Hamartoma is a rare benign breast tumor. Between 1995 and 2001, eight breast hamartomas (0.058%) were identified from 13608 mammographic examinations. All patients had typical mammographic features: oval-shaped masses with smooth margin and mixed density. The age at detection ranged between 27 and 52 years old. Seven of them presented with a palpable painless lump. Tumor size varied between 2.2 × 1.7 and 13.0 × 7.0 cm. Sonographic appearance was variable and non-diagnostic. In four tumors, malignancy was suspected by sonogram and cytological result by fine needle aspiration showed negative result. Three patients received surgical excision for cosmetic reason. Histopathology proved hamartoma. Awareness of the characteristic mammographic manifestations of this kind of tumor may obviate the unnecessary procedures.

Key words: Breast neoplasm; Hamartoma; Mammography; Sonography

Breast hamartoma is a relatively rare benign tumor. It was first proposed by Arrigoni et al in 1971 [1], that variable amount of fat, fibrous and glandular tissue constitute this tumor. It was also referred as lipofibroadenoma, fibroadenolipoma or adenolipoma based on the predominant components [2]. The frequency of this tumor has been reported as between 0.04%~1.15% [3-6] and accounts for 4.8% of all benign breast tumors [7]. Because of the varied appearance in sonogram [8-10], this tumor is usually diagnosed by mammographic examination. In addition, more occult hamartomas will be recognized by screening mammography. Therefore, it is important for all radiologists to be familiar with the various radiologic manifestations of breast hamartoma.

MATERIALS AND METHODS

From November 1995 to December 2001, breast hamartomas were diagnosed in 8 patients out of 13608 mammographic examinations in our hospital. Their clinical records, mammograms and sonograms were reviewed. Mammography was performed by BENNETTE CONTOUR (TREX Medical Corporation, New York). Mediolateral oblique and craniocaudal views were obtained in all patients. The dimension of tumor was measured by mammogram. Breast sonography was performed by ALOKA SSD 650 scanner (Tokyo, Japan) with a 10 MHz transducer. Echo-guided fine needle aspiration and cytologic examinations were carried out in four tumors with clinical suspicion of malignancy. Excision of the tumor was performed in 3 patients for reasons of contour deformity and histopathologic diagnosis. In three of the remainder cases, follow-up mammography was done.

RESULTS

Clinical Findings

All of these eight patients were premenopausal and none used oral pills before. The age of patients ranged from 27 to 52 years (median, 40 years). One
Patient was nulliparous and seven had born at least one child. One patient had family history of breast cancer in her grandmother. One patient received breast biopsy before at the same area of the palpable mass and the result was benign. Seven of them presented with a painless palpable lump, which had a soft consistency on physical examination.

**Mammographic Findings**

The mammographic features of these 8 patients were listed in Table 1. Five of the eight tumors were located in the right breast and three in the left breast. The greatest dimension of the masses varied between 2.2 cm and 13 cm (mean, 5.3 cm). All of the masses had oval-shaped, smooth margin and mixed fibrofatty density. Pseudocapsule was noted in three masses (Fig.1). The density was heterogeneous: slight preponderance of fat tissue in two masses (Fig.1), of fibroglandular tissue in one mass (Fig.2a) and nearly equal proportion in five masses (Fig.3a). Three of five patients who didn’t receive surgery have follow-up mammography for up to 5 years. No significant interval change in the tumor size and density was identified.

**Sonographic Findings**

On the sonogram, the mass also had an ovoid shape and solid content. The tumor margin was smooth in six tumors (Fig. 4) and partially ill-defined in another two (Fig. 2b). Three tumors were isoechoic, with the same echogenicity as the adjacent fibroglandular tissue, and had small to large areas of hypoechogenicity (Fig. 3b). Five tumors were mainly hypoechogenic with small areas of cystic component (Fig. 4). Echogenic stripes were visualized within four tumors (1 isoechoic and 3 hypoechoic) (Fig. 3b). Echo-guided fine needle aspiration cytology was obtained in four tumors and the results were negative.

**Histopathologic Findings**

Microscopically, the three excised tumors were composed of admixture of mature adipose tissue, hyalinized fibrous tissue and lobules of mammary glands. There was no evidence of malignancy.

**DISCUSSION**

The frequency and age distribution of our patients were comparable to the reported literatures [3-7,11,12]. Only one of our patients was nulliparous. Pregnancy and lactation had been considered to be related to the pathogenesis [3, 13]. However, in the study by Helvie et al [9], 53% of their patients were nulliparous. The lesions are usually painless and palpable as a relatively soft mass. Occasionally, the mass may grow up to 9 cm and remains non-palpable.

The characteristic mammographic appearance of hamartoma has been described as “a piece of cut sausage” [2], which represents the admixture of fat and fibroglandular elements within the lesion [3,4,14]. All of the tumors in our patients had the pathognomonic mammographic findings, although there was slight difference in the proportion of density. Of notes,
Figure 2. The right breast of a 38-year-old woman. a. Craniocaudal mammogram reveals a little predominance of fibroglandular tissue than fat within the tumor (arrows). b. Sonogram displays that this tumor has a partially ill-defined margin (arrows) and is isoechoic with some hypoechoic components.

Figure 3. The left breast of a 36-year-old woman. a. Mediolateral oblique mammogram demonstrates that fibroglandular components of the tumor are almost equivalent to fat components. Pseudocapsule is also present (arrows). This tumor has no interval change with 5 years of follow-up. b. Sonogram of this tumor displays a smoothly margined and isoechoic mass with hypoechoic areas. Echogenic stripes are present within the tumor (arrows).
small hamartoma within a very dense breast tissue might not have the typical mammographic manifestations [11]. In three of our patients, pseudocapsule was detected on the mammogram, being explained histologically by the presence of collagen from adjacent tissue or displaced breast trabeculae [4].

Breast hamartoma has a wide variation of sonographic appearance, which is not helpful for differential diagnosis [8,9]. Black et al [10] pointed out that in their mammographically and clinically detected hamartomas, most have heterogeneous echogenicity without posterior acoustic shadowing. Kopan et al [8] have described the ultrasonic findings as “sonolucent adenomatous tissue interspersed with echogenic septa of fat and fibrous tissue”. In the study by Berna et al [6], 70.3% of cases presented a well-circumscribed hypoechoic solid mass with hyperechoic lines and/or bands in the interior. They believe that these are strong indicators of the diagnosis of breast hamartoma and those septa correspond to connective fibrous tissue and/or fatty tissue. In another series reported by Wahner-Roedler et al [12], most of the hamartomas had a rather uniform echo pattern and were totally solid, but 24% of them showed small cystic areas, which have been seen in phyllodes tumors and occasionally in fibroadenoma. In our series, they may be isoechoic or hypoechoic depending on the individual tissue composition. Small cystic areas have been depicted in those hypoechoic tumors. Nonetheless, echogenic septa appeared in some isoechoic or hypoechoic tumors. Fine needle aspiration cytology had been performed in four tumors with suspicion of malignancy on sonogram. Gogas et al [15] have also found that cytology is an insufficient method for the diagnosis of this tumor.

Needle biopsy cannot establish the histologic diagnosis since it will only demonstrate normal breast tissue. The pathologists may give false interpretation if not aware of the mammographic diagnosis. But it can support the exclusion of malignancy. Although hamartoma is usually benign, malignant transformation is possible. Breast cancer arising from a hamartoma has been reported [16].

Breast hamartoma is now more frequently diagnosed because of increased use of mammography and can be mistaken for a neoplasm. The appearance of hamartoma, reflecting the varying proportions of fat and fibroglandular tissue, is inconsistent on the mammogram and sonogram. Needle aspiration or biopsy only can exclude the possibility of malignancy. If the mammographic features are distinct enough to allow the diagnosis of a hamartoma, it requires no further evaluation and can avoid surgical excision. Then scrupulous mammographic follow-up becomes crucial. It is therefore important that clinicians and radiologists should be acquainted with it.

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乳房缺陷瘤

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乳房缺陷瘤是一種罕見的良性乳房腫瘤。從1995年至2001年本院共實施13608次乳房攝影檢查，其中8位病患（0.06%）有典型缺陷瘤的特性：密度不均界限平滑的卵圓形腫塊。病患發現時的年齡介於27和52歲之間，其中7例因摸到無痛性乳房腫塊就診，腫塊大小自2.2×1.7公分到13×7公分不等，這些腫瘤在超音波的影像特徵不一致，其中四例無法排除惡性的可能，接受細針抽吸細胞學檢查結果為陰性；另有三例因外觀因素，接受腫瘤切除，病理切片證實為良性缺陷瘤。所以只要發現乳房腫瘤具備此種乳房攝影之特徵，即可避免多餘的檢查和不必要的手術。

關鍵詞：乳房腫瘤，缺陷瘤，乳房攝影，超音波攝影