

High-spatial-resolution bilateral contrast-enhanced breast MRI at 3.0T: Preoperative staging of patients diagnosed with invasive lobular cancer

A. C. Schmitz¹, C. Meeuwis¹, W. Mali¹, W. Veldhuis¹, R. van Hillegersberg², M. Schipper³, and M. A. van den Bosch⁴

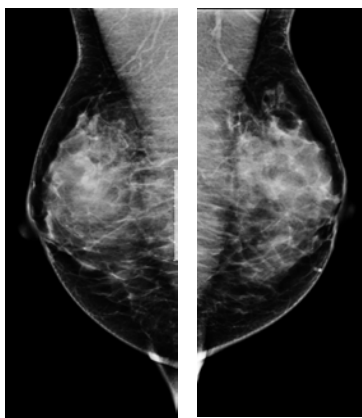
¹Department of Radiology, University Medical Center Utrecht, Utrecht, Netherlands, ²Department of Surgery, University Medical Center Utrecht, Utrecht, Netherlands, ³Department of Pathology, University Medical Center Utrecht, Utrecht, Netherlands, ⁴Lucas MRS Imaging Center, Radiological Sciences Laboratory, Stanford, California, United States

Objective: A high-spatial-resolution imaging protocol for bilateral contrast-enhanced 3.0 tesla (T) breast Magnetic Resonance Imaging (MRI) was developed and our initial experience with this protocol for preoperative staging of patients diagnosed with infiltrating lobular carcinoma (ILC) is described.

Materials and Methods: 11 patients with 12 suspicious lesions on physical breast exam, mammography, or breast ultrasound, were diagnosed with ILC in our hospital between June 2005 and June 2006. Subsequently, all patients underwent high-spatial-resolution bilateral contrast-enhanced breast MRI at 3.0T for preoperative staging. MRI were evaluated according to the MRI-BI-RADS lexicon criteria. Lesions size, number of lesions and localization in the breast, were systematically assessed. The impact of these findings on clinical management following MRI was recorded.

Results: High-spatial-resolution 3.0T breast MRI detected the 12 index lesions representing infiltrating lobular carcinoma in all patients. In addition, 11 suspicious MRI-only lesions were identified in 7 patients (63%). The most common morphologic pattern of the 23 MRI lesions consisted of an irregular shaped mass with irregular margins (n=9). The most common enhancement kinetics curve showed wash-in of contrast in the initial phase, followed by washout of contrast in the post-initial phase (n=18). The smallest detected MRI lesion was 3mm in size. All suspicious MRI-only lesions proved to be ILC (n=9) or ductal-lobular carcinoma (n=2) on pathology. Based on the high-spatial-resolution 3.0T breast MRI findings, the clinical management changed from conservative breast surgery to mastectomy in 5/11 (45%) of the patients.

Conclusions: This is the first study on 3.0T breast MRI for preoperative staging of patients with ILC. The high-spatial-resolution imaging protocol that we developed for bilateral breast MRI at 3.0 T provided important additional information in the preoperative staging of patients diagnosed ILC, and altered surgical management in 45% of the patients.



A 45 year old patient with a new growing palpable breast mass. A dens mammogram of both breasts showed no abnormalities. On ultrasound a hypoechoic, irregular solid mass, suspected for malignancy was seen. Pathology revealed infiltrative lobular breast carcinoma. 3.0T MRI revealed not only the primary tumor, but also a second lesions in the same breast and a third lesion in the contralateral breast. Instead of one side breast conserving surgery, both breast were amputated. Final pathology showed all three lesions as being infiltrating lobular breast cancer.

