staging were recruited into this study following informed consent. The MRI was undertaken on a 1.5T GE CVi/NVi (Milwaukee, WI, USA) and a 3T Philips Achieva (Best, the Netherlands). T2W, dynamic T1W (voxel size 0.85 x 1.19 x 2 mm – 1.5 T MRI, and 0.6 x 0.6 x 2 mm – 3T MRI) and high-resolution fat-suppressed T1W postcontrast sequences (single-dose contrast) were carried out. The confidence level in morphology and contrast kinetics (three-point scale) and conspicuity for each lesion (five-point scale, –2 to +2) was assessed by a single observer (SKAR).

Results Seventeen patients were included in the study. Eleven patients had one or more lesions, giving 22 lesions. The confidence level in assessing morphology was high in 16/22 and 19/22 and in assessing contrast kinetics was high in 12/22 and 16/22 in 1.5T and 3T examinations, respectively. The mean and standard deviation of the conspicuity score are 1.09 ± 0.88 for 3T.

Conclusions The confidence in characterising and conspicuity of the breast lesions is improved and no lesions identified at 1.5T were missed at 3T MRI. 3T MRI can be used safely in clinical practice.

P19

Effect of region of interest size in quantitative diffusion-weighted magnetic resonance imaging of the breast

N AlRashidi, T Gagliardi, T Ahearn, T Redpath, F Gilbert
University of Aberdeen, UK
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Introduction In breast MRI, morphological and dynamic enhancement features determine whether a lesion is benign or malignant but specificity is low. Diffusion-weighted magnetic resonance imaging (DW-MRI) measures microscopic motion of water and gives quantitative measurement known as the apparent diffusion coefficient (ADC). This study was conducted to determine whether the whole of the lesion should be included within the region of interest (ROI) or whether a small ROI would differentiate benign from malignant disease.

Methods Fifteen female patients with 15 suspicious lesions were imaged on a 3T MRI machine (Philips HealthCare, Best, the Netherlands). DWI-MRI was performed with b-values of 0, 150, 800 s/mm^2 using single-shot SE-EPI (TR/TE = 9,543 ms/50 ms). The ROI of the lesion and of fibroglandular tissue was used to calculate ADC values. Histology or follow-up data were available for all lesions.

Results The mean ADC value of malignant lesions (13) from two small ROIs was 0.954 ± 0.145 mm^2/second and for benign (2) was 1.69 ± 0.17 mm^2/second (Figure 1a). The ADC values for the whole lesion were 1.027 ± 0.23 mm^2/second and 1.78 ± 0.293 mm^2/second, respectively (Figure 1b).

Conclusions There is a significant difference between ADC values from large and small ROIs (P <0.05), with small ROIs giving greater differentiation. DWI is a promising technique to improve specificity of breast MRI.

P20

Negative predictive value for atypia and malignancy of 14-gauge core biopsy of breast papillomas

GT Mataka, MJ Pearson, AJ Maxwell
Royal Bolton Hospital, Bolton, UK
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Introduction Papillary lesions of the breast may be heterogeneous and associated with atypia or frank malignancy. Current practice is to perform wider sampling of lesions showing benign papilloma on core biopsy because of the risk of underestimation of disease. The literature, however, is unclear about the negative predictive value (NPV) of 14-gauge needle core biopsy for atypia or malignancy.

Methods A retrospective review of image-guided biopsies performed over an 11-year period from January 1999 to December 2009 was undertaken. We identified cases with a 14-gauge core biopsy diagnosis of benign papilloma. Patients with atypia or malignancy on core biopsy were excluded. The imaging features and number of core samples were documented. All patients subsequently underwent lesion excision.

Results Seventy-eight patients had a diagnosis of a benign papilloma on core biopsy. Subsequent excision was with vacuum-assisted biopsy in 48 and surgery in 30. Twenty-eight patients with microcalcification had a stereotactic-guided biopsy. Fifty patients with a mass had ultrasound-guided biopsy. Atypical ductal hyperplasia was found in three out of 28 (11%) who had microcalcification (mean number of 10 cores) and one out of 50 (2%) with a mass (mean number of three cores). Seventy-four (95%) patients had a benign papilloma only.

Conclusions The NPV for atypia and malignancy of 14-gauge core biopsy of papillomas is 95% in this series. Underestimation of disease is more common in lesions presenting with microcalcification. The current practice of wider sampling of all papillary lesions diagnosed on 14-gauge core biopsy should continue.

P21

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P22

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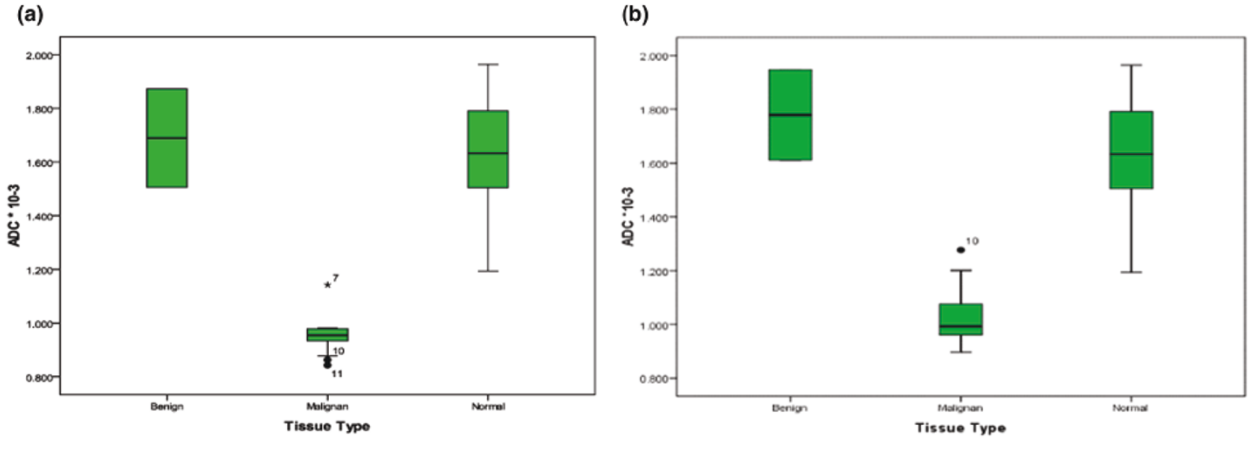

Figure 1 (abstract P19). Box plot of ADC values for benign, malignant and normal tissue using **(a)** two small ROIs and **(b)** a large ROI.