
Mammographic Features of Fat Necrosis

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ABSTRACT

Fat necrosis of the breast is a benign, nonsuppurative inflammatory process with variable presentation. Occasionally it mimics malignant lesions both clinically and mammographically. Four cases of fat necrosis are presented which illustrate the spectrum of mammographic features of this condition. The appearances vary from one indistinguishable from carcinoma to single or multiple lucent lesions with ring-like calcification. Biopsy is performed when clinical signs, mammographic findings or clinical history suggest malignancy.

INTRODUCTION

Fat necrosis of the breast is a common benign condition that has an extremely variable presentation. It occasionally mimics malignant lesions clinically and mammographically.⁽¹⁻²⁾ We report 4 cases of different mammographic presentations of fat necrosis. An appreciation of some of these appearances may prevent unnecessary biopsy.

CASE REPORTS

Case 1.

An obese 51-year-old woman had right breast mass with pain for a week. She had no history of breast trauma. Physical examination showed a firm mass in the upper, inner quadrant of the right breast and the overlying skin was dimpled. Mammograms revealed a fatty breast and a focal irregular increased density without calcification in the upper, inner quadrant of the right breast (Fig 1). The clinical and mammographic diagnosis of suspicious carcinoma called for excisional biopsy. The pathologic diagnosis was fat necrosis (Fig 2).

Case 2.

An obese 41-year-old woman had mammograms performed for a lump in the left breast for 2 years. First mammograms showed a fatty breast with a 8 mm. circumscribed mass with irregular border in the left breast. Two years later a repeat mammogram showed enlargement of the left breast mass (Fig 3). Excisional biopsy was performed to exclude malignancy and revealed fat necrosis (Fig 4).

Case 3.

A 57-year-old woman had bilateral mammograms for screening. Mammograms showed moderate dense breasts. There were 2 mm. radiolucent cyst with calcified wall, 10 mm. radiolucent cyst with thick calcified wall in the right breast and a 3 mm. radiolucent cyst with calcified wall in the left breast (Fig 5). Follow up mammograms 2 years later showed no significant change of these lesions.

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Case 4.

A 73-year-old woman had mammograms performed for screening. There were multiple small radiolucent cysts with calcified wall in both breasts (Fig 6). A repeat examination was done 20 months later showed stability of these lesions.

DISCUSSION

Fat necrosis of the breast is a nonsuppurative inflammatory process that varies in appearance depending on the stage of the lesion.⁽²⁾ It occurs most often in the fatty, pendulous breasts of middle-aged women. Trauma has been thought to be the primary cause of fat necrosis, although a history of trauma is elicited in only about 40% of cases.⁽²⁾ A biopsy or other surgical procedure can also lead to fat necrosis.^(2,5) Fat necrosis may result from mammary duct ectasia with stagnation of the secretory contents, subsequent effusion of irritative material into the stroma. There is a death of tissue, saponification of fat occurs, leading to the formation of vacuoles. Macrophages are then found surrounding the vacuoles engulfing debris. The necrotic focus may cavitate and the wall of the cavity may calcify. Healing by fibrosis begins at the periphery and eventually may replace the entire area or leave a persistent cystic cavity. Calcification may occur in the necrotic area.⁽²⁾

Clinically, the patient may be asymptomatic or present with a mass that may or may not be painful. Associated localized thickening and retraction of skin over the lesion may be present and indistinguishable from carcinoma. Mammographic feature in fat necrosis is variable. They include; (1) a spiculated density often

indistinguishable from carcinoma, (2) a circumscribed mass, (3) a poorly defined mass or asymmetric density, (4) localized skin thickening and/or retraction, (5) round, branching, rodlike or angular microcalcification, often resembling those seen in carcinoma, (6) single or multiple cysts, which are often lipid-filled, and may or may not have calcified walls, and (7) any combination of these findings.⁽¹⁻⁸⁾

All our cases had no history of trauma or previous breast surgery. Two cases presented with a lump and mammograms disclosed a mass. Fat necrosis characteristically is situated near the skin or areolar region. In case 1, lesion is closed to skin but lesion in case 2 is deep in the breast. Both cases (1 and 2) are obese and pendulous breasts. Mammographic appearance in case 1 and 2 is indistinguishable from carcinoma, leading us to perform biopsy. Pathologically was not proved in cases 3 and 4 because it represents one of the characteristic mammographic appearances of fat necrosis. Although microcalcification resembling carcinoma is frequent, none could be demonstrated in our patients.

With increasing use of mammography, we can anticipate increasing numbers of fat necrosis. Biopsy of these lesions need not be performed unless other signs, mammographically or clinically, suggest malignancy. Familiarity with the variable appearance of fat necrosis will help to prevent inaccurate interpretations and unnecessary biopsies.

Acknowledgement

We are grateful to professor Dr. Sanan Simarak for reviewing the manuscript.

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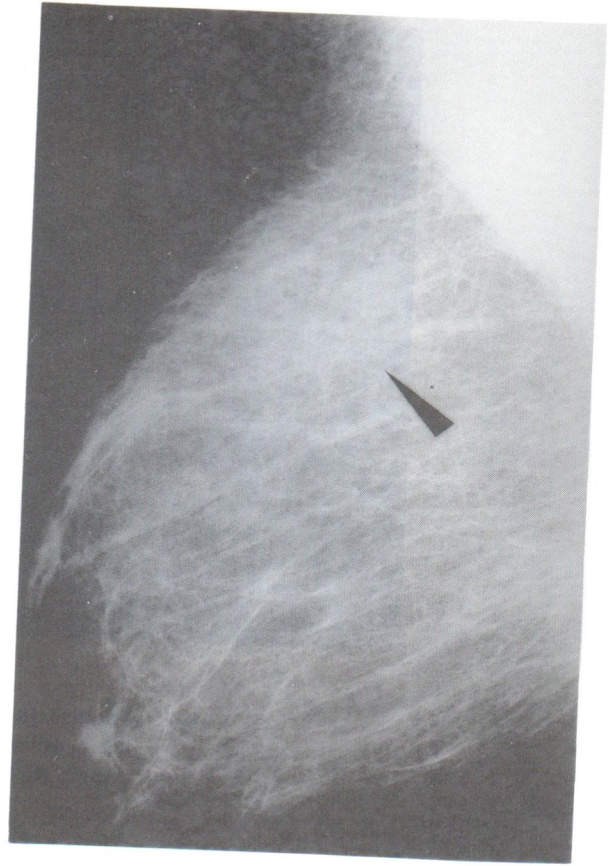
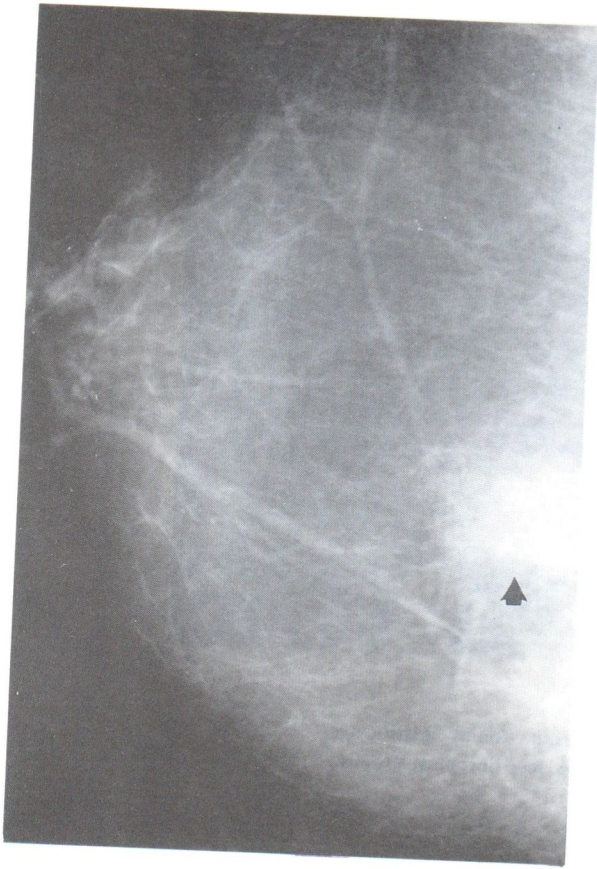


Fig 1 A. craniocaudal, B. mediolateral oblique and C. focal compression mammograms of the right breast show an area of focal irregular increase density (arrow).



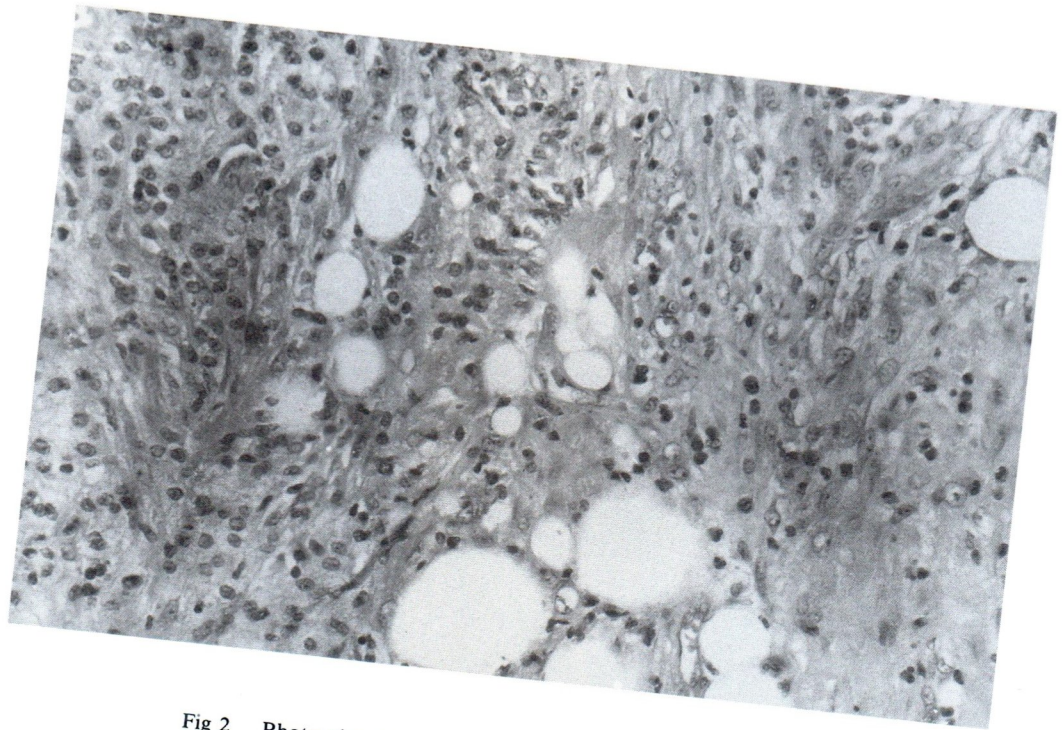


Fig 2 Photomicrograph shows numerous foamy histiocytes intermingling with lymphocytes. A few fibroblast are also evident. (H & E \times 200)

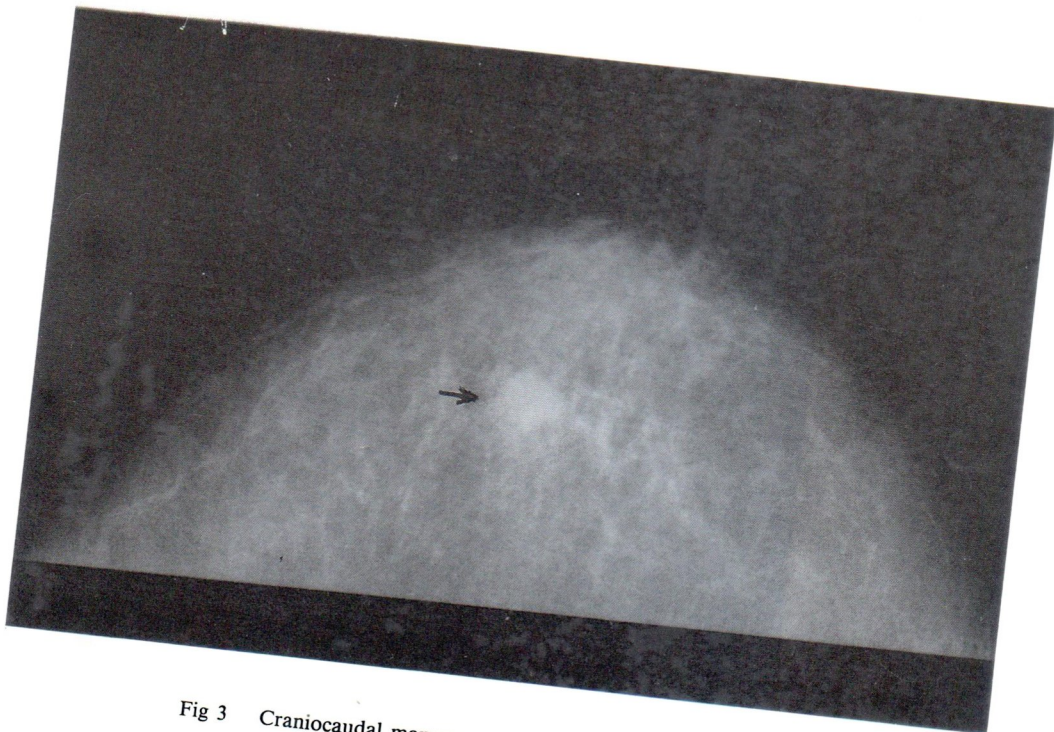


Fig 3 Craniocaudal mammogram of the left breast shows a mass with irregular border and no microcalcification (arrow).

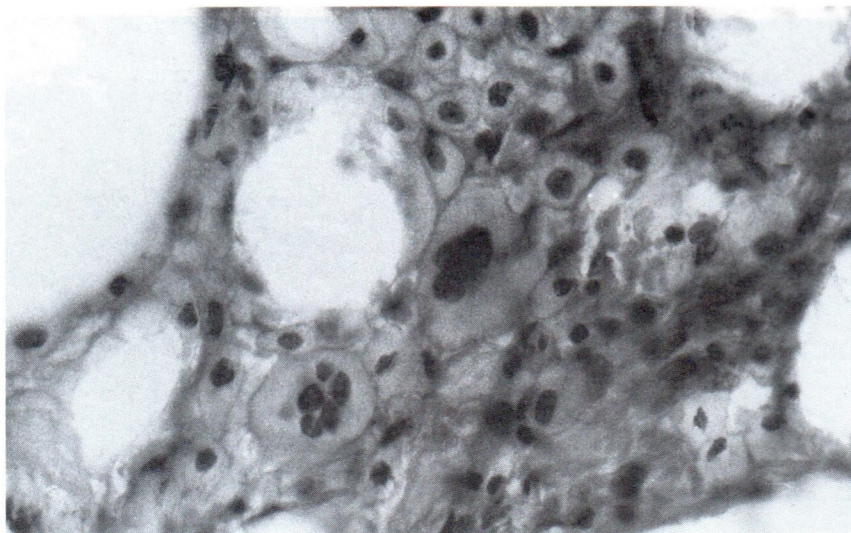


Fig 4 Photomicrograph shows numerous foamy histiocytes surrounding small cystic spaces. A few multinucleated giant cells are also seen. (H & E \times 400)

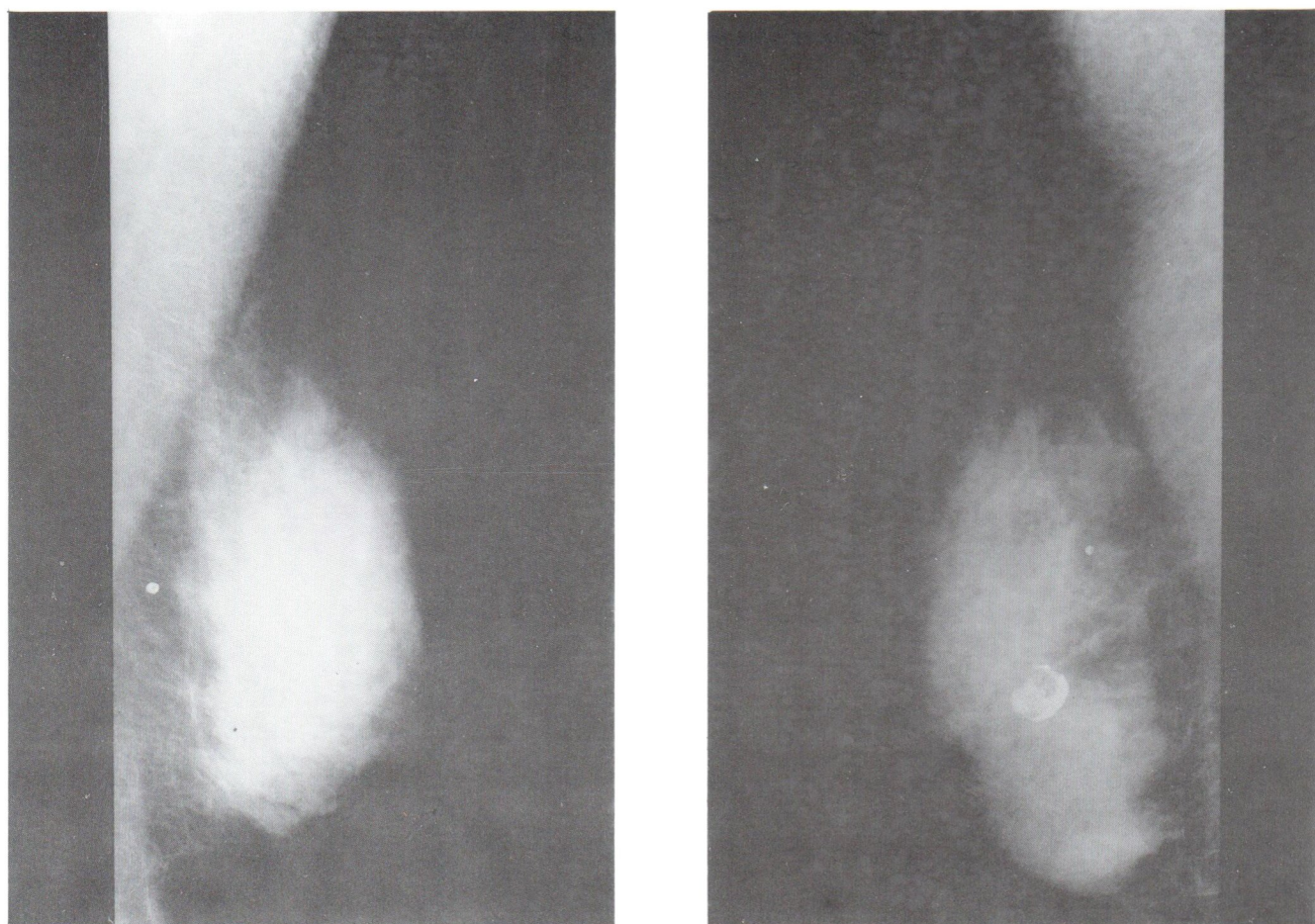


Fig 5 Bilateral mediolateral oblique mammograms A. right and B. left show moderate dense breast for a 57-year-old woman and bilateral calcified radiolucent masses.



Fig 6 Craniocaudal view of the left breast shows multiple small radiolucent cysts with calcified wall.