Sonographic Features of Breast Hamartomas

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The sonographic features of ten breast hamartomas are reported. Four masses were clinically palpable. The mammographic appearance was characteristic of hamartomas in five cases. In the remaining five lesions, because the radiographic appearance was not pathognomonic, surgical excision was required for pathologic confirmation of the diagnosis. A wide spectrum of sonographic appearances was identified, the most frequent was that of a moderate to well-circumscribed, solid, hypoechoic mass with posterior acoustic shadowing. Two isoechoic hamartomas were very difficult to visualize on sonography. We conclude that ultrasound has a minimal role in the diagnosis of breast hamartomas, in view of their wide sonographic variability. KEY WORDS: breast neoplasms; breast neoplasms, diagnosis; breast neoplasms, ultrasound studies; hamartoma. (*J Ultrasound Med 9:85, 1990*)

Hamartomas are benign tumors of the breast composed of variable amounts of fat, fibrous tissue, and glandular elements.[1,2] A characteristic mammographic appearance of a well-circumscribed mass composed of fatty and glandular tissue can obviate the need to biopsy such lesions.[3]

The purpose of our study was to analyze the sonographic appearance of breast hamartomas in order to determine their nature and determine if hamartomas have diagnostic ultrasound features. We present the mammographic and sonographic findings in ten breast hamartomas, five of which are histologically proven. To our knowledge, no such series has been previously reported.

MATERIALS AND METHODS

Between February and November 1988, ten masses in nine women with a diagnosis of breast hamartoma underwent mammography and ultrasonography at the University of Michigan Hospitals. The women ranged in age from 35 to 85 years with a mean of 60 years. All women had a physical examination, mammography, and ultrasonography. Surgical excision with pathologic confirmation of the diagnosis was obtained for five hamartomas.

Five of the women had undergone screening mammography in our department at an earlier date with radiographic findings typical for hamartoma and were subsequently recalled for ultrasound examinations for this study. The mammographic appearance of two of these lesions was included in a previous report.[4] In four of the nine patients, the ultrasound examination was performed immediately following the mammogram for further characterization of a clinically apparent and/or mammographically visualized mass. In all cases, the mammographic findings were known at the time of sonography. All mammography examinations were obtained on a film-screen unit (500T, Thomson-CGR, Columbia, MD; or Mamex DC Mag, Technomed USA, Bayshore, NY). High-resolution real-time ultrasound studies were performed by the radiologist with a 7.5-MHz, hand-held, linear array transducer (Hitachi 310 EUB, Tokyo, Japan).

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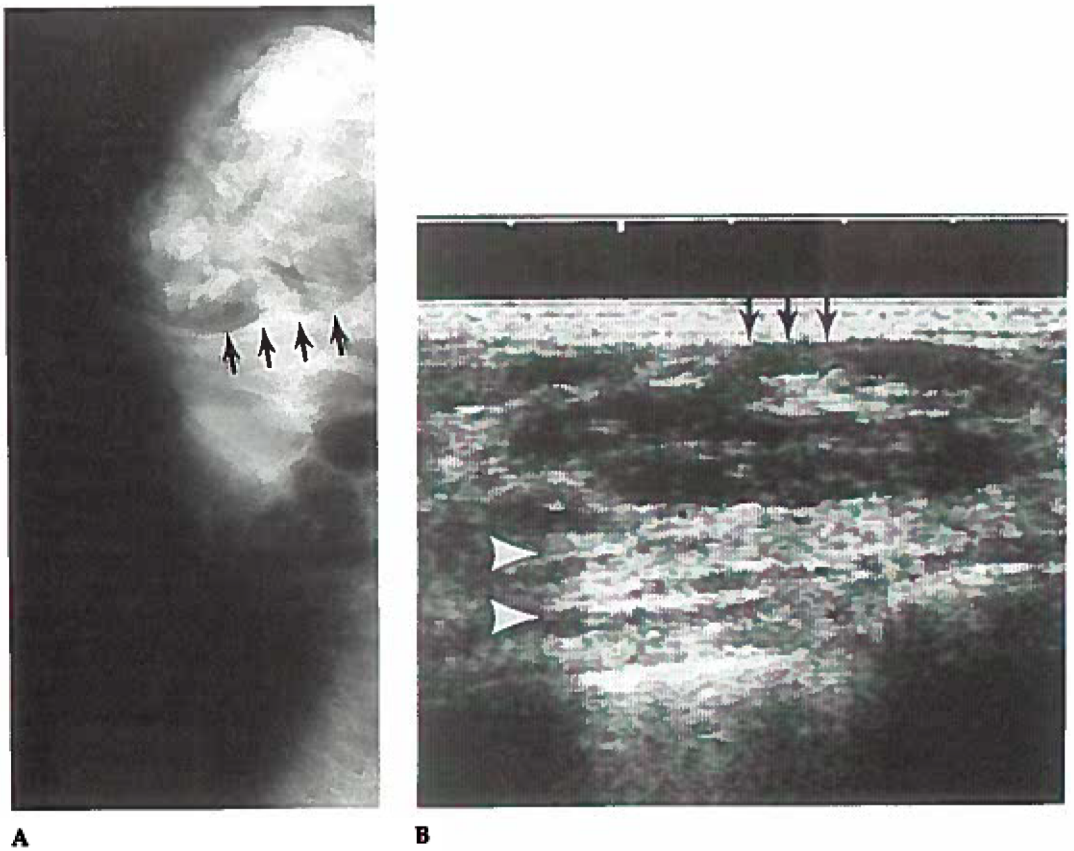
Table 1: Clinical Presentation, Mammographic and Sonographic Features of Ten Breast Hamartomas

Patient's age (yr) and clinical presentation of mass	Mammographic features		Sonographic features	
	Breast parenchymal pattern	Density of mass	Echogenicity of mass	Distal acoustic findings
1. 85, palpable	Mixed	Mixed	Isoechoic	—
2. 66, nonpalpable	Fatty	Mixed	Hyperechoic	Shadowing
3. 35, palpable	Glandular	Mixed	Mixed	Enhancing
4. 58, nonpalpable	Mixed	Mixed	Mixed	Shadowing and enhancing
5. 78, nonpalpable*	Fatty	Dense	Hypoechoic	Shadowing
6. 58, nonpalpable	Mixed	Mixed	Hypoechoic	Shadowing
7. 66, nonpalpable*	Fatty	Mixed, Ca^{+2}	Isoechoic	—
8. 48, palpable*	Mixed	Dense	Hypoechoic	Shadowing
9. 42, palpable*	Mixed	Dense, Ca^{+2}	Mixed	—
10. 42, nonpalpable*	Mixed	Dense	Hypoechoic	Shadowing

* Pathologically proven.

Figure 1 A, Left axillary view in a 35-year-old woman demonstrates a large mass (*arrows*) of mixed fatty and glandular composition occupying the entire lower half of the breast. The mammographic appearance is pathognomonic for a hamartoma. A soft, mobile mass was clinically palpable and stable for many years, corresponding to the radiographic finding. B, Transverse real-time sonogram of the palpable left breast mass demonstrates a solid lesion (*arrows*) of mixed echogenicity with distal acoustical enhancement (*arrowheads*).



A B

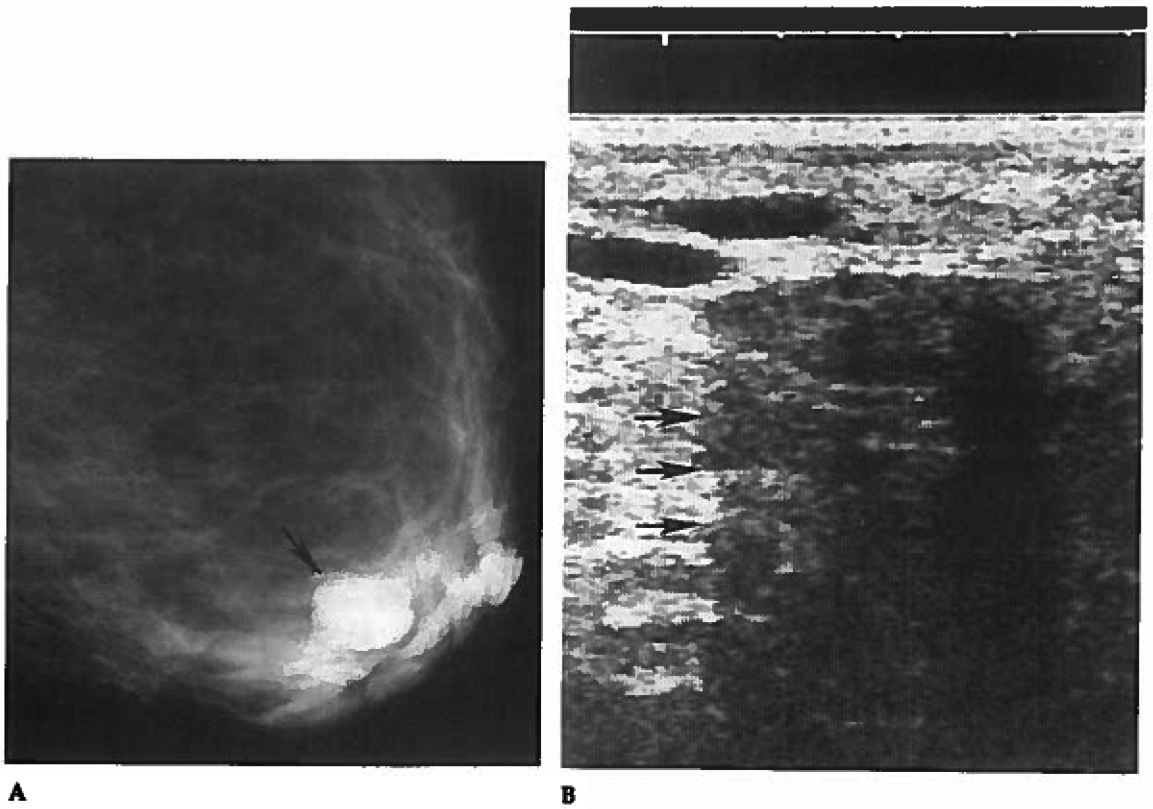
RESULTS

Patient age, clinical presence of the mass, and mammographic and sonographic features of the ten masses are listed in Table 1. Four masses were palpable. The remaining six were not and were first detected on mammography. This included one woman with bilateral lesions, one of which was palpable and the second of which was not. The mammographic density of the breasts was fatty in three women, predominantly glandular in one, and mixed in five. Six of the hamartomas had mixed fatty and glandular density (Fig. 1A) on mammography and four were homogeneously dense (Fig. 2A). Seven hamartomas were well circumscribed on the mammogram whereas three were moderately to poorly circumscribed. Six lesions were located in the left breast and four in the right. The most common location was the upper outer quadrant (four out of ten), followed by the 6-o'clock position and lower inner quadrant (each two out of ten). One mass was located in the upper inner quadrant and one was subareolar. The masses were 2 to 8 cm in greatest dimension as measured on the mammogram (mean, 3.7 cm). A few nonspecific microcalcifications were associated with two hamartomas. No skin changes were present.

Ultrasound depicted a moderate to well-circumscribed mass in eight out of ten lesions. Four of these were predominantly hypoechoic relative to the surrounding tissue (Fig. 2B), one was hyperechoic, and three masses were composed of a mixed echogenic pattern (Fig. 1B). Two hamartomas could not be visualized sonographically. One of these was in a predominantly fatty breast (Fig. 3) whereas the other was in a breast which was of mixed fatty and glandular composition on mammography. Acoustic attenuation posterior to the mass was present in five lesions (Figs. 2B and 4), although these were not the ones with microcalcifications on the mammogram. Acoustic enhancement was visualized behind one mass (Fig. 1B) and one mass had areas that both enhanced and attenuated sound. No discrete cysts or fluid areas were identified in any of the masses.

Five of the ten lesions that did not have the classic mammographic findings of a hamartoma were surgically excised following demonstration of a solid mass on sonography. Histologic review of the five masses showed them to be predominantly fibrous hamartomas.

Figure 2 A, A homogeneous well-circumscribed mass (*arrow*) is present in the subareolar region of the left breast of a 77-year-old woman. No mass was clinically palpable. The mammographic appearance is nonspecific and could be consistent with either a cyst or a solid neoplasm. Incidentally noted are dilated ducts, present bilaterally. B, A solid hypoechoic mass with distal shadowing (*arrows*) is seen on the transverse ultrasound image. Portions of dilated ducts are visualized superficially.



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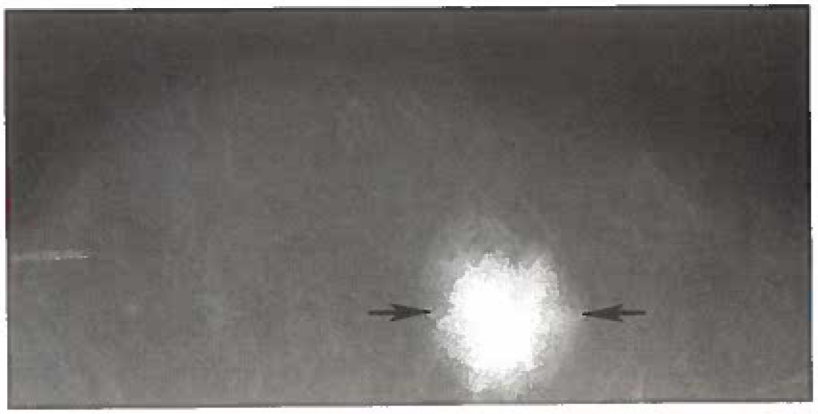

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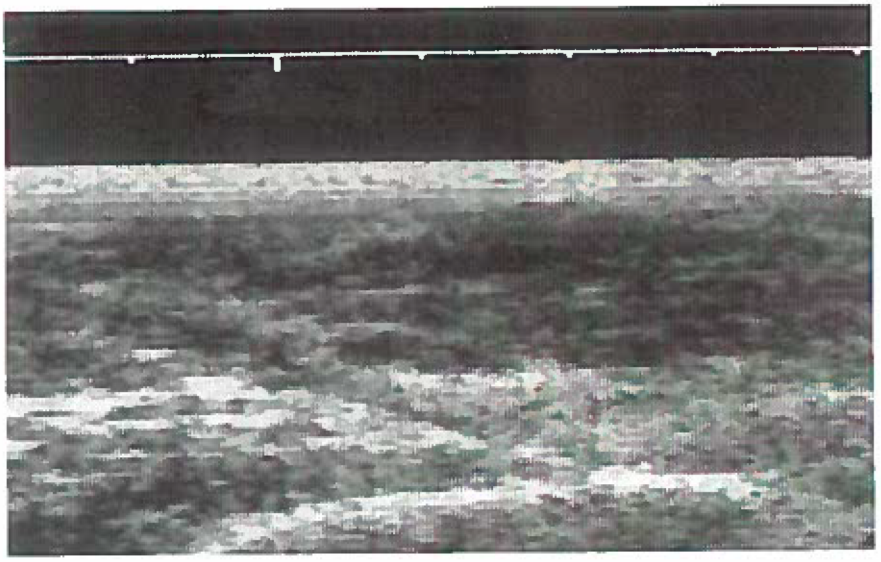

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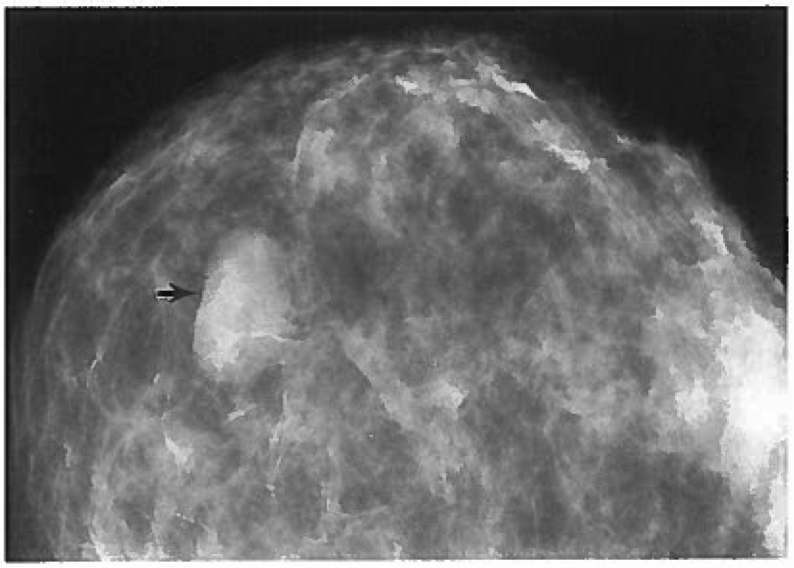
Figure 3 A, A poorly marginated 3 cm nonpalpable mass of mixed fatty and glandular composition was noted in the upper outer quadrant of the breast in a 66-year-old woman (*arrows*). A few nonspecific calcifications are present within the mass. The breast is predominantly fatty in composition. B, No discrete mass is seen on the sagittal real-time image of the left upper outer quadrant. Surgical excision confirmed a densely collagenous hamartoma.

DISCUSSION

Hamartomas of the breast are benign tumors composed primarily of dense, fibrous tissue with variable amounts of fat and associated ducts. They are also referred to as fibroadenolipomas, lipofibroadenomas, and adenolipomas.[5,6] The classic mammographic appearance of a well-defined mass composed of a mixture of glandular tissue and fat can allow diagnosis based entirely on the radiographic appearance.[3,7] However, breast hamartomas may not have a classic mammographic appearance,[4] in which case further workup is required.

The primary role of sonography in the evaluation of breast masses is well established as a simple means of differentiating cystic from solid masses.[8,9] Thus far, due to the nonspecific sonographic appearance of solid breast masses,[10,11] cytologic and/or histologic information is usually required to differentiate benign from malignant breast masses. We attempted to determine whether a specific sonographic appearance exists for a hamartoma that would obviate the need for more invasive procedures. Only a few anecdotal examples of the sonographic appearance of breast hamartomas exist in the literature.[12,13]

A wide spectrum of sonographic features was found in our series. The variable echogenicity encountered may be attributable to different amounts of fat, fibrous, and glandular tissue in a given lesion. Forty percent of the lesions were hypoechoic although an additional 30% had areas of mixed echogenicity. Two hamartomas were not well seen on sonography, including one that occurred in a breast of known mixed fatty and glandular composition. Shadowing was noted in half of the lesions. We therefore conclude that sonography has little to offer in the diagnosis of breast hamartomas apart from excluding cysts. Whereas the most common sonographic appearance in our patients was that of a well circumscribed solid hypoechoic mass with distal acoustic shadowing, this appearance is not specific and has been reported for other benign masses such as fibroade-



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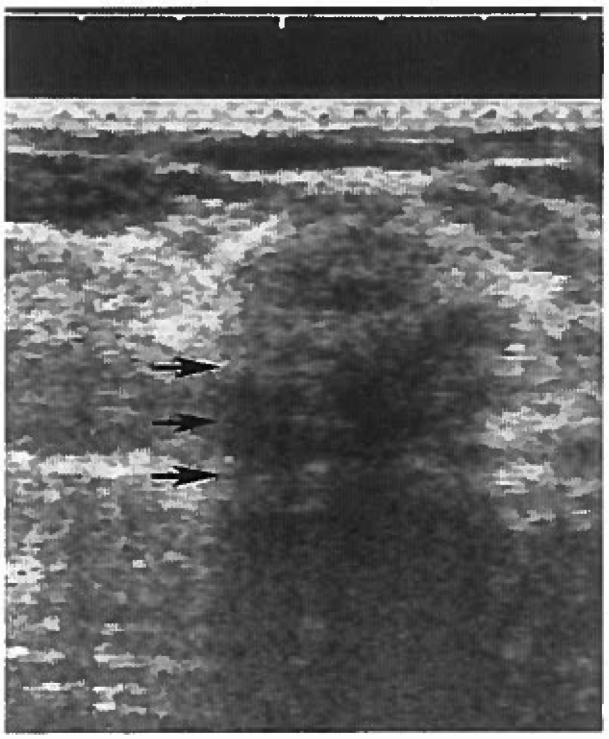

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Figure 4 A, A well-circumscribed mass (*arrow*) is seen on the right craniocaudal view in a 48-year-old woman. The mass was clinically palpable. B, Sonogram shows a solid mass with ill-defined margins and shadowing (*arrows*) that is suspicious for malignancy. Pathologic diagnosis: hamartoma.

nomas and, more importantly, carcinomas.[10,14] Thus, visualization of a solid mass will generally require biopsy to arrive at the diagnosis of a hamartoma that does not demonstrate characteristic mammographic features.

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