

CLINICAL PRESENTATION AND RADIOLOGY QUIZ QUESTION

A 23 year old woman presents with a lump of the right breast. The lump has been present for approximately one month, and the patient had a routine physical examination scheduled in one week at which time she was planning to ask about the lump, but the lump suddenly became painful and she therefore came in specifically for evaluation of the lump. On physical examination, the lump measures approximately 2 cm in diameter, is firm, and tender. There is no nipple drainage, breast dimpling, or overlying skin change.

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 both breasts
- (c) ultrasound of the palpable lesion
- (d) MR imaging of both breasts

RADIOLOGY QUIZ QUESTION, ANSWER, AND EXPLANATION

A 23 year old woman presents with a lump of the right breast. The lump has been present for approximately one month, and the patient had a routine physical examination scheduled in one week at which time she was planning to ask about the lump, but the lump suddenly became painful and she therefore came in specifically for evaluation of the lump. On physical examination, the lump measures approximately 2 cm in diameter, is firm, and tender. There is no nipple drainage, breast dimpling, or overlying skin change.

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

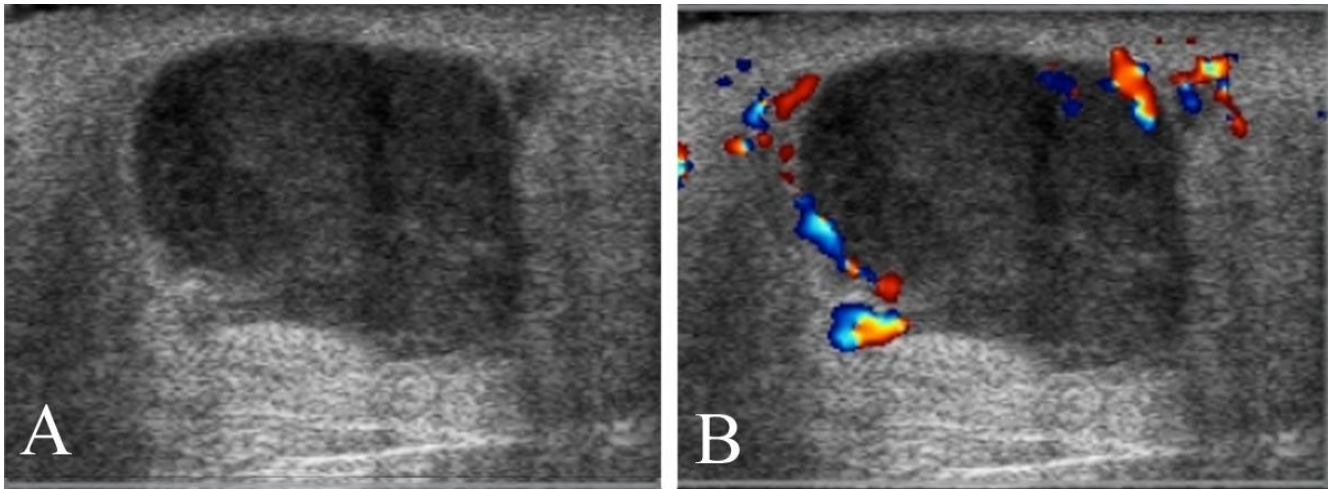
- (a) no further work-up is required
- (b) CT of both breasts
- (c) ultrasound of the palpable lesion
- (d) MR imaging of both breasts

Answer: (c), ultrasound of the palpable lesion, is the correct response. New breast masses discovered on breast self-examination or during clinical breast examination 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). Of the steps listed, ultrasound is the most reasonable alternative. Proceeding directly to biopsy (either fine needle aspiration or excisional biopsy) of the palpable lesion would probably also be a reasonable alternative, but this option is not listed.

As noted above, palpable lesions found on clinical breast exam need to be regarded with suspicion even if a diagnostic mammogram is negative; therefore, (a) is incorrect. CT of the breasts 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

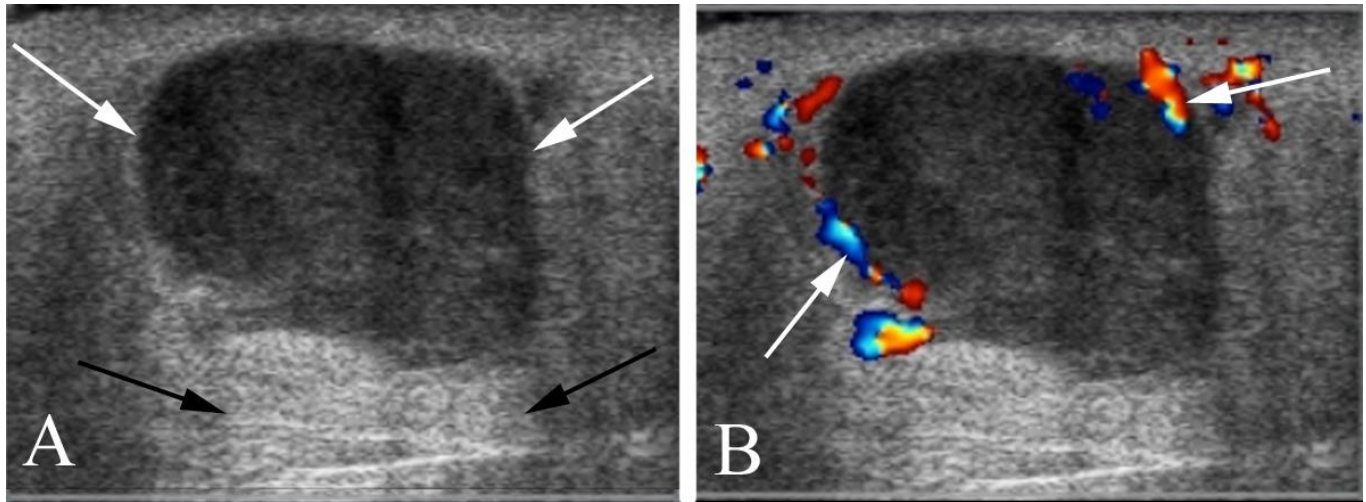
The patient underwent further imaging:



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:

- 5) What type of study is shown? A is a gray-scale ultrasound study, and B is a color Doppler ultrasound study.
- 6) Are there any abnormalities? Yes. There is a hypoechoic well-marginated mass (white arrows in A) with posterior enhancement (black arrows in A) showing peripheral flow on color Doppler imaging (white arrows in B).
- 7) What is the most likely diagnosis? The lesion does *not* represent a simple cyst, which would show no internal echoes on ultrasound evaluation. The lesion may represent a hypovascular mass, a complicated cyst, or a breast abscess.
- 8) 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 found to represent a ruptured epidermal inclusion cyst on microscopic evaluation.

SUMMARY

Presenting symptom: The patient presented with a breast lump. Most breast lumps, particularly in women under 30 years of age, are benign. However, these lesions still require evaluation, particularly (as in this case) when they are a source of symptoms.

Imaging work-up: As noted in Radiology Quiz of the Week #50 and #51, there is variability in how palpable breast lesions are worked up. For those young patients (generally, less than 35 years of age), we generally recommend ultrasound evaluation as the initial imaging examination for several reasons: 1) the pre-test probability of cancer is lower than with older women, 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. It may also be reasonable to proceed directly to biopsy of the lesion, depending on local resources and practice patterns. The point of this quiz is that, if imaging is going to be performed, ultrasound is the first choice among imaging studies for young women with palpable breast lesions.

Establishing the diagnosis: The diagnosis is established by microscopic evaluation of obtained tissue. If the ultrasound had shown a simple cyst, aspiration of the cyst would likely have sufficed. Cytologic evaluation of aspirated fluid is generally not necessary if the fluid is clear and the cyst does not recur. In this case, given the non-cystic nature of the lesion, excisional biopsy was performed and the diagnosis was based on microscopic examination of the resected tissue.

Take-home message: Ultrasound is the initial imaging study of choice for women less than 35 years of age with new lesions found on either breast self-examination or clinical breast examination.

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.