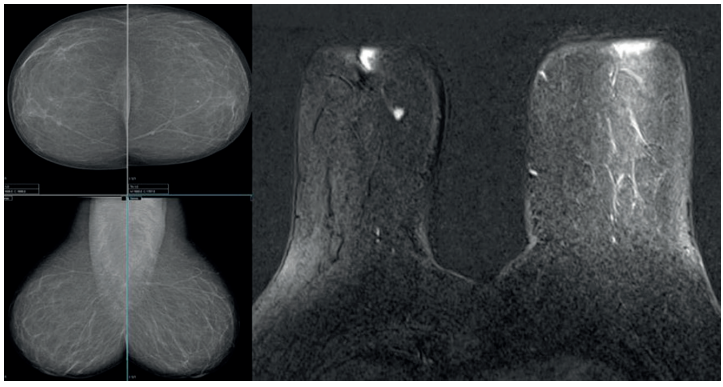
MEME MANYETİK REZONANS GÖRÜNTÜLEME

6. BÖLÜM

Ayşegül ALTUNKESER[1]

Memede manyetik rezonans görüntüleme (MRG) nin klinik kullanımı kontrastlı protokollerin kullanılmasıyla başlamıştır (1,2). Teknik gelişmeler ve klinik çalışmalar ile geçen yıllar içerisinde meme kanser tespitinde tanısal performansı mamografi (MG) ve ultrasonografi'ye (US) göre üstün, duktal karsinoma insitu (DKIS) saptanmasında da mamografiden daha duyarlı olduğu gösterilmiştir (3,4) (Şekil 1). Son yıllarda meme kanserinde kontrastsız sekanslardan da faydalanılmakta, özellikle de difüzyon ağırlıklı görüntüleme ve kantitatif bilgi veren ADC haritalamanın tanı ve tedavi takibinde kullanılması önerilmektedir (5) (Şekil 2). MRG'nin pahalı bir yöntem olması ve yalancı pozitifliğinin yüksekliği kullanımındaki en önemli sorunlardandır (6,7).



Şekil 1: Sağ memede mamografide net tanımlanmayan MRG'de belirgin kontrastlanan invaziv duktal karsinom olgusu

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Problem Çözücü Amaçlı (Mamografi ve Ultrasonografide Belirsiz Bulgular)

EUSOMA meme kanseri açısından kuşku taşıyan, MG ve US ile karar verilemeyen ve biyopsi yapılamayan yapısal distorsiyon, asimetri ve lezyon varlığı şüphesinde ek inceleme olarak yapılabileceğini belirtmektedir. Ancak MRG'nin biyopsinin alternatifi olamayacağı dikkat çekilmektedir (33, 46).

Kaynaklar

1. Heywang SH, Hahn D, Schmidt H et al. MR imaging of the breast using gadolinium-DTPA. J Comput Assist Tomogr 1986; 10:199– 204.
2. Kaiser WA, Zeitler E. MR imaging of the breast: fast imaging sequences with and without Gd-DTPA. Preliminary observations. Radiology 1989; 170:681–686.
3. Peters NH, Borel Rinkes IH, Zuithoff NP, et al. Meta-analysis of MR imaging in the diagnosis of breast lesions. Radiology 2008; 246: 116–24.
4. Kuhl CK, Schrading S, Bieling HB, et al. MRI for diagnosis of pure ductal carcinoma in situ: a prospective observational study. Lancet 2007; 370: 485–92.
5. Woodhams R, Ramadan S, Stanwell P, et al. Diffusion- weighted imaging of the breast: principles and clinical applications. Radiographics 2011; 31: 1059–84.
6. Liberman L, Morris EA, Dershaw DD et al. MR imaging of the ipsilateral breast in women with percutaneously proven breast cancer. AJR Am J Roentgenol 2003; 180: 901-10.
7. Van Goethem M, Schelfout K, Dijckmans L, et al. MR mammography in the pre-operative staging of breast cancer in patients with dense breast tissue: comparison with mammography and ultrasound. Eur Radiol 2004; 14: 809-16.
8. Kuhl CK, Bieling HB, Gieseke J et al. Healthy premenopausal breast parenchyma in dynamic contrast-enhanced MR imaging of the breast: normal contrast medium enhancement and cyclical phase dependency. Radiology 1997; 203:137–144.
9. DeMartini WB, Liu F, Peacock S et al. Background parenchymal enhancement on breast MRI: impact on diagnostic performance. AJR Am J Roentgenol 2012; 198: W373–W380.
10. Ellis RL. Optimal timing of breast MRI examinations for premenopausal women who do not have a normal menstrual cycle. AJR Am J Roentgenol 2009; 193:1738–1740.
11. Hegenscheid K, Schmidt CO, Seipel R et al. Contrast enhancement kinetics of normal breast parenchyma in dynamic MR mammography: effects of menopausal status, oral contraceptives, and postmenopausal hormone therapy. EurRadiol 2012; 22:2633–2640.
12. TRD MRG ve BT İnceleme Standartları 2018. https://www.turkrad.org.tr
13. Eshed I, Althoff CE, Hamm B et al. Claustrophobia and premature termination of magnetic resonance imaging examinations. J MagnReson Imaging 2007; 26:401–404.
14. Institute for magnetic resonance safety, education, and research. At: http://www.mrisafety.com/. Accessed on 22 Aug 2014.
15. Thomsen HS, Morcos SK, Almen T et al. Nephrogenic systemic fibrosis and gadolinium-based contrast media: updated ESUR Contrast Medium Safety Committee guidelines. EurRadiol 2013; 23: 307–318.

16. Cova MA, Stacul F, Quaranta R et al. Radiological contrast media in the breastfeeding woman: a position paper of the Italian Society of Radiology (SIRM), the Italian Society of Paediatrics (SIP), the Italian Society of Neonatology (SIN) and the Task Force on Breastfeeding, Ministry of Health, Italy. EurRadiol 2014; 24: 2012–2022.
17. American College of Radiology (ACR) Breast Imaging Reporting and Data System Atlas (BI-RADS Atlas). Reston, Va, U.S.A.: American College of Radiology; 2013. At: http://www.acr.org/ Quality-Safety/Resources/BIRADS/MRI. Accessed on 21 Aug 2014
18. Pınar Balcı. Meme Manyetik Rezonans Görüntüleme Endikasyonları ve Yorumu Zor Olan Bulgular.; Trd Sem 2014; 2: 252-267.
19. Scheurlen K, Schnitzer A, Krammer J, et al. Value of galactography for the diagnostic work-up of pathological nipple discharge in multimodal breast diagnostics: Part 2: a systematic review of the literature. Radiologe 2014; 54:160–166.
20. Londero V, Zuiani C, Linda A et al. High-risk breast lesions at imaging-guided needle biopsy: usefulness of MRI for treatment decision. AJR Am J Roentgenol 2012; 199:W240–W250.
21. Sardanelli F, Boetes C, Borisch B et al. Magnetic resonance imaging of the breast: recommendations from the EUSOMA work- ing group. Eur J Cancer 2010; 46:1296–1316.
22. Kuhl C, Weigel S, Schrading S et al. Prospective multicenter cohort study to refine management recommendations for women at elevated familial risk of breast cancer: the EVA trial. J ClinOncol 2010: 28:1450–1457.
23. Sung JS, Lee CH, Morris EA, et al. Screening breast MR imaging in women with a history of chest irradiation. Radiology 2011; 259:65–71.
24. Tieu MT, Cigsar C, Ahmed S Breast cancer detection among young survivor of pediatric Hodgkin lymphoma with screening magnetic resonance imaging. Cancer2014; 120:2507–2513.
25. Lee CS, Monticciolo DL, Moy L. Screening Guidelines Update for Average-Risk and High-Risk Women. AJR Am J Roentgenol. 2020 Feb;214(2):316-323. doi: 10.2214/AJR.19.22205. Epub 2019 Nov 12.
26. American College of Radiology. Practice guideline for breast conservation therapy in the management of invasive breast cancer. J Am Coll Surg 2007; 205: 362-76.
27. Mann RM, Hoogeveen YL, Blickman JG, et al. MRI compared to conventional diagnostic work-up in the detection and evaluation of invasive lobular carcinoma of the breast: a review of existing literature. Breast Cancer Res Treat 2008; 107: 1-14.
28. Sardanelli F, Giuseppetti GM, Panizza P, et al. Sensitivity of MRI versus mammography for detecting foci of multifocal, multicentric breast cancer in Fatty and dense breasts using the whole-breast pathologic examination as a gold standard. AJR Am J Roentgenol 2004; 183: 1149-57.
29. Berg WA, Gutierrez L, NessAiver MS, et al. Diagnostic accuracy of mammography, clinical examination, US, and MR imaging in preoperative assessment of breast cancer. Radiology 2004; 233: 830-49.
30. Mann RM, Loo CE, Wobbes T et al. The impact of preoperative breast MRI on the reexcision rate in invasive lobular carcinoma of the breast. Breast Cancer Res Treat 2010; 119:415–422.
31. Plana MN, Carreira C, Muriel A et al Magnetic resonance imaging in the preoperative assessment of patients with primary breast cancer: systematic review of diagnostic accuracy and meta- analysis. EurRadiol 2012; 22:26–38.

32. Hartman M, Czene K, Reilly M et al Incidence and prognosis of synchronous and metachronous bilateral breast cancer. J ClinOncol 2007; 25:4210–4216.
33. Turnbull L, Brown S, Harvey I et al. Comparative effectiveness of MRI in breast cancer (COMICE) trial: a randomised con- trolled trial. Lancet 2010; 375:563–571.
34. Peters NH, van Esser S, van den Bosch MA et al. Preoperative MRI and surgical management in patients with nonpalpable breast cancer: the MONET randomised controlled trial. Eur J Cancer 2011: 47:879–886.
35. Gonzalez V, Sandelin K, Karlsson A et al. Preoperative MRI of the breast (POMB) influences primary treatment in breast cancer: a prospective, randomized, multicenter study. World J Surg 2014; 38: 1685–1693.
36. Hold PM, Alam S, Pilbrow WJ et al. How should we investigate breast implant rupture? Breast J 2012; 18:253–256.
37. Marinovich ML, Sardanelli F, Ciatto S et al. Early prediction of pathologic response to neoadjuvant therapy in breast cancer: systematic review of the accuracy of MRI. Breast 2012; 21:669–677.
38. Pickles MD, Lowry M, Manton DJ, et al. Role of dynamic contrast enhanced MRI in monitoring early response of locally advanced breast cancer to neoadjuvant chemotherapy. Breast Cancer Res Treat 2005; 91: 1-10.
39. Londero V, Bazzocchi M, Del Frate C, et al. Locally advanced breast cancer: comparison of mammography, sonography and MR imaging in evaluation of residual disease in women receiving neoadjuvant chemotherapy. Eur Radiol 2004; 14: 1371-9.
40. Julius T, Kemp SE, Kneeshaw PJ,et al. MRI and conservative treatment of locally advanced breast cancer. Eur J Surg Oncol 2005; 31: 1129-34.
41. Richard R, Thomassin I, Chapellier M, et al. Diffusion-weighted MRI in pretreatment prediction of response to neoadjuvant chemotherapy in patients with breast cancer. Eur Radiol 2013; 23: 2420-31.
42. Lu H, Xu YL, Zhang SP et al. Breast magnetic resonance imaging in patients with occult breast carcinoma: evaluation on feasibility and correlation with histopathological findings. Chin Med J 2011; 124:1790–1795.
43. Buchanan CL, Morris EA, Dorn PL,et al. Utility of breast magnetic resonance imaging in patients with occult primary breast cancer. Ann Surg Oncol 2005; 12: 1045-53.
44. De Bock GH, van der Hage JA, Putter H,,et al. Isolated locoregional recurrence of breast cancer is more common in young patients and following breast conserving therapy: long-term results of European Organisation for Research and Treatment of Cancer studies. Eur J Cancer 2006; 42: 351-6.
45. Belli P, Pastore G, Romani M, et al. Role of magnetic resonance imaging in the diagnosis of recurrence after breast conserving therapy. Rays 2002; 27: 241-57.
46. DeMartini W, Lehman C. A review of current evidence based clinical applications for breast magnetic resonance imaging. Top Magn Reson Imaging 2008; 19: 143-50.