

7th WORLD CONGRESS ON BREAST CANCER

May 10-11, 2018 | Frankfurt, Germany

The branching sign can act as predictors of ductal carcinoma *in situ* for non-mass enhancement detected on breast MRI

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The aim of the study is to analyze the features of non-mass enhancement (NME) in breast carcinoma and to determine which of these features are significant predictors for DCIS and invasive carcinoma. Retrospective review was performed in 704 patients with breast carcinoma who underwent MRI and surgery. Of 198 lesions showing NME, 140 consecutive lesions of 139 patients were included in this study. We assessed morphological and kinetic characteristics on MRI using BI-RADS descriptors: distribution modifiers, homogeneous vs. heterogeneous internal enhancement pattern, presence of clumped enhancement, clustered ring enhancement (CRE), and branching signs. Mammographic finding and clinicopathological variables were analyzed. Of 140 NME lesions, ductal carcinoma *in situ* (DCIS) was found in 16 (11%) and invasive carcinoma in 124 (89%). The feature found to be significant predictor for DCIS was branching sign (75%) ($p=0.004$). The plateau or washout delayed enhancement pattern was most frequent finding in invasive carcinoma (96%) ($p=0.001$). The other imaging and clinicopathological characteristics were not significant. In multivariate analysis, branching sign ($p=0.015$) and plateau or washout delayed enhancement pattern ($p=0.017$) were significant. The branching sign was independently associated with DCIS and could be helpful in interpreting NME in patient with breast cancer. In interpreting NME, the branching sign can be helpful for careful detection of DCIS.