Case 1 Ductal Carcinoma in Situ (DCIS), high-grade

Patient Age: 56 years  
Clinical Findings: None  
Mammography: 6 mm mass in left lower inner quadrant  
Ultrasound: Hypoechogenic lesion with hypervascularization and acoustic shadowing  
MRI: Suspicious lesions with fast enhancement and wash-out in the left lower inner and left upper outer quadrants. Diffuse enhancement in the left upper inner and upper outer quadrants.  
CTLM: Stand-alone lesions in the left lower inner quadrant and left upper outer quadrant. Hypervascularity in the upper inner and upper outer quadrants.  
Pathology: Invasive ductal Ca (lower inner quadrant); invasive tubular Ca (upper outer quadrant) DCIS, intermediate type pT1b pN0 G1 and pTis G2

IDSI Comment: This case shows CTLM’s ability to detect angiogenesis, verified by MRI and ultrasound in two breast locations.

Case 2 Invasive Lobular Carcinoma

Patient Age: 54 years  
Clinical Findings: None  
Mammography: Architectural distortion in right lower outer quadrant  
Ultrasound: Hypoechogenic lesion with hypervascularization  
MRI: Suspicious lesion in right lower outer quadrant  
CTLM: Suspicious lesion in right lower outer quadrant  
Pathology: Invasive lobular carcinoma

IDSI Comment: This case shows CTLM’s excellent geographical correlation with MRA of the lesion. Both modalities show angiogenesis of the cancer.

Case 3 Ductal Carcinoma in Situ (DCIS), high-grade

Patient Age: 39 years  
Clinical Findings: Biopsy 12/95 and 07/03 of the left breast with benign results. Slight thickening underneath the scar.  
Mammography: Asymmetry with denser breast tissue in the left breast  
Ultrasound: No pathological finding  
MRI: Enhancing lesion with some wash-out in left upper outer quadrant  
CTLM: Spindle-like lesion  
Pathology: DCIS, high-grade

IDSI Comment: This case shows angiogenesis imaged on CTLM superimposed on the mammogram, which showed areas of calcifications. The correlation with MRA of the same lesion is very good, showing areas of increased hemoglobin content associated with angiogenesis in this high-grade DCIS.
Case 4  Ductal Carcinoma in Situ (DCIS), high-grade

Patient Age: 60 years
Clinical Findings: None
Mammography: Suspicious microcalcification
Ultrasound: No suspicious finding
CTLM: Saccular lesion
Pathology: DCIS, high-grade

IDSI Comment: This case shows angiogenesis imaged on CTLM superimposed on the mammogram, which shows areas of microcalcifications. The morphological information from mammography is complemented by the functional information about the area of increased hemoglobin content associated with angiogenesis.

Case 5  Ductal Carcinoma in Situ (DCIS), high-grade

Patient Age: 48 years
Mammography: Mass with microcalcifications
Ultrasound: Hypoechoic lesion
MRI: Pathologic enhancement in the left upper outer and left lower outer quadrant with typical cancer corner.
CTLM: Spindle-shaped lesion
Pathology: High-grade DCIS, pT1a pN0

IDSI Comment: Excellent image correlation between MRA and CTLM on this high grade DCIS. As seen here, some types of DCIS do have significant angiogenesis around and in the tumor.

Case 6  Ductal Carcinoma in Situ (DCIS), high-grade

Patient Age: 28 years
Clinical Findings: Palpable mass at 12 o'clock for 4 weeks
Mammography: Spiculated mass with microcalcification
Ultrasound: Hypoechoic lesion with hypervascularization
MRI: Suspicious lesion with fast enhancement and wash-out
CTLM: Stand-alone lesion
Pathology: High-grade DCIS

IDSI Comment: Excellent image correlation of this high-grade DCIS. As seen here, some types of DCIS have angiogenesis that can be shown both in CTLM and in MR angiography.
Case 7  Inflammatory Invasive Ductal Carcinoma

Patient Age: 58 years
Clinical Findings: Palpable mass in right breast, skin thickening.
Mammography: Skin thickening, architectural distortion at 12 o’clock, microcalcification. BIRADS 5
Ultrasound: Hypoechogenic lesion with ill-defined borders and dorsal attenuation.
CTLM: Stand-alone lesion
Pathology: Inflammatory invasive ductal carcinoma pT4d pN2 Mx G2 R0 L1 V0

IDSI Comment: Inflammatory ductal cancer is shown to exhibit significant angiogenesis in and around the tumor.

Case 8  Invasive Ductal Carcinoma

Patient Age: 66 years
Clinical Findings: Palpable mass
Mammography: Spiculated mass
CTLM: Stand-alone lesion
Pathology: Invasive ductal carcinoma, pT2 pN1a pMx G3 L1 V0

IDSI Comment: Invasive carcinomas are the most common type of diagnosis following discovery of angiogenesis on CTLM. This adjunctive information increases the suspicion of cancer on an inconclusive mammography lesion.

Case 9  Invasive Ductal Carcinoma

Patient Age: 61 years
Clinical Findings: Palpable mass in left outer upper quadrant
Mammography: Spiculated mass
Ultrasound: Hypoechogenic lesion with posterior shadowing
CTLM: Stand-alone lesion
Pathology: Invasive ductal carcinoma

IDSI Comment: Excellent image correlation between MRA and CTLM on this high grade DCIS. As seen here, some types of DCIS do have significant angiogenesis around and in the tumor.
Case 10  Invasive Ductal Carcinoma

Patient Age: 63 years
Clinical Findings: None
Mammography: Spiculated mass
Ultrasound: No pathologic findings
CTLM: Saccular lesion
Pathology: Invasive ductal carcinoma

IDSI Comment: Excellent image correlation between mammography findings and the CTLM evidence of angiogenesis in invasive carcinomas.

Case 11 Invasive Ductal Carcinoma

Patient Age: 66 years
Clinical Findings: None
Mammography: Microcalcifications
CTLM: Spindle-like lesion
Pathology: Invasive ductal carcinoma pT1b G2 L0 V0

IDSI Comment: Excellent image correlation between mammography findings and the CTLM evidence of angiogenesis in invasive carcinomas. In this study, the shape of the area is more important than the signal intensity in the characterization of angiogenesis.

Case 12 Invasive Ductal Carcinoma

Patient Age: 69 years
Clinical Findings: Palpable mass in right breast
Mammography: Spiculated lesion, 18 mm in size
Ultrasound: Hypoechogetic lesion with posterior shadowing
CTLM: Stand-alone lesion
Pathology: Invasive ductal carcinoma, pT1c pN0 G2

IDSI Comment: Good correlation between mammography findings and the CTLM evidence of angiogenesis as seen in this case of invasive carcinoma. In this study, the shape of the area of abnormality plays a more important role than the signal intensity in the characterization of angiogenesis.