METASTASIS TO THE BREAST FROM EXTRAMAMMARY MALIGNANCIES: MAMMOGRAPHIC FEATURES

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ABSTRACT

Metastatic tumors to the breast from extramammary malignancies are unusual. We present 3 cases of such lesions. Two cases were in females with one primary each from the ovary and lung, and one in a male with primary lung carcinoma. The incidence, pathology and radiographic findings of such metastatic lesions are reviewed.

INTRODUCTION

Metastatic tumors to the breast are unusual especially from extramammary malignancies. The autopsy incidence varies from 1.7% to 6.6%.[1-3] Many of the reported examples in the literature are based on clinical rather than radiographic evaluation.[4] We report our experience in 3 cases of breast masses in patients with known extramammary malignancies and emphasize the importance of recognizing the mamographic distinctions between metastasis and primary breast carcinoma.

CASE REPORTS

Case 1.

A 41-year-old woman presented with lumps in her right breast, axilla and flank. She had a 10-year history of ovarian carcinoma. Mammogram showed multiple densely calcified masses in the right axilla and the right breast (Fig 1). CT scans revealed calcified masses in the right breast and in the subcutaneous tissues over the right flank (Fig 2). ^{99m}Tc-MDP (methylene diphosphonate) bone scan demonstrated abnormal activity in the same areas. Biopsy of the right breast mass revealed papillary adenocarcinoma consistent with a metastatic neoplasm of ovarian origin.

Case 2.

A 50-year-old woman with a known history of squamous cell carcinoma of the left lung, presented with multiple masses in both breasts and the abdomen. Mammogram showed very dense breasts with multiple ill-defined mass(Fig 3) which on sonography appeared as well defined hypoechoic masses (Fig 4). Fine needle aspiration demonstrated squamous cell carcinoma.

Case 3

A 46-year-old man presented with lumps in his left breast. A chest radiograph showed a mass in the right upper lobe. Mammography revealed a well circumscribled mass occupying nearly the entired left breast (Fig 5). Excisional biopsy revealed metastatic squamous cell carcinoma.

DISCUSSION

Metastasis to the breast may occur by two distinct routes: lymphatic and blood-borne.[4] Lymphatic metastasis is the more common and usually occurs from primary carcinoma of the opposite breast. Metastases from extramammary malignancies are usually the result of hematogenous spread with the

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Fig 1. Mediolateral oblique mammogram of the right breast showing multiple calcified nodules in the axilla and upper quadrant of the breast.

three most common sites of origin being lymphoma/ leukemia, melanoma, and lung cancer. Spreading from the ovaries, soft tissue sarcoma, the GI and GU tracts have also been reported.[5] Metastatic tumor to the male breast is very rare but has been reported in a number of instances, primarily from the prostate.[6-8]

The metatstastic foci appear on mammograms as discrete nodules, ususally solitary, and less often multiple, with a predilection for the upper outer quadrant. Axillary node involvement is frequently encountered. Calcification is very infrequent except for rare instances of metastases from ovarian carcinoma. Most metastatic nodules cannot be differentiated from benign nodules such as cysts or fibroadenomas or from well circumscribed breast cancers such as medullary or mucinous tumors. A disinct spiculated mass or microcalfication indicates the presence of an unrelated primary breast lesion rather than metastases.[3-5,9]

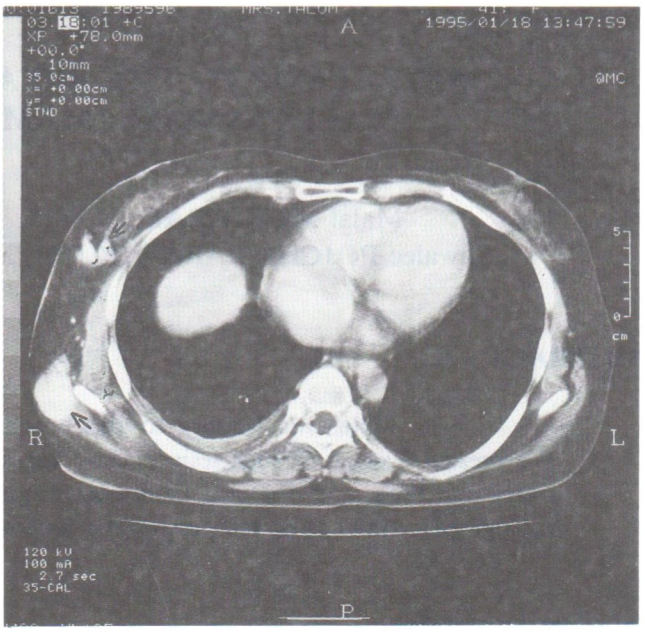

Fig 2. CT scan of the chest showing calcified nodules in the tail of the right breast and subcutaneous tissue (arrows).

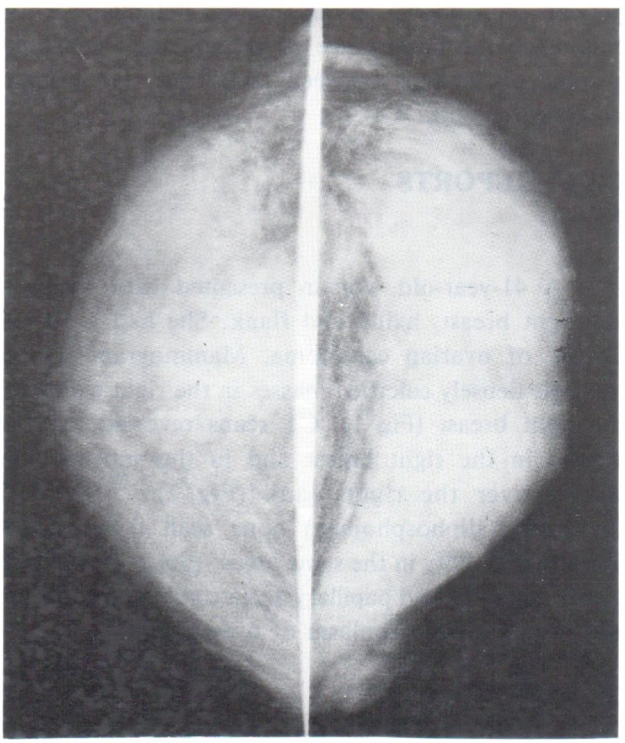

Fig 3. Craniocaudal mammograms of both breasts showing dense breasts and multiple ill-defined masses.

Fig 4. Ultrasound of the right breast showing multiple well defined low echoic masses.

The mammographic appearance of calcified metastases from primary ovarian papillary cystadenocarcinoma was first described in 1974 by Royen et al[10] and Moncada et al.[11] In 1991, Duda et al[12] reported a patient with a papillary serous adenocarcinoma with metastasis to the right breast, axillary lymph node, and subcutaneous tissues. This report describes the mammographic findings and special immunohistochemical stains with CA-125 of the tumor. Our patient in case 1 shows calcified metastases not only from mammograms but in ^{99m}Tc-MDP bone scintigraphy. The localized uptake of ^{99m}Tc-MDP in the breast can be found in normal breasts as well as in those with benign and malignant disease. Marked local radionuclide uptake has been reported in primary osteosarcoma of the breast.[13,14]

Case 2 has a very dense breasts and metastatic nodules were hardly seen on mammogram but were well delinated by ultrasonography. Multiple fibroadenomas cannot be excluded solely on the basis of the ultrasonographic findings. However, fibroadenoma usually occurs in younger woman and less often multiple.[15]

Breast enlargement in Case 3 can be either gynecomastia or metastasis as gynecomastia may be associated with lung carcinoma. Mammograms showed a well circumscribed mass in contrast to gynecomastia. Primary male breast cancer can exhibit the typical features of female breast cancer but may also show as a well-difined mass.[16] Therefore, differentiation between primary and secondary breast cancer in male is not possible.

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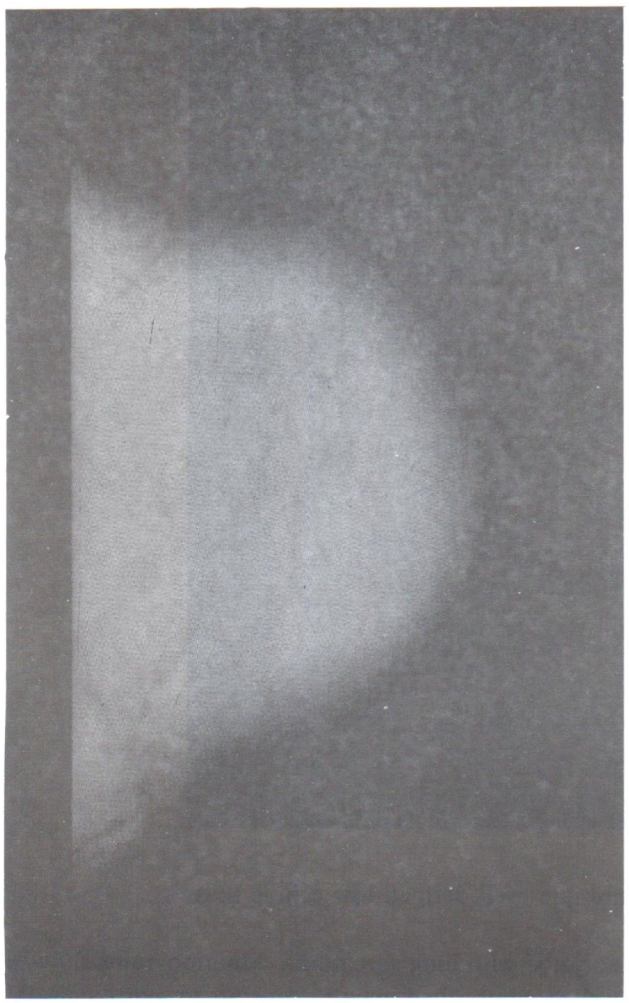

Fig 5. Lateral mammogram of the left breast showing a well circumscribed dense mass occupying nearly entire breast.

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