CAN PERILESIONAL EDEMA DETECTED IN MRI BE CONSIDERED AS A BIOMARKER FOR BREAST CANCER? ROLE OF FSE T2-WEIGHTED IDEAL SEQUENCES

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PURPOSE

To evaluate whether the presence of peritumoral edema in FSE T2-weighted IDEAL sequences in Magnetic Resonance Imaging (MRI) is correlated with specific biological subtypes of breast cancer.

METHODS

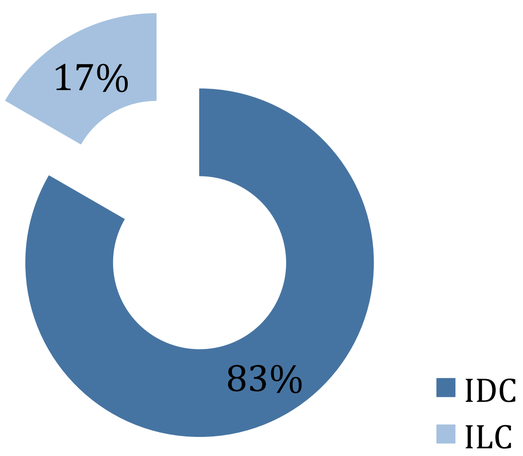
From August 2017 to March 2018, 68 patients with biopsy-proven breast cancer underwent bilateral contrast-enhanced breast MRI, performed on a 3T scanner (GE Discovery MR 730) using a dedicated coil and protocol, in prone position.

30 patients (mean age of 52) with peritumoral edema, detectable as FSE T2-weighted IDEAL hyperintensity, were enrolled in this study. The patients were divided into 3 groups characterized by different prognostic phenotypes: Luminal A, Luminal B and Triple Negative/ Basal-like, according to molecular profiling (Ki-67, hormone receptors status and Her-2 expression).

The BREAST MRI PROTOCOL includes

- **Pre-contrast FSE T2-weighted IDEAL**
- DWI and ADC maps
- Dynamic 3D T1-weighted DISCO, acquired before and after contrast agent administration (0,2 ml/kg ProHance® – Gadoteridol 279.3 mg/ml, Bracco Imaging S.p.A.)

HISTOLOGY



RESULTS

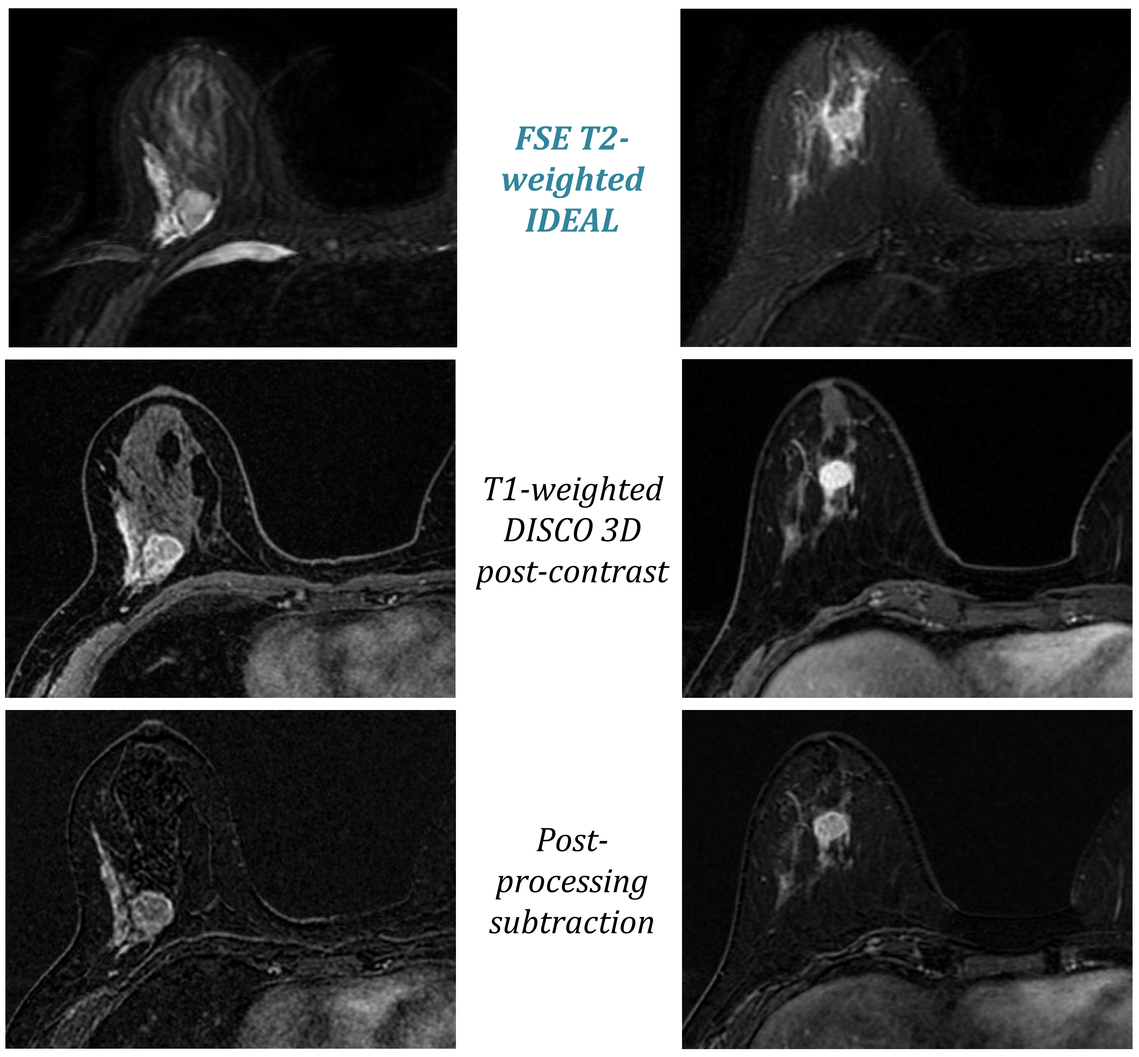
On histological examination 23 unifocal and 7 multifocal/ multicentric tumors were detected: 25 (83.3%) were invasive ductal carcinoma (IDC) and 5 (16.7%) were invasive lobular carcinoma (ILC). Tumor mean size was 29.3 mm (SD 16.4).

The prognostic phenotype of patients was: Luminal A in 6 (20%), Luminal B in 16 (53.3%) and Triple Negative in 8 (26.7%).

Perilesional edema was significantly correlated with breast cancer with worse prognosis (Luminal B and Triple Negative) rather than with those with better prognosis (Luminal A) (**p < 0.0001 – Chi squared test**).

Luminal A	Luminal B	Triple Negative
6 (20%)	16 (53.3%)	8 (26.7%)

p < 0.0001 – Chi squared test



CASE 1
Single lesion (19 mm), IDC, G3, **Triple Negative**

CASE 2
Bigger nodule (16 mm), IDC, G3, **Luminal B**

CONCLUSION

In spite of its limits (small population, preliminary results to be confirmed), our study showed that perilesional edema is significantly associated with more aggressive breast cancer.

Therefore, surrounding edema detected on FSE T2-weighted IDEAL sequences may be useful in the evaluation of breast cancer and could be considered an additional prognostic indicator.