Clinics in Diagnostic Imaging (84)

M Muttarak, W Padungchaichote

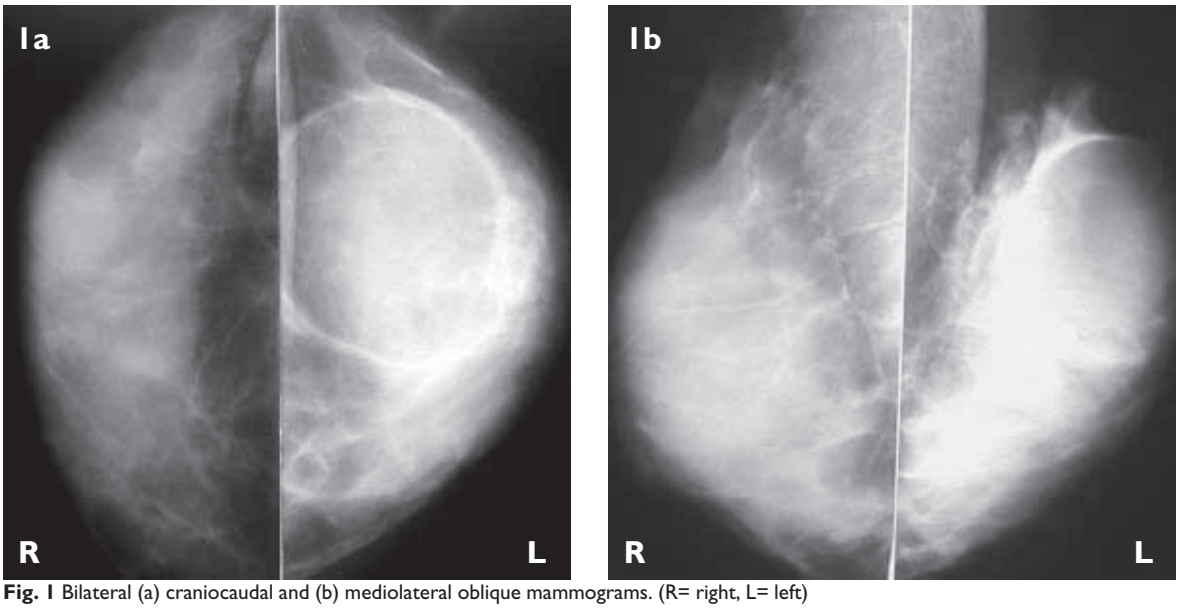


Fig. 1 Bilateral (a) craniocaudal and (b) mediolateral oblique mammograms. (R= right, L= left)

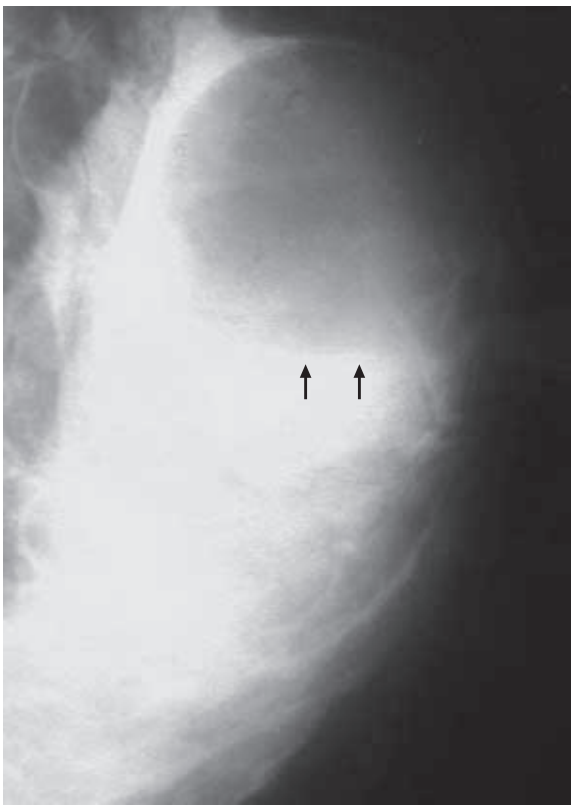


Fig. 2 Left lateral mammogram.

CASE PRESENTATION

A 37-year-old woman, six months postpartum, presented with a lump over the left breast for three months. After stopping breast feeding, she noticed a painless mass in her left breast. She did not have fever and had no familial history of breast carcinoma. Physical examination revealed a painless, well-circumscribed mass in the upper quadrant of the left breast. There was no nipple discharge, no sign of inflammation or axillary lymphadenopathy. What do the craniocaudal, mediolateral oblique, and left lateral mammograms show (Figs. 1 & 2)? What is the diagnosis?

Department of Radiology
Chiang Mai University
Chiang Mai, Thailand

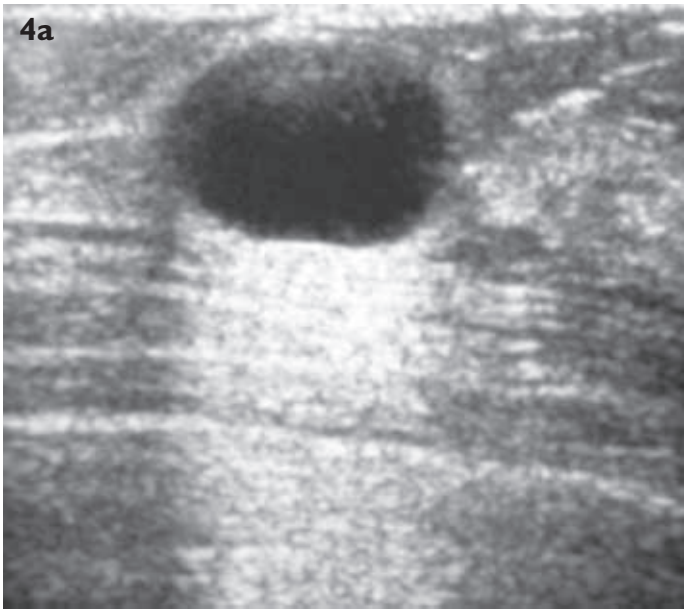
M Muttarak, MD
Professor

Lopburi Regional Cancer Centre
Amphur Muang Lopburi

W Padungchaichote, MD
Consultant Radiologist

Correspondence to:
Prof Malai Muttarak
Tel: (66) 53 945450
Fax: (66) 53 2171144
Email: mmuttara@med.cmu.ac.th

Fig. 3 Photograph shows the syringe containing milky fluid aspirated from the left breast mass.



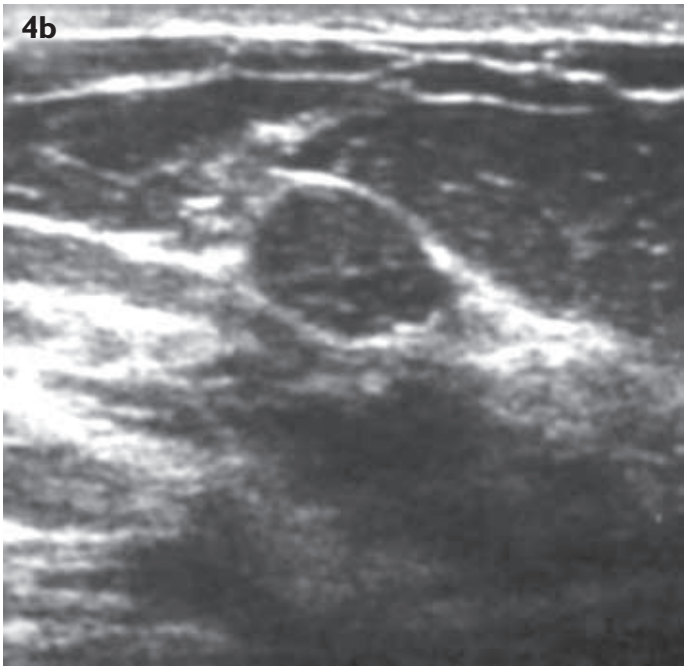


Fig. 4 Usefulness of US scans in two different patients. (a) A cyst is seen as a well-defined anechoic mass with posterior acoustic enhancement. (b) A solid mass is seen as a mass with internal echoes.

IMAGE INTERPRETATION

The craniocaudal and mediolateral oblique mammograms (Figs. 1a, b) show a 4.5 cm round circumscribed mass of mixed fat and soft tissue density in the upper quadrant of the left breast. The lateral mammogram (Fig. 2) shows a mass containing a fat-fluid level within the lesion (arrows).

DIAGNOSIS

Galactocoele.

CLINICAL COURSE

Needle aspiration of the left breast mass yielded thickened milky fluid (Fig 3). The mass decreased in size following the procedure.

DISCUSSION

The differential diagnosis of a breast mass found in pregnant or lactating women are cyst, fibroadenoma, abscess, galactocoele, phyllodes tumour, lactating adenoma, and carcinoma. All of the above lesions except galactocoele are seen as either well- or ill-defined soft tissue masses. Since our patient did not have fever and sign of inflammation, breast abscess is unlikely. Ultrasonography (US) is helpful to differentiate a cyst from a solid mass (Fig 4). The differential diagnosis of fat-containing masses on mammogram include galactocoele, oil cyst, hamartoma, lipoma and intramammary lymph node[1].

Galactocoele

A galactocoele is a benign breast lesion consisting of a cyst containing thick, inspissated milky fluid. It usually occurs in young women during lactation, but has been described in women of all ages and even in men[2,3]. A galactocoele is presumed to be caused by some form of ductal obstruction. Clinically, patients usually present with a painless freely-mobile palpable lump. Diagnosis can be established by aspiration of milk-like fluid and disappearance of the lesion. The fluid contains variable amounts of protein, fat, and lactose.

On mammography, a galactocoele is seen as single or multiple masses with a density equal to or less than that of fibroglandular breast tissue, depending on the amount of fat component. If the amount of fat is very high, the mass can be seen as a totally radiolucent mass, simulating a lipoma. There may be a fat-fluid level within a circumscribed mass on upright horizontal beam mammograms which is characteristic for a galactocoele. Sometimes, fat and water densities are mixed, giving an image similar to that of a breast hamartoma. Galactocoele may also contain areas of calcium density[3,4] (Fig. 5).

Fig. 5 Galactocoele. Left craniocaudal mammogram of a 34-year-old woman, 5 months postpartum, shows dense breast with a circumscribed mixed soft tissue and calcium density mass (arrows). Aspiration yielded milky fluid with subsequent decreased size of the mass.

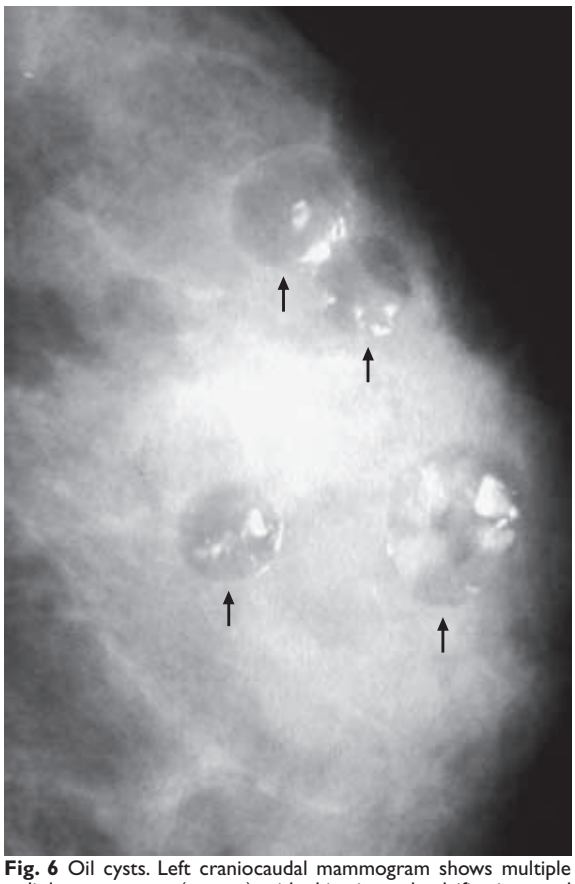


Fig. 6 Oil cysts. Left craniocaudal mammogram shows multiple radiolucent masses (arrows) with thin-rimmed calcifications and macrocalcifications.

Fig. 7 Fat necrosis. Left mediolateral mammogram of a patient who had reduction mammoplasty 2 years ago shows a radiolucent mass with indistinct margins (arrow).

Oil cyst

Oil cysts represent a focal form of fat necrosis. The cyst is composed of triglycerides[1]. Fat necrosis of the breast is a nonsuppurative inflammatory process resulting from blunt trauma or surgery. A history of breast trauma may not be recalled in many cases. Clinically, the patients may be asymptomatic, or present with a painful or painless mass. Associated skin thickening and retraction simulating carcinoma may be found. Fat necrosis has a wide spectrum of mammographic findings, including masses, localised skin thickening, calcifications of variable size and morphology, architectural distortion, and oil cysts with or without calcified walls[5-7] (Fig 6). Areas of fat necrosis are most often located in areas of previous trauma or surgery, particularly after reduction mammoplasty (Fig. 7) or lumpectomy with radiation[7,8]. Fat necrosis is frequently mistaken for carcinoma, both clinically and mammographically. However, biopsy can be avoided in cases that manifest as fat-containing masses.

Hamartoma

A hamartoma is an uncommon benign breast tumour that contains variable amounts of fat, glandular tissue,

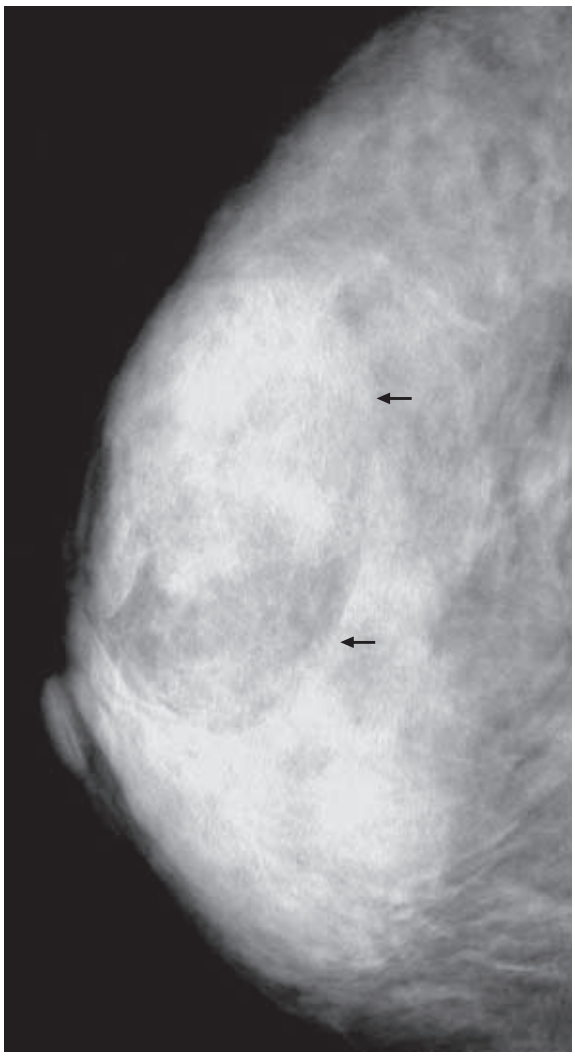


Fig. 8 Hamartoma. Right lateral mammogram shows a well-defined mass with areas of mixed fat and soft tissue density (arrows) in the upper quadrant.

and fibrous connective tissue. Hamartoma has also been referred to as lipofibroadenoma, adenolipoma, and fibroadenolipoma to reflect the dominant type of tissue within the lesion. Clinically, patients may be asymptomatic or present with a painless palpable mass. The consistency of the mass may be soft or firm, depending on the amount of fat. On mammograms, a hamartoma is seen as a circumscribed mass of mixed fat and fibroglandular density (Fig. 8). This appearance is sufficiently characteristic to establish the diagnosis and further investigation such as US or biopsy is not required. Hamartomas with a large amount of fat may be confused with a lipoma while those with very little fat may be mistaken for a fibroadenoma or a carcinoma[9].

Lipoma

A lipoma is a benign breast tumour that is composed of mature fat cells. It commonly occurs in women in the postmenopausal age group who have fatty breasts. The patients are usually asymptomatic. A lipoma is seen on mammograms as a well-circumscribed, round, oval, or lobulated radiolucent mass with a thin radiopaque capsule[10] (Fig. 9). This appearance is characteristic for a benign lesion, and further investigation or biopsy is not necessary.

Intramammary lymph node

An intramammary lymph node is probably the most common fat-containing breast mass. It is found in approximately 5% of patients undergoing mammography. This node is typically located in the upper outer quadrant, though its presence has been reported in

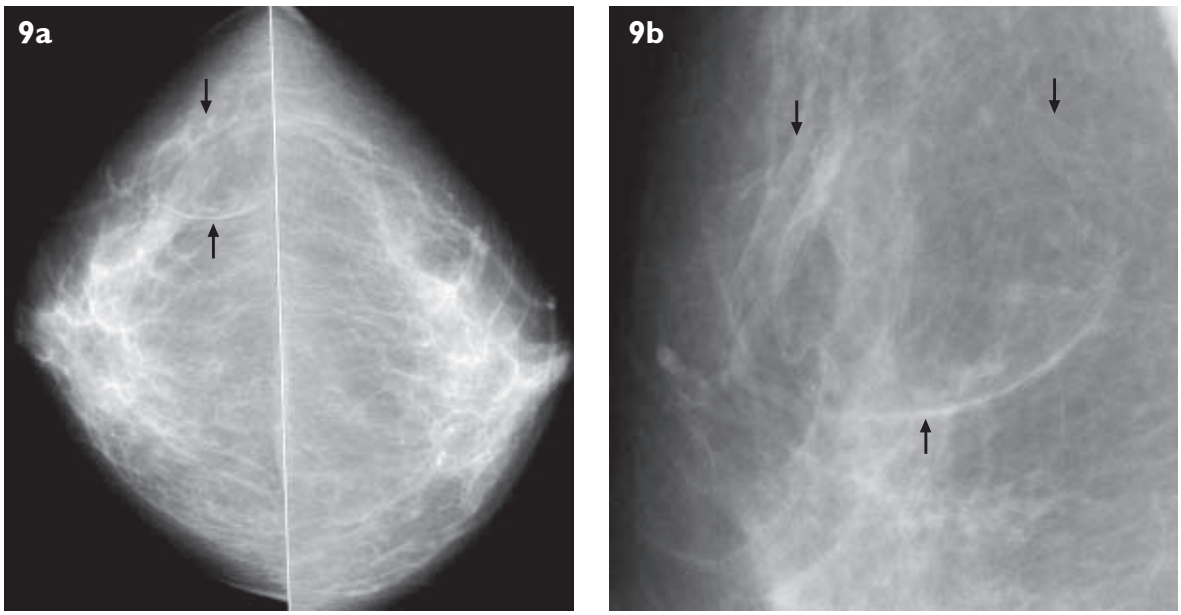


Fig. 9 Lipoma. (a) Bilateral craniocaudal mammogram shows a well-defined radiolucent mass (arrows) in the outer quadrant of the right breast. The mass is difficult to visualise in breasts that are fatty. (b) Spot-compression magnification view shows a radiolucent mass with a thin radiopaque capsule (arrows).

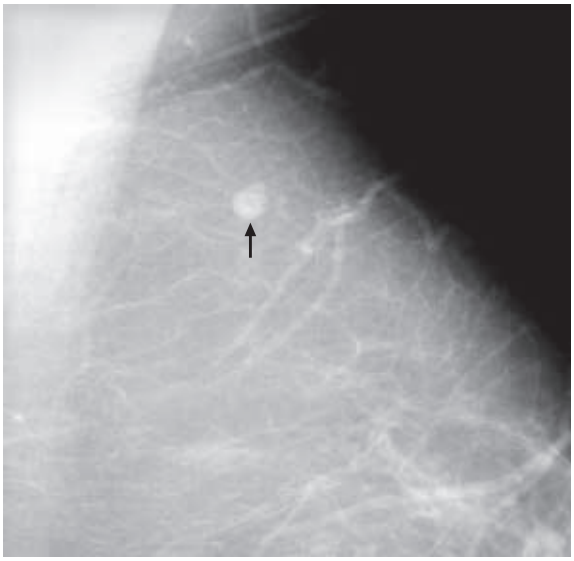


Fig. 10 Intramammary node. Left mediolateral oblique mammogram shows a small well-defined mass with central lucency (arrow).

all other areas of the breast[11,12]. Intramammary nodes are usually less than 1 cm in their greatest diameter. It appears on mammograms as a circumscribed oval or reniform noncalcified mass with a central or peripheral lucency that represents fat within its hilum (Fig 10).

ABSTRACT

A 37-year-old woman who was six months postpartum presented with a painless lump in her left breast for three months. Mammograms showed a mixed fat and soft density mass on the craniocaudal and mediolateral views. A fat-fluid level was seen within the mass, typical of a galactocoele. Needle aspiration yielded milky fluid. The differential diagnosis of breast masses presenting in women with pregnancy or lactation is briefly discussed. The other causes of fat containing breast masses, such as oil cyst, hamartoma, lipoma and intramammary lymph nodes, are illustrated with additional examples.

Keywords: galactocoele, fat-containing breast mass, mammography.

Singapore Med J 2003 Vol 44(4):211-215

REFERENCES

1. Adler DD. Mammographic evaluation of masses. In; Kopans DB, Mendelson EB, eds. RSNA categorical course in breast imaging, Oak Brook, IL: RSNA 1995; 107-16.
2. Golden GT, Wangensteen SL. Galactocele of the breast. Am J Surg 1972; 123:271-3.
3. Gomez A, Mata JM, Donoso L, Rams A. Galactocele: three distinctivve radiographic appearances. Radiology 1986; 158:43-4.
4. Sickles EA, Vogelaar PW. Fluid level in a galactocele seen on a lateral projection mammogram with a horizontal beam. Dis Breast 1981; 7:22-3.
5. Bassett LW, Gold RH, Cove HC. Mammographic spectrum of traumatic fat necrosis: the fallibility of pathognomonic signs of carcinoma. Am J Roentgenol 1978; 130:119-22.
6. Hogge JP, Robinson RE, Magnant CM, Zuurbier RA. The mammographic spectrum of fat necrosis of the breast. RadioGraphics 1995; 15:1347-56.
7. Stigers KB, King JG, Davey DD, Stelling CB. Abnormalities of the breast caused by biopsy: spectrum of mammographic findings. Am J Roentgenol 1991; 156:287-91.
8. Orson LW, Cigtay OS. Fat necrosis of the breast: characteristic xeromammographic appeerance. Radiology 1983; 146:35-8.
9. Muttarak M Pojchamarnwiputh S, Chaiwun B. Hamartoma of the breast. J Hong Kong Coll Radiol 2000; 3:155-8.
10. Feig SA. Breast masses: mammographic and sonographic evaluation. Radiol Clin North Am 1992; 30:67-92.
11. Svane G, Franzen S. Radiologic appearance of nonpalpable intra-mammary nodes. Acta Radiol 1993; 34:577-80.
12. Meyer JE, Ferraro FA, Frenna TH, DiPiro PJ, Denison CM. Mammographic appearance of normal intramammary lymph nodes in an atypical location. Am J Roentgenol 1993; 161:779-80.