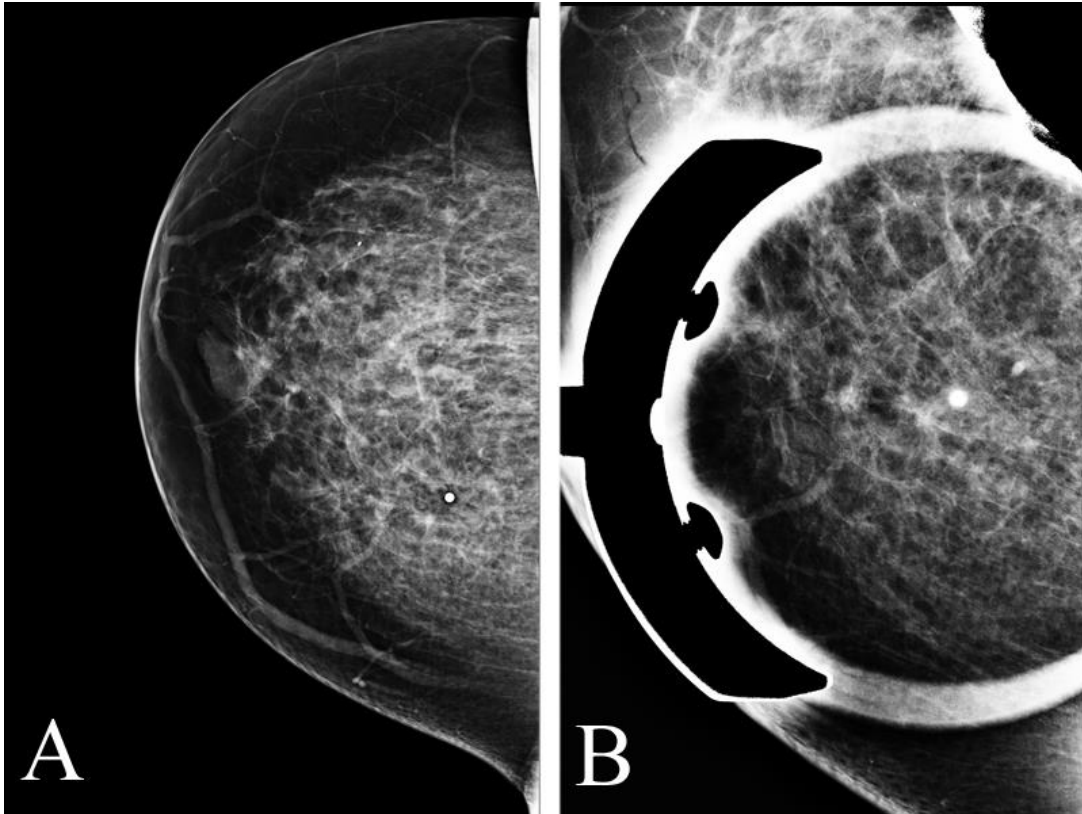


CLINICAL PRESENTATION AND RADIOLOGY QUIZ QUESTION



78 year old woman with a palpable lesion of the right breast. A. Full field digital craniocaudal mammogram with a marker at the location of the palpable lesion. B. Spot compression digital craniocaudal mammogram with a marker at the location of the palpable lesion.

A 78 year old woman has a palpable lesion on clinical breast examination done during a physical examination. The hard, painless right breast mass measures approximately 2 cm. The patient has no palpable abnormalities of the contralateral breast or either axilla, and has no additional symptoms (such as bone pain or weight loss). It has been approximately one year since the patient had a screening mammogram. A diagnostic mammogram is performed (see above figure).

Of the following options, which is the best first step in further evaluation of this patient's breast lesion?

- (a) no further work-up is required, since the diagnostic study is negative
- (b) CT of the breast
- (c) ultrasound of the palpable lesion
- (d) MR imaging of both breasts

RADIOLOGY QUIZ QUESTION, ANSWER, AND EXPLANATION

Of the following options, which is the best first step in further evaluation of this patient's breast lesion?

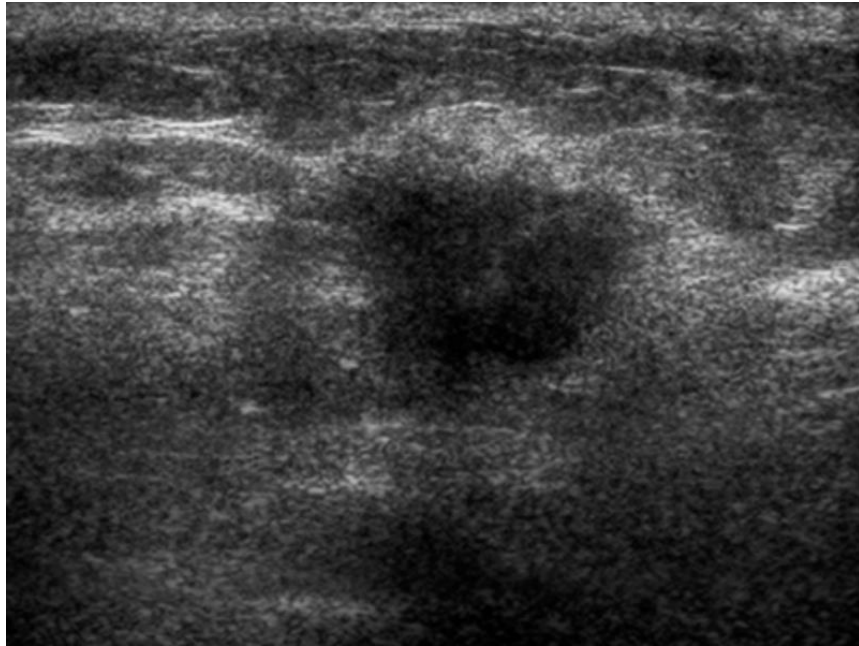
- (a) no further work-up is required, since the diagnostic study is negative
- (b) CT of the breast
- (c) ultrasound of the palpable lesion
- (d) MR imaging of both breasts

Answer: (c), ultrasound of the breast, is the correct response. New breast masses discovered on breast self-examination or during clinical breast examination in patients over the age of 40, particularly if suspicious (hard and nonpainful) should undergo further evaluation. The exact method of further evaluation varies depending on the local resources and preferences (see Radiology Quiz of the Week #50, Diagnostic Mammography I). This patient had a diagnostic mammogram performed initially. There is a subtle density at the location of the marker, but the finding is very hard to see. There is no obvious, spiculated mass with malignant calcifications accounting for the abnormality, and the study shows no additional lesions. The lack of an obvious malignancy on mammography should *not* stop the work-up in this case, as 10-15% of breast malignancies may not be visualized on mammograms. Of the steps listed, ultrasound is the most reasonable alternative. Proceeding directly to biopsy of the palpable lesion would probably also be a reasonable alternative, but this option is not listed.

As noted above, hard, non-painful palpable lesions found on clinical breast exam in any woman, but particularly in any woman older than 40 years of age, needs to be regarded with suspicion *even if a diagnostic mammogram is negative*; therefore, (a) is incorrect. CT of the breast is rarely performed and is not indicated in this case, and (b) is incorrect. MR of the breasts is usually performed for trouble-shooting difficult cases or screening patients at extremely high risk for breast cancer, and is not the best first step in further evaluation, so (d) is incorrect.

IMAGING STUDY AND QUESTIONS

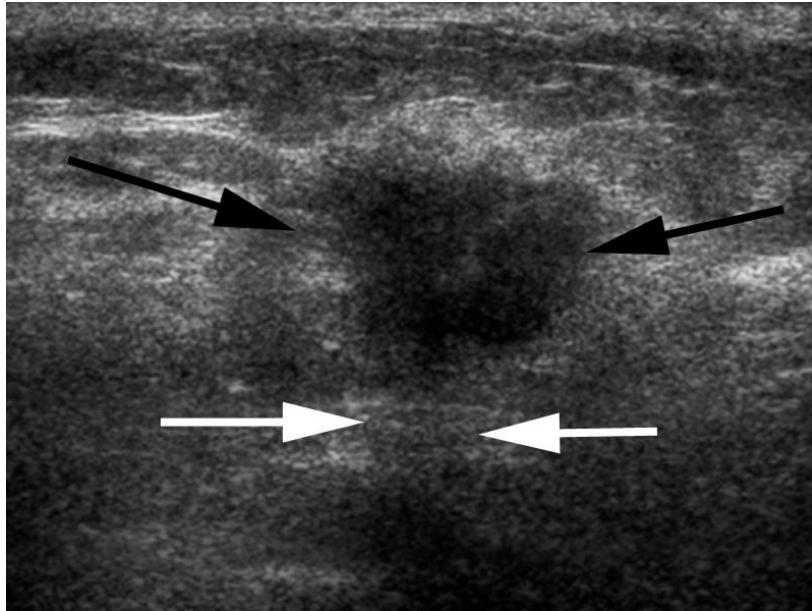
The patient underwent further imaging:



Imaging questions:

- 1) What type of study is shown?
- 2) Are there any abnormalities?
- 3) What is the most likely diagnosis?
- 4) What is the next step in management?

IMAGING STUDY QUESTIONS AND ANSWERS



Imaging questions:

- 1) What type of study is shown? Breast ultrasound.
- 2) Are there any abnormalities? Yes. There is a hypoechoic mass with somewhat poorly defined borders (black arrows) demonstrating posterior shadowing (white arrows).
- 3) What is the most likely diagnosis? Breast cancer.
- 4) What is the next step in management? Biopsy of the lesion.

PATIENT DISPOSITION, DIAGNOSIS, AND FOLLOW-UP

The patient underwent excisional biopsy of the lesion, which was diagnostic of infiltrating ductal carcinoma. The patient elected to have radiation and chemotherapy.

SUMMARY

Presenting symptom: The patient presented with a breast lump. While most breast lumps are benign, there are three features which are worrisome in this patient: 1) her age, since older patients are more likely to have a malignant cause for a breast lump; 2) the density of the lesion, since harder lesions (in general) are more likely malignant than softer lesions; and 3) the painless nature of the lesion, since painless lesions (in general) are more likely to be malignant than painful ones. Note, however, that these are only generalizations.

Imaging work-up: While there is some variability in how palpable breast lesions are worked up, as a general rule diagnostic mammography should be performed first in patients over the age of 35, particularly if the patient is due for screening mammography anyway. There is variability in the work-up of such masses, however, and it may also be reasonable to perform ultrasound first in all patients, or to proceed directly to biopsy of the lesion, depending on local resources and practice patterns. The point of this quiz is that a negative diagnostic mammogram in a patient with a palpable breast lesion does NOT exclude cancer and such patients require additional evaluation including ultrasound and/or biopsy.

Establishing the diagnosis: The diagnosis of worrisome breast lesions is established by microscopic evaluation of obtained tissue.

Take-home message: Women greater than 40 years of age with new lesions found on either breast self-examination or clinical breast examination should undergo diagnostic mammography, particularly if it has been some time since the most recent mammogram. A negative diagnostic mammogram does NOT exclude cancer, however, and further evaluation may include additional imaging and often biopsy.

FURTHER READING

Fletcher SW, Barton MB. Primary care evaluation of breast lumps. UpToDate, accessed 7/29/09.

Mulley AG. Evaluation of breast masses and nipple discharges. Chapter 113 in Goroll AH, Mulley AG (editors), *Primary Care Medicine: Office Evaluation and Management of the Adult Patient*. Lippincott Williams and Wilkins, Philadelphia, 2009.

Renfrew, DL. Breast imaging. Chapter 9 of *Symptom Based Radiology*, Symptom Based Radiology Publishing, Sturgeon Bay, WI, 2010, available for no charge at www.symptombasedradiology.com.