

MR Imaging Features of Invasive Lobular Carcinoma: A Comparison with Invasive Ductal Carcinoma

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Purpose: To evaluate the MRI findings of invasive lobular carcinoma (ILC), compared to the findings of invasive ductal carcinoma (IDC).

Materials and Methods: The study included pathologically proven invasive lobular carcinoma (n=27) and invasive ductal carcinoma (n=85). Two radiologists reached a consensus in the evaluation of the magnetic resonance imaging (MRI) findings, according to BI-RADS lexicon. Multiplicity and MRI detection accuracy were evaluated. Final surgical pathology results were used as the reference standard. We compared imaging findings, multiplicity and MRI detection accuracy of ILC with those of IDC.

Results: At MRI, ILC and IDC most commonly appeared as a heterogeneously enhancing irregular mass with spiculated border. There was no significant difference of morphologic features and kinetic curve patterns between two groups. Multifocality of ILC and IDC was 40.7% (11/27) and 14.1% (12/85), respectively. ILC was associated with a significantly higher rate of multifocality than IDC (p=0.002). But, multicentricity and bilaterality were not different between two groups. Sensitivity and specificity of MRI for multiplicity detection was 90.9% and 68.7% in ILC and 83.3% and 80.3% in IDC.

Conclusion: There were no characteristic imaging features of ILC to be differentiated from IDC on MRI. Multifocality was more combined with ILC than with IDC. MRI Sensitivity to detect multiplicity was slightly higher with ILC than with IDC.

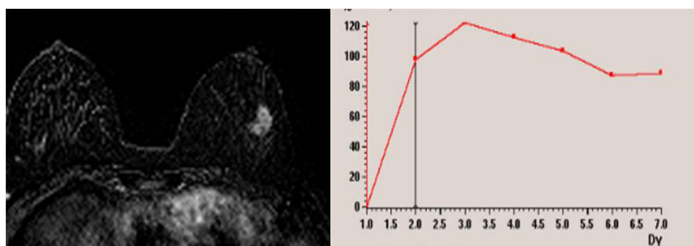


Figure: Common MRI findings of ILC. Axial contrast material-enhanced subtraction MR image shows and heterogeneously enhancing, irregular mass with spiculated border. Kinetic curve shows early rapid enhancement and delayed washout pattern..

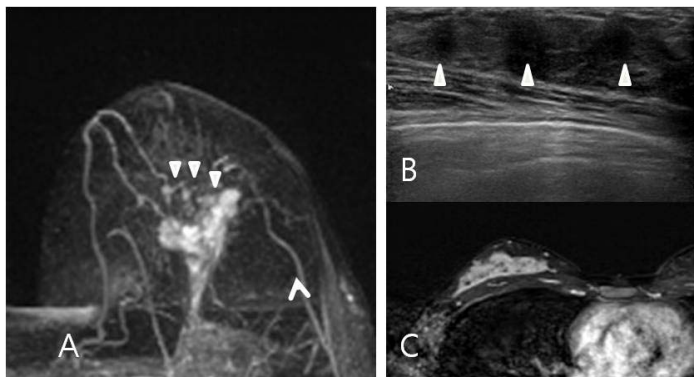


Figure: Multiplicity of ILC and MRI correlation:

A. True Positive MRI; axial postcontrast maximum-intensity-projection MR images show a heterogeneously enhancing irregular mass with adjacent several smaller enhancing masses (arrowheads). Histopathology revealed multifocal ILCs. B and C: False positive MRI; US image (B) shows three irregular hypochoic masses (arrowheads) in the right upper outer quadrant. Contrast material-enhanced axial subtraction (C) MR image shows a non mass-like enhancement in the right upper breast. Pathology revealed multifocal ILCs in the right upper outer quadrant and extensive LCIS (Lobular Carcinoma in Situ) in the right upper breast.

Table. MRI and Clinicopathologic findings of ILC and IDC

MRI finding	ILC (n=27)	IDC (n=85)	P value
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Lesion Type			0.757
Mass	24 (88.8%)	72 (84.1%)	
Non mass	3 (11.1%)	13 (15.2%)	
Mass shape			0.166
Round/oval	3/24 (12.5%)	15/72 (20.8%)	
lobular	4/24 (16.6%)	22/72 (30.5%)	
Irregular	17/24 (70.8%)	35/72 (48.6%)	
Mass margin			1.000
Smooth	1/24 (4.1%)	4/72 (5.5%)	
Irregular	9/24 (37.5%)	25/72 (34.7%)	
Spiculated	14/24 (58.3%)	43/72 (59.7%)	
Mass enhancement			0.115
Homogeneous	1/24 (4.1%)	2/72 (2.7%)	
Heterogeneous	18/24 (75.0%)	39/72 (54.1%)	
Rim enhancement	5/24 (20.8%)	31/72 (43.0%)	
Clinicopathologic Findings			
Multifocality (positive)	11/27 (40.7%)	12/85 (14.1%)	0.002
Multicentricity (positive)	1/27 (3.7%)	3 /85(3.5%)	1.000
Bilaterality	0 (0%)	2 /85(2.3%)	1.000

References:

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- Lopez, J.K. and L.W. Bassett, Invasive lobular carcinoma of the breast: spectrum of mammographic, US, and MR imaging findings. *Radiographics*, 2009. **29**(1): p. 165-76.