

Enhancing diagnostic certainty, changing the clinical pathway

eL18-4 PureWave linear array transducer

Category

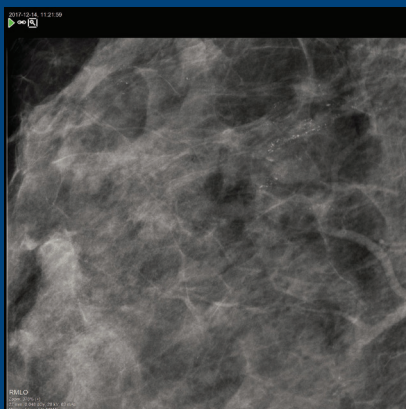
Breast Assessment

Authors

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“The B-mode image itself is powerful enough to diagnose the stage of disease and improve the patient care pathway.”

Ariel Saracco, MD, PhD



Magnification: Mammogram MLO.

Confirms the presence of highly suspicious microcalcifications in the UOQ-axillary tail. Categorized as BI-RADS 5. No mass is seen associated with the microcalcifications.

Overview

At Bröstcentrum Södersjukhuset in Stockholm, Sweden, breast ultrasound is always performed when an abnormality presents itself clinically or on a mammogram. This clinical case will demonstrate the power of B-mode imaging in the breast with the Philips ultra-broadband PureWave linear transducer as a diagnostic tool, as findings are correlated on MRI and pathology as well.

Patient history

A 51-year-old asymptomatic woman underwent a screening mammogram.

Protocol

The patient was recalled for additional mammography views and an ultrasound exam due to the presence of microcalcifications in the upper outer quadrant (near the axillary tail) of the right breast. The additional views demonstrated a highly suspicious cluster of microcalcifications to the extent of 20x25 mm. This was categorized as BI-RADS 5, and reported as having no associated mass.

Subsequently, an ultrasound exam of the right breast was performed using the Philips EPIQ 7 ultrasound system and eL18-4 PureWave linear array transducer. In the right upper quadrant-axillary tail, a 6 mm hypoechoic irregular mass was noted in the same area as the microcalcifications described on the mammogram. Ultrasonography demonstrated a small invasive tumor (with poorly defined and irregular borders) associated with the microcalcifications of concern. Ultrasonography also revealed calcifications inside this invasive component. There were no suspicious findings in the lymph nodes in the right axilla.

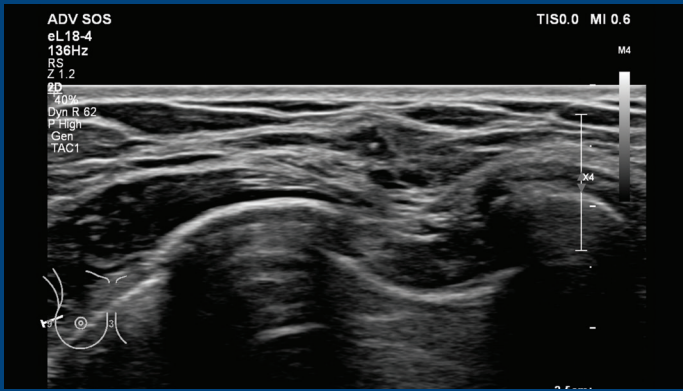
Findings

Of note, this patient was enrolled in a clinical study/trial that involved a contrast-enhanced breast MRI exam prior to the scheduled biopsy. In the area of concern on the right breast, MRI showed an irregular/ill-defined linear area (15 mm) of increased contrast uptake. These findings were consistent with an invasive carcinoma and ductal carcinoma in situ (DCIS) with no further pathology in the ipsilateral axilla. The lesions were categorized as BI-RADS 5, “in accordance with the initial mammogram and ultrasound exam.

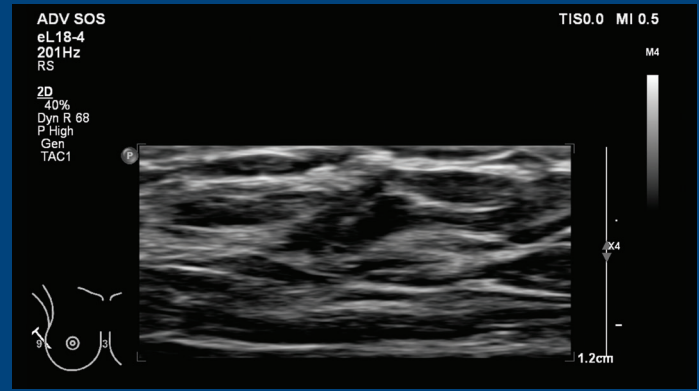
A subsequent vacuum-assisted biopsy (10 g needle) revealed invasive ductal carcinoma (IDC) grade 3 and associated DCIS grade 2-3. This patient was scheduled for partial mastectomy and sentinel node biopsy (SNB) in the right breast/axilla within the next few days.



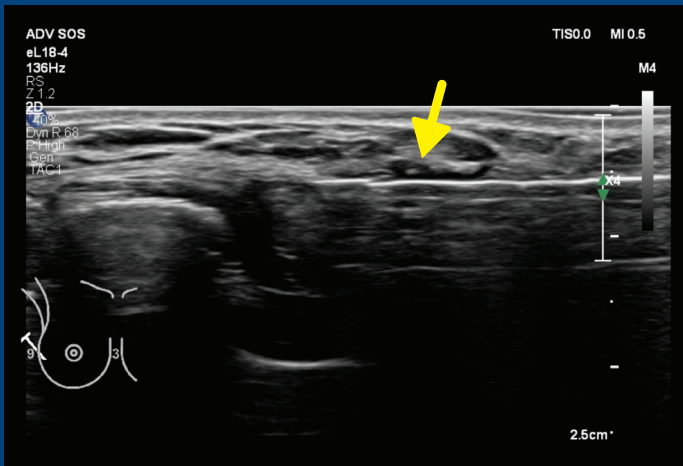
The Philips eL18-4 PureWave linear array transducer is our first high-performance transducer featuring ultra-broadband PureWave crystal technology with multi-row array configuration, allowing for fine-elevation focusing capability.



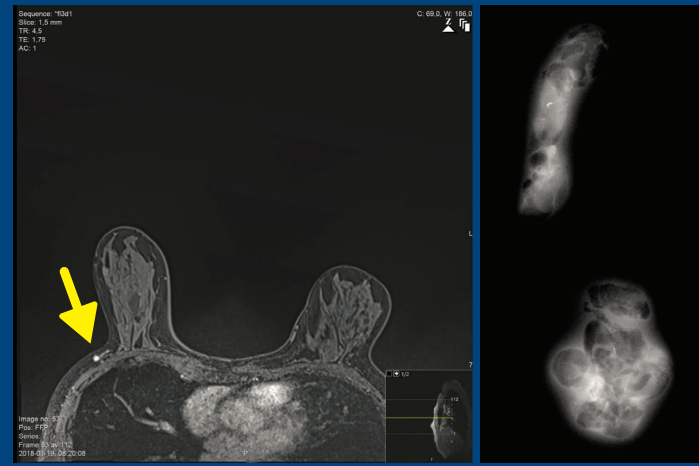
Breast ultrasound. Right UOQ-axillary tail using the eL18-4 shows a 6 mm invasive tumor associated with the microcalcifications of concern. Note: a microcalcification is even seen inside the tumor.



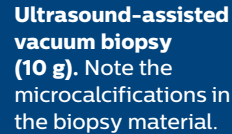
Magnified: Ultrasound image confirms a small ductal extension that is seen coming out of the tumor.



Ultrasound-guided vacuum biopsy (10 g). Note the microcalcifications in the area where the biopsy sample it taken.



CE-MRI of the breast. A T1-weighted image shows in the right UOQ-axillary tail, an irregular/ill-defined and linear area of increased contrast uptake, consistent with an invasive carcinoma and associated DCIS (extension 15 mm). Findings categorized as BI-RADS 5.



Ultrasound-assisted vacuum biopsy (10 g). Note the microcalcifications in the biopsy material.

Conclusion

Using the Philips PureWave eL18-4 transducer, the clinician was able to delineate a 6 mm invasive tumor in the area of microcalcifications. This invasive component was not initially noted on the mammogram, but was later confirmed by contrast-enhanced breast MRI and subsequent biopsy. The ability to diagnose the stage of disease early on by using the Philips eL18-4 transducer demonstrates a higher level of diagnostic capabilities for ultrasound, making an earlier impact on clinical decisions.

IDC mandates sentinel node biopsy as part of the care plan. If the invasive component had not been diagnosed at the time of the ultrasound exam and the patient had not been enrolled in a clinical research study involving breast MRI, the full extent of the disease would not have been identified until the pathology report had been completed. The early detection of IDC in this particular case allowed a sentinel node biopsy to be performed at the same time as the planned surgery, which spared additional cost and time (a second operation for SNB), and most importantly improved the patient's experience.

Results from case studies are not predictive of results in other cases. Results in other cases may vary.