MULTIPLE CHOICE

BREAST - MIXED EXAM

1. The Rotter nodes (interpectoral nodes) are located:

A. Within the axillary tail of Spence
B. Along the internal mammary chain
C. Posterior to the pectoralis minor in the subclavicular region
D. Between the pectoralis major and pectoralis minor muscles

2. Which sonographic finding within a hypoechoic solid breast mass increases suspicion for malignancy when present?

A. Thin echogenic pseudocapsule
B. Edge refraction shadowing
C. Posterior acoustic enhancement
D. Punctate microcalcifications

3. Several years after breast-conservation therapy with radiation, expected sonographic and physical findings include:

A. Decreased skin thickness with loss of all parenchymal echogenicity
B. Skin thickening, increased parenchymal echogenicity, and architectural distortion at the lumpectomy site
C. A new hypoechoic, taller-than-wide mass with spiculated margins
D. Diffuse anechoic dilation of the ductal system

4. Which of the following best describes the relationship between the level I, II, and III axillary lymph nodes and the pectoralis minor muscle?

A. Level I is lateral, level II is posterior (deep), and level III is medial to the pectoralis minor
B. Level III is the most lateral group and drains directly to the supraclavicular chain
C. Level I is medial, level II is lateral, and level III is posterior to the pectoralis minor
D. All three levels lie lateral to the pectoralis minor

5. Which sonographic feature of an intramammary lymph node is most concerning for abnormality?

A. Oval shape with parallel orientation
B. Loss of the echogenic fatty hilum with rounded shape
C. Presence of an echogenic fatty hilum
D. Cortical thickness of 1 mm with smooth contour

6. On ultrasound, which structure is most likely to be confused with a hypoechoic breast mass and is best clarified by changing transducer orientation?

A. An echogenic duct in cross section
B. A simple anechoic cyst
C. Fat lobule with surrounding Cooper ligaments
D. The pectoralis major muscle

7. Edge shadowing (thin refractive shadows at the lateral margins) of a breast cyst is best described as which of the following?

A. A suspicious feature warranting biopsy
B. An artifact, not a sign of malignancy
C. Evidence of a solid component
D. An indication for BI-RADS 4 assessment

8. Which sonographic finding is typical of fat necrosis at a prior surgical or trauma site?

A. Variable appearance ranging from oil cyst to a complex mass with mural calcifications

B. A simple anechoic cyst with imperceptible wall
C. A purely cystic mass that increases in size on serial imaging
D. A homogeneously hyperechoic mass with intense internal Doppler flow

9. Which BI-RADS lexicon shape descriptor is most strongly associated with malignancy?

A. Round
B. Lobular
C. Oval
D. Irregular

10. True or false: A BI-RADS category 3 lesion has an expected likelihood of malignancy of less than 2 percent.

A. False
B. True

11. Which statement about Paget disease is correct?

A. It is usually associated with an underlying ductal carcinoma in the retroareolar tissue
B. It always occurs without any underlying breast malignancy
C. It is benign and requires no further workup
D. It is most common in women under 30

12. Which margin descriptor in the BI-RADS lexicon is most strongly associated with malignancy?

A. Macrolobulated
B. Smooth
C. Circumscribed
D. Spiculated

13. The most common cause of pathologic (spontaneous, unilateral, single-duct) bloody nipple discharge is:

A. Intraductal papilloma
B. Fibroadenoma
C. Lactational mastitis
D. Fibrocystic change

14. Which quadrant of the breast contains the highest proportion of glandular tissue and is the most common site of malignancy?

A. Lower inner quadrant
B. Lower outer quadrant
C. Upper outer quadrant
D. Upper inner quadrant

15. A patient has a known biopsy-proven invasive ductal carcinoma in the right breast and is undergoing imaging to evaluate response to neoadjuvant chemotherapy. The appropriate BI-RADS assessment for the known cancer is which category?

A. Category 5
B. Category 4C
C. Category 3
D. Category 6

16. Which hormone is primarily responsible for ductal proliferation in the breast during puberty?

A. Estrogen
B. Progesterone
C. Prolactin
D. Oxytocin

17. Within the BI-RADS lexicon, which of the following is NOT a category of non-circumscribed margin?

A. Circumscribed
B. Spiculated
C. Indistinct
D. Angular

18. A 1.5 cm breast mass with both anechoic cystic spaces and a discrete solid mural nodule is best described by which BI-RADS lexicon term?

A. Complicated cyst

B. Clustered microcysts
C. Simple cyst
D. Complex cystic and solid mass

19. The most common distant metastatic site for breast cancer is which of the following?

A. Spleen
B. Bone
C. Pancreas
D. Brain

20. The functional secretory unit of the breast where most carcinomas and fibrocystic changes originate is the:

A. Retromammary space
B. Terminal ductal lobular unit
C. Lactiferous sinus
D. Cooper ligament

21. Which ultrasound technique is used to localize a non-palpable breast lesion for surgical excision prior to a lumpectomy?

A. Ultrasound-guided wire (needle) localization
B. Ultrasound-guided core biopsy
C. Ultrasound-guided fine-needle aspiration
D. Ductography

22. Skin thickening greater than the normal range and associated edema in the breast are most suggestive of which condition?

A. Fibroadenoma
B. Inflammatory breast carcinoma or mastitis
C. Simple cyst
D. Lipoma

23. A common pitfall in evaluating a small simple cyst on ultrasound is:

A. Echogenic capsule mimicking a hamartoma
B. Internal echoes from slice thickness artifact mimicking a complicated cyst
C. Posterior acoustic shadowing simulating a solid mass
D. Color flow within the lesion

24. A lactating woman presents with focal breast pain, erythema, and fever. Ultrasound shows a complex collection with thick irregular walls, internal debris, and surrounding hyperemia. The most likely diagnosis is:

A. Invasive ductal carcinoma
B. Breast abscess
C. Galactocele
D. Complicated cyst

25. Multicentricity of breast cancer is defined as which of the following?

A. Bilateral disease of the same histology only
B. A single dominant mass with skin retraction
C. Tumors in different quadrants or separated by 5 cm or more
D. Multiple small lesions confined to a single duct

26. Normal lactiferous ducts on ultrasound typically measure approximately:

A. Up to about 1 cm in the non-lactating breast
B. Greater than 8 mm in the non-lactating breast
C. 5 to 7 mm in the non-lactating breast
D. Up to about 2 to 3 mm in diameter in the non-lactating breast

27. Which is a classic sonographic pitfall when scanning a hyperechoic intramammary lymph node?

A. Confusing it with a galactocele
B. Mistaking it for a malignant mass with shadowing
C. Confusing it with mammary duct ectasia
D. Mistaking it for a focal area of fibroglandular tissue

28. Which of the following is the standard sonographic appearance of an intact silicone gel breast implant?

A. Multiple curvilinear echogenic lines floating within the implant

B. Stepladder lines within the implant
C. Echogenic interior with multiple internal echoes (snowstorm appearance)
D. Anechoic interior with smooth, thin, echogenic shell and reverberation artifact anteriorly

29. On a standard sonographic image of the breast, the layer located deep to the glandular tissue and superficial to the pectoralis major is the:

A. Subcutaneous fat
B. Premammary fascia
C. Retromammary fat (retromammary space)
D. Cooper ligament plane

30. Which structure represents the dilated portion of the lactiferous duct just beneath the nipple, where milk pools during lactation?

A. Areolar gland of Montgomery
B. Lactiferous sinus
C. Terminal ductal lobular unit
D. Acinus

31. Which statement about gynecomastia in the male breast is correct?

A. It is most commonly an eccentric mass remote from the nipple
B. It is composed of fluid only and resembles a simple cyst
C. It appears as flame-shaped or nodular hypoechoic tissue in the retroareolar region, often bilateral
D. It appears as a discrete spiculated solid mass with posterior shadowing

32. Paget disease of the breast arises in which location?

A. Retroareolar ducts, growing toward and into the nipple and areola
B. Pectoralis major fascia
C. Axillary tail of Spence
D. Upper outer quadrant terminal ductal lobular units

33. Cooper ligaments are best described as:

A. Fibrous suspensory bands extending from the skin to the deep fascia
B. Fascial planes separating the breast from the pectoralis major
C. Smooth muscle fibers within the nipple-areolar complex
D. Lymphatic channels draining the upper outer quadrant

34. Which post-surgical breast finding is most likely seen on ultrasound in the weeks immediately following lumpectomy?

A. Diffuse fatty replacement of the entire breast
B. A complex fluid collection (seroma or hematoma) at the surgical bed
C. A new spiculated solid mass in a different quadrant
D. Multiple bilateral simple cysts

35. The classic mammographic finding of fat necrosis that helps differentiate it from malignancy is:

A. Spiculated mass with associated calcifications
B. Architectural distortion without a mass
C. Clustered pleomorphic microcalcifications
D. Oil cyst with rim calcification

36. In the BI-RADS US lexicon, an anechoic mass with imperceptible wall, posterior acoustic enhancement, and thin edge shadows is classified as which of the following?

A. Solid mass
B. Simple cyst
C. Complicated cyst
D. Complex cystic and solid mass

37. A palpable lump is found by mammography to be a circumscribed mass. The most appropriate next step is:

A. Galactography (ductography)
B. Repeat mammogram in 12 months
C. Targeted diagnostic breast ultrasound
D. Proceed directly to MRI-guided biopsy

38. Which clinical sign is classically associated with inflammatory carcinoma of the breast?

A. Peau d'orange skin appearance
B. Bilateral nipple inversion present since adolescence
C. Painless palpable cyst
D. Bloody nipple discharge

39. A lactating woman presents with a painless palpable breast lump. Ultrasound shows a well-circumscribed mass with mixed cystic and hyperechoic components and possible fat-fluid level. The most likely diagnosis is:

A. Simple cyst
B. Abscess
C. Fibroadenoma
D. Galactocele

40. Which descriptor pattern is most concerning when characterizing internal vascularity of a solid breast mass on color Doppler?

A. No internal vascularity
B. Peripheral rim vessels only
C. Internal vascularity with penetrating vessels
D. Vessels in adjacent normal tissue

41. Which feature most strongly suggests male breast cancer rather than gynecomastia?

A. An eccentric, irregular hypoechoic mass not centered on the nipple
B. Tender, palpable retroareolar tissue in a teenager
C. A bilateral, symmetric, nodular pattern beneath the nipple
D. A bilateral flame-shaped subareolar density

42. A well-circumscribed, smoothly lobulated, mildly compressible breast mass in a 45-year-old woman is found to be malignant on biopsy. Which malignancy most likely mimics a fibroadenoma in this way?

A. Medullary carcinoma
B. Inflammatory carcinoma
C. Scirrhous carcinoma
D. Invasive lobular carcinoma

43. Mastitis on ultrasound is most often characterized by:

A. A circumscribed mass with internal fat-fluid level
B. Skin thickening, increased echogenicity of subcutaneous fat, and hyperemia on color Doppler
C. Anechoic ducts without surrounding tissue changes
D. A discrete oval hypoechoic mass with parallel orientation

44. Which BI-RADS category is most appropriate for a probably benign finding with a recommendation of short-interval follow-up?

A. Category 3
B. Category 2
C. Category 4A
D. Category 0

45. Which malignancy is the most common cause of bloody nipple discharge from a malignant lesion?

A. Tubular carcinoma
B. Inflammatory carcinoma
C. Intraductal papillary carcinoma
D. Medullary carcinoma

46. How is the location of a breast lesion most commonly documented in the radiology report?

A. By measurement from the sternal notch
B. By the patient's subjective description of where she feels it
C. By clock-face position, distance from the nipple, and depth
D. By quadrant only (UOQ, UIQ, LOQ, LIQ)

47. Which of the following best characterizes the duct changes recognized in the BI-RADS US lexicon as a suspicious associated feature?

A. Symmetric bilateral duct ectasia
B. Normal ducts following the nipple-areolar complex
C. Abnormal duct dilatation with intraductal solid material
D. Periductal echogenic halo without dilatation

48. Which condition is associated with skin thickening, peau d'orange, and diffuse breast hyperemia without a discrete mass and must be differentiated from inflammatory carcinoma?

A. Hamartoma
B. Mastitis
C. Fibrocystic change
D. Fibroadenoma

49. Compared with mammography, which statement best describes the role of breast MRI in high-risk screening?

A. Breast MRI has higher sensitivity than mammography for invasive cancer in high-risk women
B. Breast MRI has higher specificity than mammography and reduces biopsies
C. Breast MRI uses ionizing radiation and is therefore limited to symptomatic patients
D. Breast MRI is the preferred screening modality for women at average risk

50. A breast mass that is oval, parallel in orientation, circumscribed, and homogeneously hypoechoic with mild posterior enhancement is most likely which entity?

A. Inflammatory breast cancer
B. Intraductal papilloma
C. Fibroadenoma
D. Invasive ductal carcinoma