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CLINICAL PRESENTATION AND RADIOLOGY QUIZ QUESTION

A 57 year old woman presents with bloody left nipple discharge. The discharge is spontaneous and emanates from a single pore. The patient has no masses, pain, or skin changes. She undergoes annual screening mammography, and the most recent mammogram, done 4 months prior to presentation, was negative.

Of the following options, which is the *least* likely to be helpful in further evaluation of this patient's bloody nipple discharge?

(a) ultrasound of the left breast with attention to the retroareolar area
(b) CT of both breasts
(c) ductogram of the left breast
(d) MR imaging of both breasts with inclusion of T2 weighted sequences

RADIOLOGY QUIZ QUESTION, ANSWER, AND EXPLANATION

A 57 year old woman presents with bloody left nipple discharge. The patient has no masses, pain, or skin changes. She undergoes annual screening mammography, and the most recent mammogram, done 4 months prior to presentation, was negative.

Of the following imaging options, which is the *least* likely to be helpful in further evaluation of this patient's bloody nipple discharge?

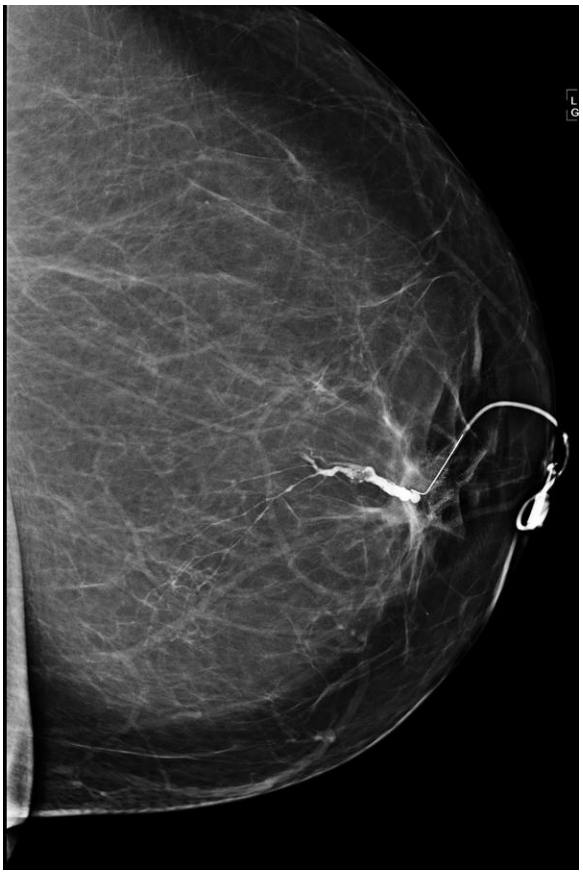
(a) ultrasound of the left breast with attention to the retroareolar area
(b) CT of both breasts
(c) ductogram of the left breast
(d) MR imaging of both breasts with inclusion of T2 weighted sequences

Answer: (b), CT of both breasts, is the correct response, since this imaging option is the *least* likely to be helpful in further evaluation of bloody nipple discharge. CT of the breasts is rarely performed and is not indicated in this case.

Evaluation of nipple discharge, as evaluation of all symptoms, begins with a history and physical examination. Bilateral multipore discharge of nonbloody material generally has a benign cause, and if such discharge is consistent with galactorrhea, thyrotropin and prolactin levels should be drawn. Of the various types of nipple discharge, unilateral, single pore bloody discharge is the most worrisome. If a mass is identified in the breast with discharge, the mass should undergo evaluation (see Radiology Quiz of the Week #50 and Radiology Quiz of the Week #51). If no mass is identified, there are several valid options for imaging, and which imaging option is chosen varies with local expertise. Ultrasound of the breast may demonstrate a dilated duct or breast mass. A breast ductogram involves cannulation of the bleeding duct with a small catheter and injection of radio-opaque contrast material followed by mammography, and may demonstrate abnormalities of the duct including filling defects characteristic of tumors. MR imaging of both breasts with inclusion of T2 weighted images ("MR ductography") has recently been identified as a valuable tool in working up nipple discharge.

IMAGING STUDY AND QUESTIONS

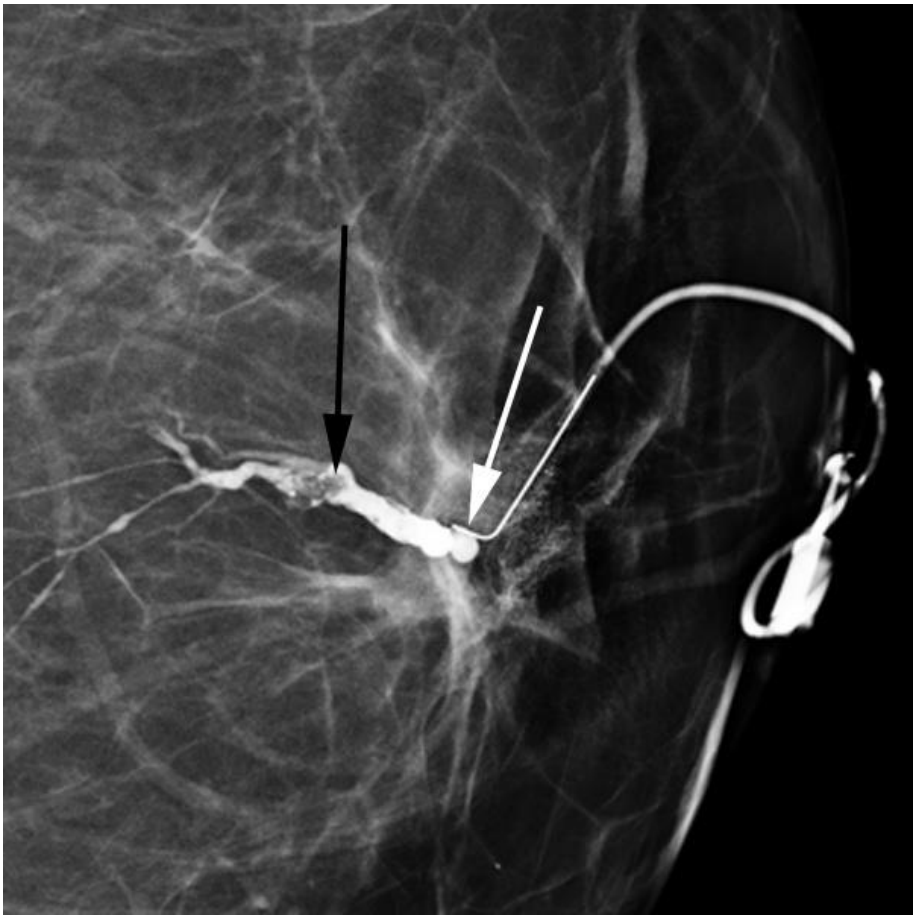
The patient underwent further imaging:



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? A breast ductogram, which is a mammogram performed following insertion of a small catheter (white arrow) into the single pore producing abnormal discharge, with injection of contrast material through the catheter. Note that the same image shown on Page 3 has been cropped, magnified, and labeled with arrows.
2) Are there any abnormalities? Yes. There is a filling defect in the contrast column (black arrow).
3) What is the most likely diagnosis? Intraductal tumor of the left breast. Statistically, this is most likely to be a benign papilloma, but there is no way to be certain of the diagnosis without resection of the lesion.
4) What is the next step in management? Surgical removal of the duct and filling defect/tumor.

PATIENT DISPOSITION, DIAGNOSIS, AND FOLLOW-UP

The patient underwent excision of the duct of the breast containing the papilloma. Since the papilloma was not palpable, the bleeding duct was injected with methylene blue prior to the procedure to allow confident identification. Microscopic evaluation of the resected tissue demonstrated an intraductal papilloma, along with mammary duct ectasia.

SUMMARY

Presenting symptom: The patient presented with bloody nipple discharge. Of all of the various types of nipple discharge, single-pore, unilateral bloody discharge is the most worrisome and should be evaluated fully. If there is persistent bloody discharge, even if no lesion is identified by palpation or by imaging, the duct most likely to be producing the bloody discharge should be resected.

Imaging work-up: If the patient has a palpable lesion in the same breast as the nipple discharge, then evaluation proceeds along the same line as for a palpable breast lesion in the absence of nipple discharge. As noted in Radiology Quiz of the Week #50 and #51, there is variability in how palpable breast lesions are worked up (see those quizzes for further details). As noted on Page 2, the imaging workup of nipple discharge when no palpable lesion can be identified varies depending on local practice and may consist of ultrasound, ductography, or MR imaging.

Establishing the diagnosis: In the case of an identified tumor (whether because the lesion is palpable or seen on imaging), the diagnosis is established by microscopic evaluation of obtained tissue. If no palpable or imaging-identified lesion is present, then microscopic evaluation of the resected culprit duct should be performed. Note that even though single pore bloody discharge is the most worrisome type of discharge, even in this case the majority of lesions are *not* malignant. The most common cause is a benign papilloma, as was present in this case.

Take-home message: Single pore bloody nipple discharge is a worrisome finding and needs to be fully evaluated. If a palpable lesion is identified, workup focuses on the palpable lesion; if a lesion is identified at imaging (either ultrasound, MR, or ductography) the lesion should be resected, and if no lesion can be identified by palpation or imaging, the culprit duct should be resected.

FURTHER READING

Hirose M, Nobusawa H, Gokan T. MR ductography: comparison with conventional ductography as a diagnostic method in patients with nipple discharge. RadioGraphics 2007;27:S183-S196.

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.

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Rissanen T, Reinikainen H, Spaja-Sarkkinen M. Breast sonography in localizing the cause of nipple discharge. J Ultrasound Med 2007; 26:1031-1039.