

ANSWER KEY FOR SELF-ASSESSMENT EXERCISE:

Breast MRI Techniques & Interpretation
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QUESTION I:

Correct answer: 3. Kinetic enhancement pattern.

Rationale: Normal axillary lymph nodes commonly display a suspicious (washout) enhancement pattern and therefore evaluation of kinetic pattern is least helpful in evaluating for metastatic involvement.

References:

Dynamic breast MR imaging: are signal intensity time course data useful for differential diagnosis of enhancing lesions? Kuhl CK, Mielcareck P, Klaschik S, Leutner C, Wardelmann E, Gieseke J, Schild HH. Radiology. 1999 Apr;211(1):101-10.

Diagnostic architectural and dynamic features at breast MR imaging: multicenter study. Schnall MD, Blume J, Bluemke DA, DeAngelis GA, DeBruhl N, Harms S, Heywang-Köbrunner SH, Hylton N, Kuhl CK, Pisano ED, Causer P, Schnitt SJ, Thickman D, Stelling CB, Weatherall PT, Lehman C, Gatsonis CA. Radiology. 2006 Jan;238(1):42-53.

QUESTION II:

Correct answer: 3. Increases detection of occult contralateral disease.

Rationale: Detection of contralateral occult disease is the only benefit of pre-operative MRI proven in a randomized prospective clinical trial.

References:

MRI evaluation of the contralateral breast in women with recently diagnosed breast cancer. Lehman CD, Gatsonis C, Kuhl CK, Hendrick RE, Pisano ED, Hanna L, Peacock S, Smazal SF, Maki DD, Julian TB, DePeri ER, Bluemke DA, Schnall MD; ACRIN Trial 6667 Investigators Group. N Engl J Med. 2007 Mar 29;356(13):1295-303. Epub 2007 Mar 28.

QUESTION III:

Correct answer: 2. Infiltrative or mass-like enhancement of the pectoralis muscle

Rationale: Infiltrative or mass-like enhancement of the pectoralis muscle is the most reliable diagnostic sign on breast MRI in predicting tumor involvement.

References:

Evaluation of pectoralis major muscle with patients with posterior tumors on breast MR images: early experience. Morris EA, Schwartz LH, Dortman MB et al. Radiology. 2000 Jan;214(1):67-72.

QUESTION IV:

Correct answer: 1. Biopsy should be pursued despite the benign kinetic pattern.

Rationale: Because some breast cancers may demonstrate a benign enhancement pattern on MRI, morphologically suspicious enhancing lesions should be biopsied despite a benign kinetic pattern.

References: Diagnostic architectural and dynamic features at breast MR imaging: multicenter study. Schnall MD, Blume J, Bluemke DA, DeAngelis GA, DeBruhl N, Harms S, Heywang-Köbrunner SH, Hylton N, Kuhl CK, Pisano ED, Causer P, Schnitt SJ, Thickman D, Stelling CB, Weatherall PT, Lehman C, Gatsonis CA. *Radiology*. 2006 Jan; 238(1):42-53.

QUESTION V:

Correct answer: 3. The pathology results do not account for the MRI findings.

Rationale: Due to the potential for under sampling with core needle biopsy, pathology results from biopsy of a suspicious lesion that do not account for the MRI findings should be considered discordant.

References:

Clinical experience with MRI-guided vacuum-assisted breast biopsy. Lehman CD, Deperi ER, Peacock S, McDonough MD, Demartini WB, Shook J. *AJR Am J Roentgenol*. 2005 Jun;184(6):1782-7.

Imaging histologic discordance at MRI-guided 9-gauge vacuum-assisted breast biopsy. Lee JM, Kaplan JB, Murray MP, Bartella L, Morris EA, Joo S, Dershaw DD, Liberman L. *AJR Am J Roentgenol*. 2007 Oct;189(4):852-9.

QUESTION VI:

Correct answer: 4. New isolated finding.

Rationale: Although most enhancing foci are benign, a new isolated focus of enhancement in a high-risk patient should be considered suspicious.

References:

Probably benign lesions detected on breast MR imaging. Eby PR, DeMartini WB, Gutierrez RL, Lehman CD. *Magn Reson Imaging Clin N Am*. 2010 May;18(2):309-21, x. Review.

Breast lesions detected on MR imaging: features and positive predictive value.

Liberman L, Morris EA, Lee MJ, Kaplan JB, LaTrenta LR, Menell JH, Abramson AF, Dashnaw SM, Ballon DJ, Dershaw DD. *AJR Am J Roentgenol*. 2002 Jul;179(1):171-8.