



MR features: triple negative breast cancer vs. receptor positive cancer



Triple negative breast cancer (TNBCs) constitute a relatively small number of all breast cancers, but they are responsible for a relatively large proportion of breast cancer deaths, due to the aggressive clinical course and the lack of effective targeted therapies. A new study suggests that contrast-enhanced breast MR imaging can be accurate to predict histological diagnosis and prognosis of TNBC. The study demonstrates how TNBCs are more commonly associated with higher T2 signal intensity, rim enhancement and unifocality.

"Our study confirms a significant correlation between TNBC and unifocal lesions according to literature, in particular to Uematsu works," the authors write. "Multivariate analysis of the MR features 'rim', unifocality and hyperintensity in T2w stresses the first two as independently predictive factors of TNBC."

The impact of these findings on patient management and therapeutic approach should be evaluated by future studies, according to the study authors.

The majority of TNBC are discovered on physical exam, found in younger women and present a higher pathologic grade. Although there are numerous prior studies reporting these clinical characteristics of TNBC, only some studies report their imaging findings. The current study aimed to assess MR features of TNBC compared to receptor positive cancer (nTNBC) to assist in diagnosis, pretreatment planning and prognosis evaluation of these tumours.

From May 2014 to May 2015, investigators retrospectively enrolled 31 consecutive patients with histological diagnosis of TNBC and a control group of 31 consecutive nTNBC observed in the same period, out of 602 cases, diagnosed at a single facility in the same year. Histopathological analysis and MR features of TNBC (31 patients) were compared to nTNBC (31 patients). MR features included dimension, fibroglandular tissue (FGT), background parenchymal enhancement (BPE), mass shape, margins, presence of rim, intratumoural signal intensity in T2w, uni-multifocality and kinetic curves. All patients were examined with MR 1.5T performing T2w fat-sat and contrast enhanced high temporal and spatial resolution T1w before and after injection of gadolinium.

In all, 62 staging MR were reviewed. Median age was 50 (30-78 yrs) with a standard deviation of 10.9. TNBC showed three MR features in concordance with current literature: rim enhancement, hyperintensity in T2 sequence and unifocality. Rim enhancement was shown in 67.7% of TNBC (21/31) and 29% of nTNBC (9/31). Higher T2w values were shown in 83.9% of TNBC (26/31) and 58.1% of nTNBC (18/31). Cancer was multifocal in 7/31 (22.6%) of TNBC and 19/31 (61.3%) nTNBC. No correlation was found for dimension, FGT, BPE, homogeneity of enhancement, margins and kinetic.

Multivariate analysis demonstrated that rim enhancement and unifocality correlated independently with TNBC group.

"Regarding clinical outcome, MR data analysed suggest an association between poor prognosis and higher kinetic curves. Washout curve, which has a drop-off in signal intensity with time after a rapid initial rise in the beginning, has been considered as a hallmark of malignancy in MR since the late 1980s," the authors note." The impact of cancer vasculature upon prognosis has been widely shown in literature. Recent research works identify kinetic curves as surrogates of outcome and grading. Even if numerically limited, our study supports these results."

In addition, TNBC's peculiar vascular permeability is useful to explain distinct underlying pathophysiological characteristics and clinical features in comparison to nTNBC and to create targeted therapies. Increased vascular permeability may occur because of the tumour volume that can cause increased peritumoural pressure, the authors explain.

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