

Diffusion Weighted Imaging with Background Body Signal Suppression/T2 Image Fusion in Magnetic Resonance Mammography for Breast Cancer Diagnosis

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Abstract

Introduction: Dynamic Contrast-Enhanced Magnetic Resonance Mammography (DCE-MRM) represents the most sensitive examination for breast cancer (BC) diagnosis. However literature data reports very inhomogeneous specificity. The aim of our study was to evaluate the clinical efficiency of a new MRM technique – diffusion weighted imaging with background body signal suppression/T2 image fusion in BC diagnosis, compared to DCE-MRM.

Methods: We retrospectively analyzed 50 consecutive DCE-MRM examinations with DWIBS sequence from the archives of the Department of Radiology, Lyon Sud Hospital, (02.2010-02.2011), summing up to 64 breast lesions. Fusions were created using the Osirix software from the DWIBS images ($b=1000$ s/mm²) and their T2 correspondents. Interpretation was performed using an adapted BI-RADS system. The final histopathological examination or a minimum 6-months follow-up served as gold standard.

Results: Out of the 64 examined breast lesions, 35(54.7%) were classified as malignant by DCE-MRM and 24(37.5%) cases by DWIBS/T2, respectively. Thus the DWIBS/T2 fusion had a Sensitivity of 62.5%(95%CI:35.4-84.8) and a Specificity of 70.8%(95%CI:55.9-83.3) while DCE-MRM had a higher Sensitivity: 87.5%(95%CI:61.6-98.4) but a lower Specificity: 56.2%(95%CI:41.1-70.5).

Conclusion: DWIBS/T2 fusion is an innovative MRM technique, with a specificity superior to DCE-MRM, showing a large potential for improving the clinical efficiency of classical MRM.

Key words: magnetic resonance mammography, DWIBS, T2, fusion, breast cancer

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