid mass in the left anterior abdominal wall and three hypoechoic masses in the liver.

Histologic examination of the left breast mass and anterior abdominal wall mass revealed diffuse NHL of predominantly mixed large and small cell types. Chemotherapy was given without clinical improvement.



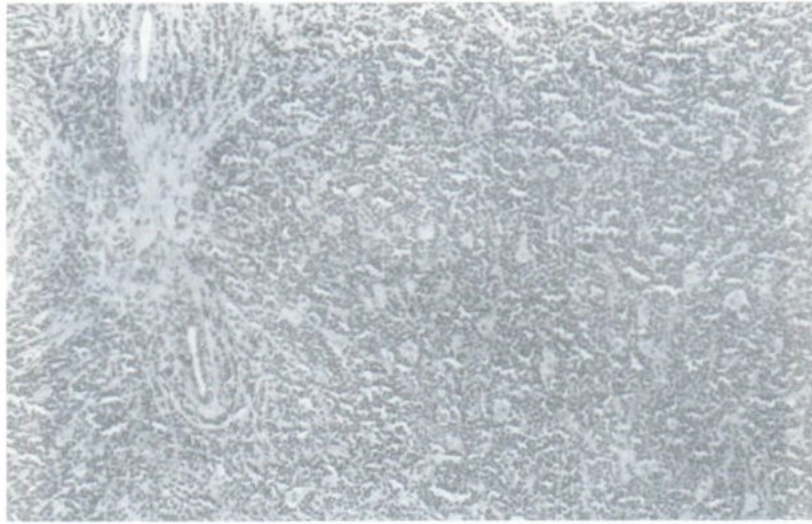
**Fig. 1 Case 1** Mediolateral oblique mammogram of the breasts reveals multiple well-circumscribed noncalcified masses in the left breast and enlarged left axillary lymph node. The right breast appears normal.



**Fig. 2** US scan shows a hypoechoic mass in the left axilla which was thought to be an enlarged axillary lymph node (left). In the left breast, there was a well - defined solid mass with heterogeneity of internal echoes and marked posterior acoustic enhancement (right).



**Fig. 3 Case 2** US scan of the left breast reveals multiple well-defined hypoechoic masses with no posterior acoustic enhancement.



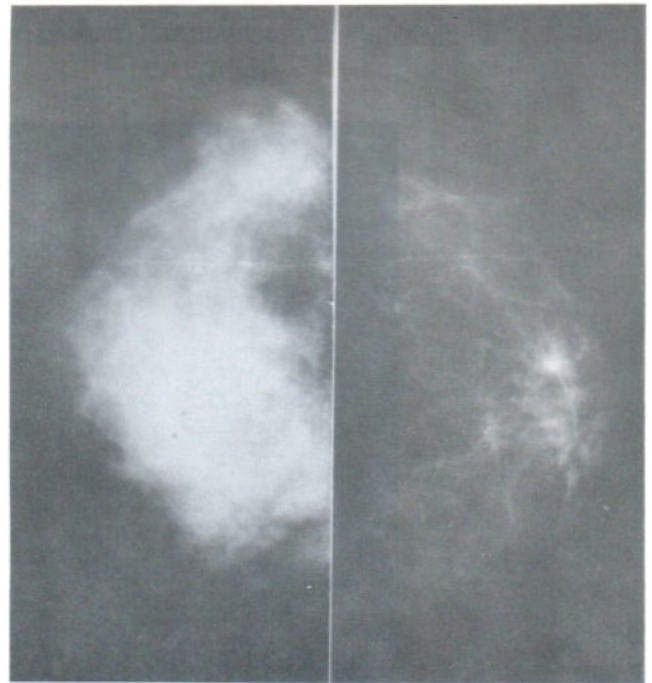
**Fig. 4** Low magnification of the tumor mass in filtrating the mammary tissue resulting in atrophic ductal structures. The tumor shows starry-sky pattern with small neoplastic lymphocytes and tingible macrophages. (H&E, original magnification 100x)

**CASE 2 :** A 19-year-old woman with AIDS-related lymphoma presented with multiple palpable masses in both breasts for 2 months and dyspnea for a week. Physical examination revealed hepatomegaly, bilateral multiple breast masses and ascites.

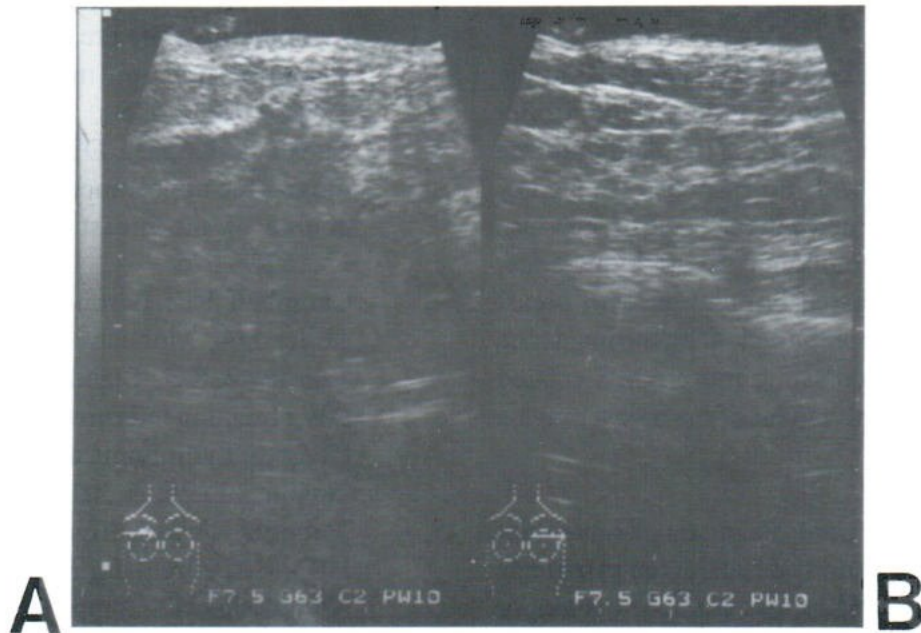
The chest radiograph showed bilateral pleural effusion. Sonography revealed multiple, well-circumscribed hypoechoic masses in both breasts (Fig.3), multiple hypoechoic masses in the liver, bilateral ovarian masses and ascites. Biopsy of the right breast mass showed diffuse predominantly small cell NHL (Fig. 4). She refused treatment and went home.

**CASE 3 :** A 30-year-old woman had NHL of the lymph nodes for 11 months. During chemotherapy, there was diffuse enlargement of the right breast over 1 week. Mammography showed diffusely increased parenchymal density in the right breast with skin thickening and multiple enlarged right axially lymph nodes (Fig 5). Diffuse inhomogeneous echoes in the right breast with skin thickening were present on ultrasound (Fig. 6).

Biopsy of the right breast showed diffuse NHL. The disease progressed despite a new regimen of chemotherapy.



**Fig. 5 Case 3** Craniocaudal mammogram of the breasts reveals diffusely increased parenchymal density associated with skin thickening in the right breast. The left breast is normal.



**Fig.6 ( A, B )** US scan of the breasts demonstrate diffuse inhomogeneous echoes with skin thickening in the right breast ( A ) in comparison with normal echoes in the left breast ( B ).

## DISCUSSION

Primary breast lymphoma accounts for 0.05-0.53% of all breast malignancies.<sup>1,2</sup> Lymphoma of the breast usually occur as secondary disease. Most of these malignancies are non-Hodgkin type. The frequency of primary versus secondary breast lymphoma varies in the literature.<sup>1,3,4</sup> The tumor architecture can be classified as either follicular (nodular) or diffuse, with the cell type predominantly large cell (histocytic) predominantly small cell (lymphocytic) , or mixed large and small cell.

Breast lymphoma most often occurs in women aged 50-60 years. The radiological features of breast lymphoma are nonspecific. The typical mammographic findings of primary or secondary non-Hodgkin lymphoma, consist of one or more, discrete round or oval uncalcified masses with well-circumscribed, lobulated or ill-defined borders that may mimic benign tumors such as fibroadenoma. Enlarged axillary lymph nodes may be seen. Less commonly, breast lymphoma may

present as diffusely increased parenchymal density in combination with skin thickening.<sup>1-5</sup> This occurred in only one case in our study. Spiculated masses and miliary densities have been reported.<sup>2,3,5</sup> Calcifications, which often occur in breast carcinoma, are rarely seen. Localized desmoplastic or scirrhous reaction with architectural distortion is typically not identified on mammography.<sup>4</sup> Most authors report unilateral involvement, but bilateral disease has been observed.<sup>5</sup>

Reports of the sonographic appearances of breast NHL are even more limited than those of the mammographic appearances. Jackson and Lalani<sup>6</sup> reported a wide spectrum of sonographic appearances ranging from well-defined to poorly-defined, hypo- to hyperechoic lesions, and focal to diffuse involvement, with variable posterior attenuation.

In our series, the mammographic and sonographic appearances were similar to those

described in previous reports.

Prognosis of breast NHL depends on the clinical stage and histologic grade of the lesion. All our three cases had diffuse NHL and multiple organ involvement with no response to chemotherapy in the two treated patients. One of our cases had AIDS-related lymphoma. To our knowledge, no case of AIDS-related lymphoma with breast involvement has been reported. With the incidence of HIV infection increasing, more AIDS-related lymphoma with involvement of the breast may be encountered.

In conclusion, the diagnosis of secondary NHL of the breast should be considered in patients with a history of NHL when multiple masses or diffuse lesions are observed in the breast.

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