Udine University

Francesco Toso, M.D.

Udine, Italy

Case 1 Invasive Ductal Carcinoma

Patient Age: 49 years

Clinical Findings: Palpable nodule in right breast

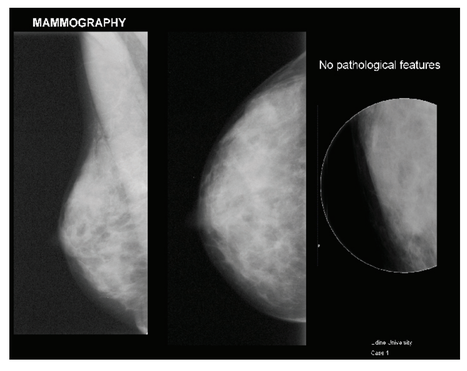
Mammography: Mammography of the right breast reveals no pathology

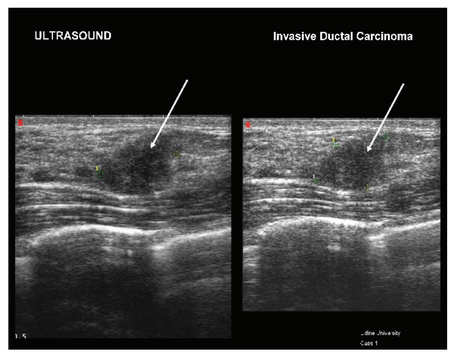
Ultrasound: Demonstrates a 10 mm hypoechoic mass with fine spiculated margins

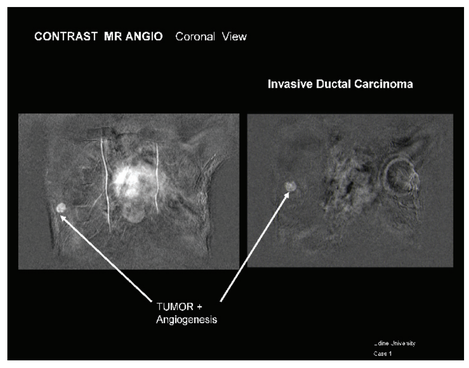
MRI: A 10 mm round area of moderate and early enhancement is shown at 9 o'clock

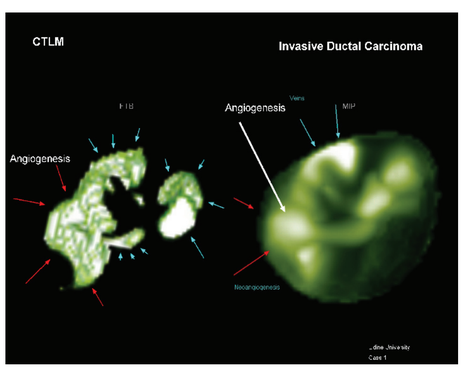
CTLM: In the corresponding localization, CTLM shows a volume of increased absorption with a round shape connected with another volume of increased absorption and linear branching

Pathology: Invasive Ductal Carcinoma (grade II) associated with an extensive high-grade DCIS. In two of the axillary nodes a metastasis was found.









IDSI Comment: *No lesion seen on the mammogram at 9 o'clock. Lesion is present on ultrasound but impossible to say if it is benign or malignant.*
Both MRI and CTLM show a large volume of angiogenesis a 9 o'clock. CTLM, however, is much quicker, less expensive, and requires no contrast medium.

Case 2 Invasive Ductal Carcinoma

Patient Age: 63 years

Clinical Findings: Asymptomatic

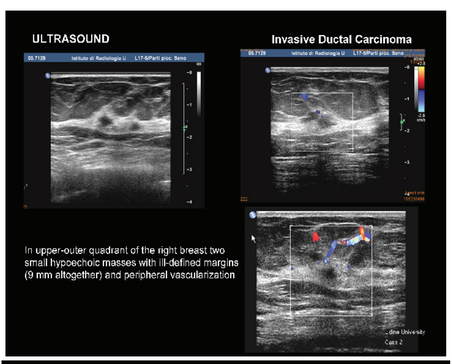
Mammography: Mammography of the right breast shows no pathological features.

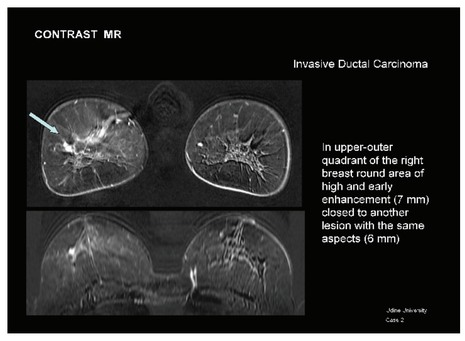
Ultrasound: Demonstrates two small hypoechoic masses in upper-outer quadrant of the right breast with ill-defined margins (9 mm altogether) and peripheral vascularization.

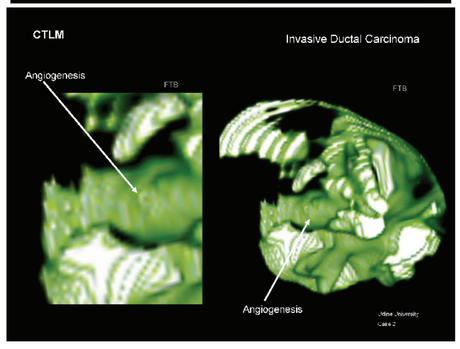
MRI: MRI reveals a 7 mm rounded area of high and early enhancement close to another lesion of 6 mm with the same appearance

CTLM: In the corresponding localization, there is an isolated irregular rounded mass of angiogenesis. The upper border is spiculated, possibly caused by new feeding vessels, better seen on the FTB reconstructions.

Pathology: Invasive Ductal Carcinoma (grade II) associated with high-grade DCIS







IDSI Comment: *The CTLM study shows a much larger volume of angiogenesis than the MRI study. This is because the MRI shows the abnormally permeable tumor vessels whereas CTLM shows all the new vessels, both permeable and impermeable.*

Case 3 Invasive Ductal Carcinoma

Patient Age: 48 years

Clinical Findings: None

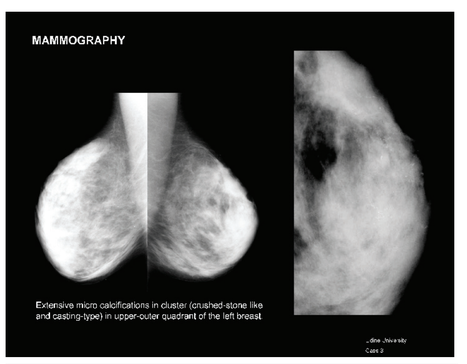
Mammography: Mammography of the left breast shows extensive clustered microcalcifications (crushed-stone like and casting-type) in upper-outer quadrant

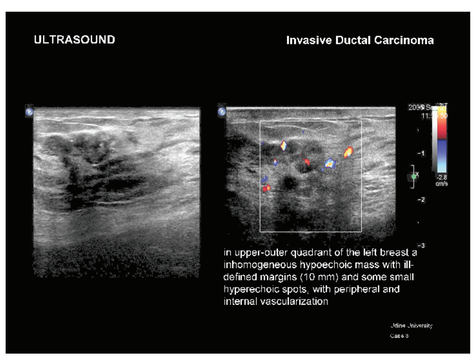
Ultrasound: Ultrasound of the same area shows a 10 mm hypoechoic mass with ill-defined margins and some small hyperechoic spots. Peripheral and internal vascularization is seen.

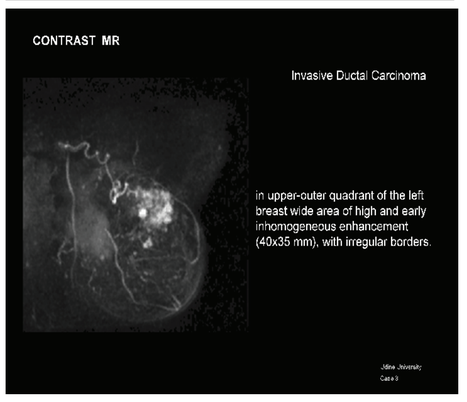
MRI: MRI in the same geographic area shows increased and early inhomogeneous enhancement (40x35 mm), with irregular borders.

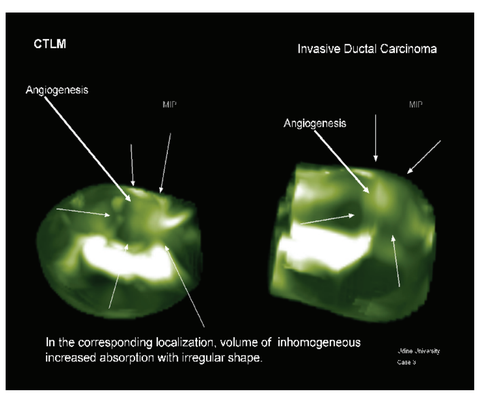
CTLM: In the same location, (1 to 3 o'clock), there is a spherical volume of angiogenesis connected to a very large drainage vein.

Pathology: Invasive Ductal Carcinoma









IDSI Comment: *In this case, the volume of angiogenesis shown by MRI and CTLM is virtually identical. Usually angiogenesis volume is larger than the tumor itself.*