

CLINICAL PRESENTATION AND RADIOLOGY QUIZ QUESTION

A 70 year old woman has a palpable lesion on clinical breast examination done during a physical examination. The hard, painless left breast mass measures approximately 5 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 just over a year since the patient had a screening mammogram.

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
- (b) CT of the breast
- (c) diagnostic mammography
- (d) MR imaging of both breasts

RADIOLOGY QUIZ QUESTION, ANSWER, AND EXPLANATION

Which is the best first step in further evaluation of this patient's breast lesion?

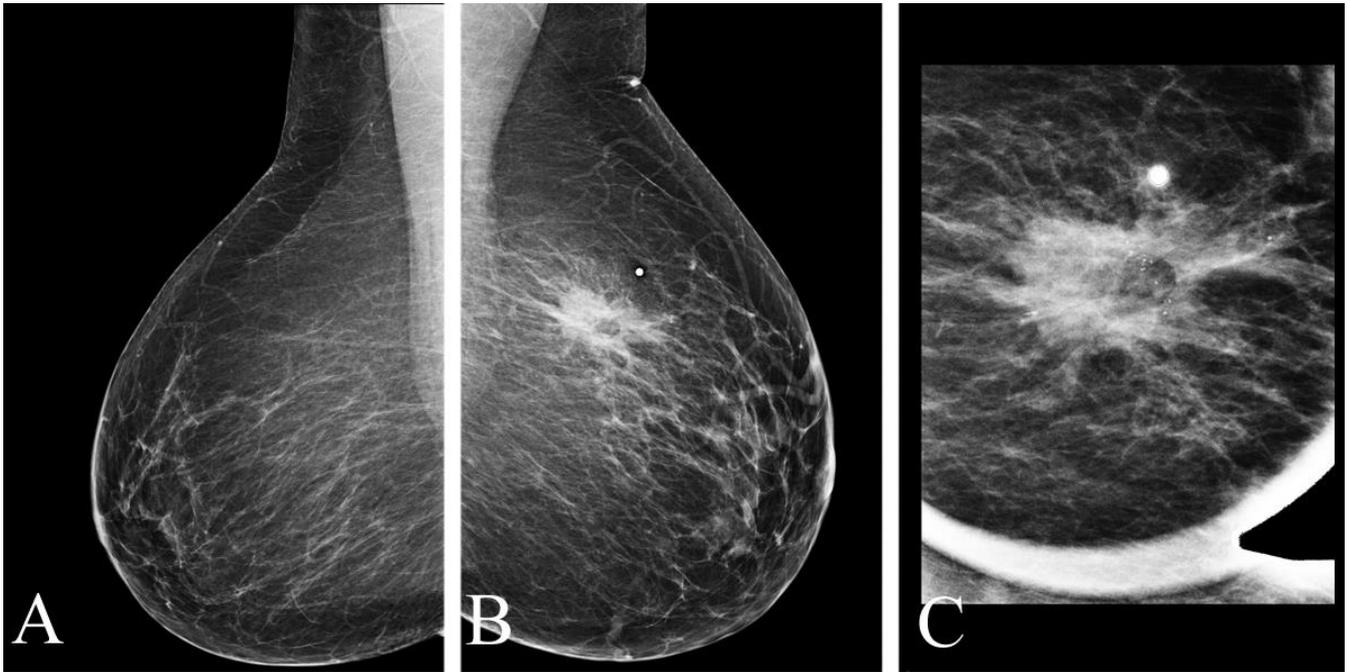
- (a) no further work-up is required
- (b) CT of the breast
- (c) diagnostic mammography
- (d) MR imaging of both breasts

Answer: (c), diagnostic mammography, 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. Of the possibilities listed, diagnostic mammography is the best response. The purpose of the diagnostic mammography is to further characterize the lesion, but also to evaluate for any additional lesions of the same breast or the contralateral breast prior to biopsy (which will distort the anatomy of the breast and may obscure lesions). Typically, diagnostic mammography consists of the usual views obtained during screening mammography (particularly if the patient has not recently undergone screening mammography, as was the case in this patient), that is, bilateral mediolateral oblique and craniocaudal views, with a marker at the location of the lesion. Additional views will usually be obtained, including a straight lateral exam and spot-compression studies of the lesion. Note that alternative methods of evaluation of this patient may also be acceptable. For example, ultrasound or proceeding directly to biopsy of the palpable lesion may also be reasonable first steps – but neither of these is listed as an option.

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 and further work-up is required; 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 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

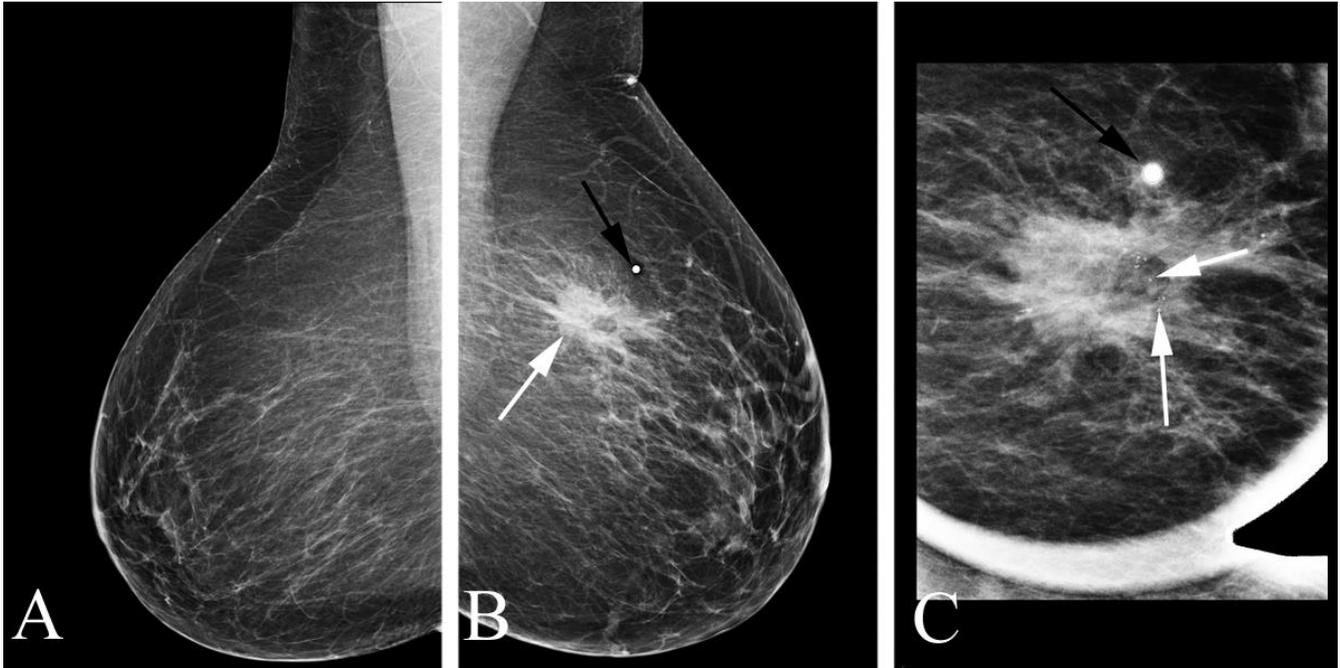
The patient underwent imaging:



Imaging questions:

- 1) What types of studies are 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 types of studies are shown? A and B represent the right and left (respectively) mediolateral oblique views from a diagnostic mammogram. Note the small metallic marker (black arrow) placed on the skin surface overlying the patient's palpable lesion. C represents a spot compression view of the lesion. Again, a marker (black arrow) has been placed at the location of the lesion.
- 2) Are there any abnormalities? Yes. There is a spiculated mass of the left breast seen on the mediolateral oblique view (white arrow). Some small scattered calcifications are seen on the spot compression view (white arrows).
- 3) What is the most likely diagnosis? Breast carcinoma.
- 4) What is the next step in management? Breast biopsy.

PATIENT DISPOSITION, DIAGNOSIS, AND FOLLOW-UP
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The patient underwent biopsy of the lesion, which was diagnostic of infiltrating ductal carcinoma. The patient subsequently underwent mastectomy along with 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. Ultrasound evaluation is usually performed first for patients under the age of 35 for several reasons: 1) the pre-test probability of cancer is lower, and the likelihood of finding a benign finding explaining the patient's palpable lesion (e.g., a benign cyst) is higher; 2) younger women have denser breasts which are typically more difficult to evaluate with mammography; 3) the risk/benefit ratio for radiation exposure increases with younger age. Note that 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. Note, as well, that a negative mammogram in a patient with a palpable breast lesion does NOT exclude cancer and that such patients require additional evaluation including ultrasound and/or biopsy.

Establishing the diagnosis: The diagnosis of suspicious 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 their most recent mammogram. Further evaluation may include additional imaging and often biopsy, but the mammogram should be performed before directly proceeding to biopsy in order to evaluate the breast prior to instrumentation.

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.