Evaluation of Nipple Discharge

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September 11, 2018, 7:00pm ET

SAM Questions

1. 42 year old woman with no significant family history of breast or ovarian cancer with a recent onset of bilateral spontaneous milky nipple discharge. She was prescribed risperidone 3 months ago. Her screening mammogram from 2 years ago is normal.

What is the best next imaging step?

A. Screening mammogram
B. Diagnostic mammogram
C. Targeted ultrasound of the subareolar breasts bilaterally
D. Contrast-enhanced breast MRI
E. Galactography

Answer: A

Rationale: Screening mammogram is the best answer. This patient developed physiologic nipple discharge, defined as bilateral, originating from multiple ducts, white or green in color and milky in appearance, often nonspontaneous. Physiologic nipple discharge is not associated with breast cancer and no special imaging work up is needed (choices 2-5 are incorrect). This patient is due for a screening mammogram; therefore, answer 1 is correct. Causes of physiologic nipple discharge include hypothyroidism, pituitary adenoma, pregnancy, and medication side effects. Medications associated with physiologic discharge include hormonal preparations, psychotropic, antihypertensive, and antiemetic drugs, and the H2 receptor antagonist group. This patient, who recently started taking risperidone, a psychotropic medication, likely experiences a side effect of the new medication and should be managed clinically.


2. 20 year-old woman with an average risk of breast cancer development and spontaneous clear discharge from a single orifice on the left nipple. What is the best next step?
   A. Screening mammography
   B. Diagnostic mammography
   C. **Targeted subareolar ultrasound of the left breast**
   D. Breast MRI
   E. Galactography

**Answer:** C

**Rationale:** Targeted ultrasound is the best answer. This young woman has pathologic nipple discharge, characterized as unilateral, non-spontaneous, and from a single orifice. Imaging work-up starting with ultrasound is appropriate. Breast cancer is rare in women of average risk younger than 30 with the probability of 1 in 1681 at 20 years. Because of the theoretically increased radiation risk of mammography and the low incidence of breast cancer in this age group, diagnostic workup should start with ultrasound instead of mammogram in women younger than 30. Diagnostic mammography is the wrong answer. If the initial US reveals suspicious findings, mammography may be indicated. Similarly, screening mammogram, breast MRI, and galactography are also not appropriate as the first imaging step.


3. 42 year old woman with new onset of spontaneous bloody right nipple discharge. No recent screening mammogram.

   What is the best initial imaging study?
   A. **Diagnostic mammogram**
   B. Screening mammogram
   C. Ultrasound
   D. MRI
   E. Galactogram

**Answer:** A

**Rationale:** Diagnostic mammogram is the best choice. In patients 40 years or older with pathologic nipple discharge mammography is the first-line imaging modality unless the patient is pregnant or had a recent (<6 months) screening mammogram. In these cases work up can
start with US (choice 3). MRI and galactogram (choices 4 and 5) are usually not appropriate as the initial examination, but may be used when initial work-up is negative.


4. 45 year old woman with new onset of unilateral spontaneous bloody nipple discharge. Initial workup with mammogram and ultrasound was nonrevealing.

What is the best next step?
   A. Cytological evaluation of the discharge
   B. Galactogram or breast MRI
   C. Central duct excision

Answer: B

Rationale: Galactogram (or ductogram) is performed after the secreting duct is cannulated and a small volume (0.1-1.5 ml) of water-soluble iodinated contrast material is injected. Mammogram is then taken in two projections. Although galactography can be time-consuming and technically challenging, it was reported to localize 76% of otherwise occult malignant and high-risk lesions (ref. Morrough). MRI can also be very helpful when conventional imaging fails to demonstrate the culprit lesion. MRI has higher sensitivity and specificity than US and ductography for lesion detection and may be a useful alternative to ductography (ref.: Orel, Lubina, Manganaro). An additional advantage of MRI is the ability to perform MRI-guided needle biopsy of a suspicious finding. Answer 1 is incorrect. Cytology of nipple discharge is not indicated as it has been proven neither sensitive nor specific (ref Gray). Answer 3 is not the best answer out of the offered choices. Although duct excision is the gold standard diagnostic and therapeutic approach for patients with pathological nipple discharge when imaging does not disclose the culprit lesion, non-directed central duct excision may miss multiple or peripheral lesions. Preoperative imaging with ductography-guided operations or any other surgical procedure with image guidance of the lesion are more likely to have a specific underlying lesion identified than patients who underwent central duct excision alone. Therefore, if patient can tolerate, MRI or galactogram would be helpful prior to surgery.


5. What are contraindications to galactography?
   A. Severe allergy to iodinated contrast material.
   B. Debilitating anxiety.
   C. History of prior surgery disconnecting the duct orifices from the underlying ducts.
   D. Abscess or diffuse mastitis.
   E. All of the above.

Answer: E

Rationale: All of the above. Although no significant contrast reactions have been reported following ductography, severe allergy to contrast material should be considered a contraindication. Mental disorder or debilitating anxiety might preclude patient cooperation for the procedure. History of surgery disconnecting the nipple orifices from the ducts will make the procedure unsuccessful (ref. Slawson). Galactography should not be performed in patients with mastitis or breast abscess, as the inflammation may become more severe (ref. Tabar).
