The Role of Dynamic Contrast Enhanced MR Mammography in Differentiation between Benign and Malignant Breast Lesions

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Purpose : To assess diagnostic accuracy of dynamic contrast enhanced MR mammography in differentiating between benign and malignant lesions.

Materials and methods : Ninety-three patients with suspicious mammographic, sonographic or palpable findings underwent pre- or postoperative contrast-enhanced MR imaging of breast using three dimensional fast low-angle shot (3D FLASH) sequence (16/4 msec [repetition time / echo time], 20 flip angle, 3mm slice thickness with no slice gap, 256 by 256 in-plane matrix) covering whole breasts. T1 weighted images were obtained before and after bolus administration of gadopentetate dimeglumine (0.15 mmol/kg). Subtraction images and time-signal intensity curves of region of interest were obtained sequentially and correlated with pathologic diagnoses of lesions.

Results : Tumor margin and its extension were more precisely evaluated on subtraction images and malignant breast lesions showed a characteristic time-intensity curve with an early peak and washout in contrast to benign ones such as fibroadenomas, which showed gradual increase in signal intensity and persistent enhancement. Among 65 malignant lesions(50 invasive ductal carcinoma, 6 ductal carcinoma in situ, 4 invasive lobular carcinoma, 3 medullary carcinoma, 2 metaplastic carcinoma), 63 lesions show malignant enhancement pattern. Among 28 benign lesions, 22 lesions showed typical benign enhancement pattern, but 6 lesions showed equivocal findings or malignant pattern. The sensitivity, specificity and accuracy for diagnosis of breast carcinoma were 97%, 79%, and 91%, respectively.

Conclusion : Dynamic contrast enhanced MR mammography is a simple and excellent method to discriminate between benign and malignant breast lesions.