

Magnetic Resonance Mammography in the Diagnosis of Non-invasive Ductal Breast Cancer (Review of Literature and Own Experience)

M. S. Karpova, G. S. Alieva, A. V. Petrovsky, G. P. Korzhenkova

The N. N. Blokhin Russian Cancer Research Center, Ministry of Healthcare of Russia

Abstract

Magnetic resonance imaging plays an important role in the diagnosis of breast cancer (BC). The study of semiotic and kinetic criteria of the breast dynamic magnetic resonance imaging (MRI) revealed a number of features specific for ductal carcinoma in situ (DCIS). In our range of patients, MR-picture of the DCIS is characterized by areas of high signal intensity, with no clear-cut contour and non-arranged center (non-mass): segmental, regional, diffuse increased of the signal intensity. The combination of the features such as type III dynamic curve, high signal intensity is met in G3 DCIS and microinvasive cancer. These symptoms could be prognostic criteria of more malignant version of intraductal lesions in the breast tissue. To confirm the results, further studies are needed with a large number of patients.

Key words: Magnetic Resonance Imaging, Breast Cancer, Ductal Carcinoma in situ (DCIS).

References

1. *Baur A., Bahrs S. D., Speck S., Wietek B. M., Krämer B., Vogel U., Claussen C. D., Siegmann-Luz K. C.* Breast MRI of pure ductal carcinoma in situ: sensitivity of diagnosis and influence of lesion characteristics // *Eur. J. Radiol.* 2013; 82:1731–1737.
2. *Cao Yu., Paner, G. P., Kahn L. B., Rajan P. B.* Noninvasive carcinoma of the breast: angiogenesis and cell proliferation // *Arch. Pathol. Lab. Med.* 2004; 128:893–896.
3. *Cho K. R., Seo B. K., Kim C. H., Whang K. W., Kim Yu. H., Kim B. K., Woo O. H., Lee Y. H., Chung K. B.* Non-calcified ductal carcinoma in situ: ultrasound and mammographic findings correlated with histological Findings // *Yonsei Med. J.* 2008 February 29; 49(1): 103–110.
4. *Desantis C., Siegel R., Bandi P., Jemal A.* Breast cancer statistics, 2011 // *CA Cancer J. for Clinicians.* 2011. V. 61. No. 6, P. 409–418.
5. *Farshid, G., Downey P., Gill P. G.* Atypical presentations of screen-detected DCIS: implications for pre-operative assessment and surgical intervention // *Breast.* 2007. V. 16. P. 161–171.
6. *Jansen S. A., Paunesku T., Fan X. et al.* Ductal carcinoma in situ: X-ray fluorescence microscopy and dynamic contrast MR imaging reveals gadolinium uptake within neoplastic mammary ducts in a murine model // *Radiol.* 2009. V. 253. P. 399–406.
7. *Kane R. L., Virnig B. A., Shamliyan T. et al.* The impact of surgery, radiation, and systemic treatment on outcomes in patients with ductal carcinoma in situ // *J. Natl. Cancer Inst. Monogr.* 2010. V. 41. P. 130–133.
8. *Kuhl C.* The current status of breast MR imaging. Part I. Choice of technique, image interpretation, diagnostic accuracy, and transfer to clinical practice // *Radiol.* 2007. V. 244 (2). P. 356–378.

9. *Nadrljanski M. M., Biljana B. M. et al.* Breast ductal carcinoma in Situ: morphologic and kinetic MRI findings // Iran. J. Radiol. 2013. V. 10 (2). P. 99–102.
 10. *Newstead G. M.* MR imaging of ductal carcinoma in situ. Magn reson imaging // Clin N. Am. 2010. V. 18(2). P. 225–240.
 11. *Nguyen M., Lee M. C., Wang J. L. et al.* The human myoepithelial cell displays a multifaceted antiangiogenic phenotype // Oncogene. 2000. V. 19 (31). P. 3449–3459.
 12. *Raza S., Vallejo M. et al.* Pure Ductal Carcinoma in situ: a range of MRI features // Am. J. Roentgenol. 2008. V. 191. P. 689–699.
 13. *Tozaki M.* BI-RADS-MRI terminology and evaluation of intraductal carcinoma and ductal carcinoma in situ // Breast Cancer. 2013. V. 20(1). P. 13–20. DOI: 10.1007/s12282-011-0312-3. Epub. 2011. Nov. 23.
 14. *Yamada T., Mori N. et al.* Radiologic-pathologic correlation of ductal carcinoma in situ // Radiographics. 2010. V. 30 (5). P. 1183–1198.
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Authors

Karpova Marina Sergeevna, Ph. D. Med., Radiologist, the N. N. Blokhin Russian Cancer Research Center, Ministry of Healthcare of Russia.

Address: 24, Kashirskoe shosse, Moscow, 115448, Russia.

Phone number: +7 (499) 324-44-96. E-mail: mskarpova@bk.ru

Alieva Gunel Sabirovna, Radiologist, the N. N. Blokhin Russian Cancer Research Center, Ministry of Healthcare of Russia.

Address: 24, Kashirskoe shosse, Moscow, 115448, Russia.

Phone number: +7 (499) 324-44-96.

Petrovsky Alexander Valer'evich, Ph. D. Med., Deputy Director, Research Institute of Clinical and experimental Radiology, the N. N. Blokhin Russian Cancer Research Center, Ministry of Healthcare of Russia.

Address: 24, Kashirskoe shosse, Moscow, 115448, Russia.

Phone number: +7 (499) 324-10-94.

Korzhenkova Galina Petrovna, M. D. Med., Senior Researcher, the N. N. Blokhin Russian Cancer Research Center, Ministry of Healthcare of Russia.

Address: 24, Kashirskoe shosse, Moscow, 115448, Russia.

Phone number: +7 (499) 324-44-96. E-mail: gkorzhenkova@mail.ru