

Invasive Lobular Breast Cancer on Ultrasound - Show me the lesion

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Introduction

Breast cancer is the most common female cancer in the developed world and accounts for 25%-30% of all new cancer diagnosis in women. Invasive lobular cancer is the second most frequent subtype after invasive ductal cancer, accounting for 8%-15% of cases. Due to its morphology and growth pattern, invasive lobular carcinoma can often be challenging to diagnose both clinically and radiologically.

Objectives

Present the clinical and pathophysiological features of invasive lobular carcinoma (ILC) and retrospectively study the ultrasonographic (US) appearance features of the lesions submitted to ultrasound-guided core-needle biopsy in our institution, with histologically confirmed ILC.

Methods

On review of pathology records of all lesions submitted to ultrasound-guided core-needle biopsy in our institution between January and December of 2016, we encountered a total of 116 invasive carcinomas of all histological types.

Cases classified as infiltrating ductal carcinoma (IDC) represented 77,6% of the total of diagnosis, and 9 cases (7,8%) of ILC were encountered. The remaining cases (14,6%) represented other histological subtypes, such as apocrine, papillary, medullary, mucinous and cribriform.

The US scans of all patients were obtained before biopsy and after mammography by radiologists with full knowledge of mammographic and physical examination results, and the images of the ultrasound studies in patients with histologically confirmed ILC (Age range 43 – 87 years; mean age, 68 years) were retrospectively reviewed and are the subject of this work.

Results

All of the tumours detected were visible in the ultrasound study as a mass-forming lesion, and the majority of patients presented with T2 primary tumor staging (56%), according to the American Joint Committee on Cancer (AJCC) Breast Cancer Staging, 7th Edition, with 3 patients presenting with T1 primary tumor staging and the remaining case with locally advanced breast cancer (T3).

The ultrasound characterization of all the lesions was done according to the ACR BI-RADS® 5th Edition (Table 1).

Multifocal disease was found in 3 cases (33%), all in patients with T2 primary tumor staging, and calcifications in the mass were seen on the US examination in 3 cases, 2 patients with T2 disease and 1 case with locally advanced breast cancer.

Associated findings, such as architectural distortion (40% of patients with T2 primary tumor staging) and skin retraction (n=1; T3 primary tumor staging) were also recorded.

Primary tumor staging	Shape		Orientation		Margin			Echo Pattern		Posterior Features		US Size (cm) Range (mean)
	Oval	Irregular	Parallel	Not parallel	Angular	Microlobulated	Spiculated	Hypochoic	Heterogeneous	Absent	Shadowing	
T1 (n=3)	1	2	1	2	3	-	-	3	-	1	2	1.1-1.9 (1.6)
T2 (n=5)	-	5	-	5	2	2	1	1	4	-	5	2.5-4.9 (3.5)
T3 (n=1)	-	1	-	1	-	-	1	-	1	1	-	5.9 (5.9)
Total	1	8	1	8	5	2	2	4	5	2	7	1.1-5.9 (3.1)

Table 1. Correlation of ultrasonographic findings and primary tumor staging

Discussion

US is a valuable adjunct to breast evaluation, with higher reported sensitivities than mammography for the detection of ILC.

The ultrasound examination is superior to mammography in identifying both multicentricity and multifocality, and has a greater accuracy to determine the lesion size than clinical examination or mammography.



Fig 1. Breast Ultrasound – 80 yo patient with hypochoic 4.9 cm ILC

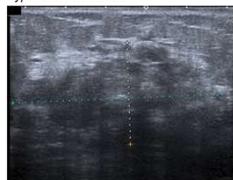


Fig 2. Breast Ultrasound – 79 yo patient with heterogeneous 3.0 cm ILC

Ultrasound is an important tool for breast interventional procedures, such as core-biopsy, insertion of breast tissue markers and localization wires, especially when the lesion is mammographically occult.

The most common ultrasound presentation of ILC described in the literature are irregular masses, with angular, ill-defined or spiculated margins and hypochoic and heterogeneous internal echoes.



Fig 3. ultrasound-guided core-needle biopsy – 83 yo patient with hypochoic 3.4 cm ILC



Fig 4. Breast Ultrasound – 43 yo patient with irregular 3.8 cm ILC and posterior shadowing

These findings are concordant with the results of our analysis, and we found that the majority of lesions in our study population have irregular shape (89%) and non-parallel orientation (89%). In 56% of the cases, the lesions margins were angular, with microlobulated and spiculated margins accounting for the rest of cases.

Regarding the echo pattern, all patients presented either with hypochoic (44%) or heterogeneous internal echoes (66%) and the vast majority (78%) of the lesions presented with posterior acoustic shadowing.

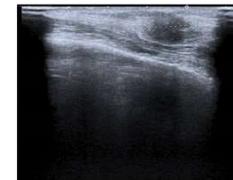


Fig 5. Breast Ultrasound – 87 yo patient with oval, hypochoic 1.1 cm ILC

Conclusions

Most ultrasound detected invasive lobular carcinomas present with irregular shape, angular, microlobulated or spiculated margins and hypochoic and heterogeneous internal echoes.

The evaluation of invasive lobular carcinoma requires a great degree of knowledge by the radiologist performing the ultrasound examination, in order to identify the most clinically significant imaging findings that point to the diagnosis.

Key words

Breast Ultrasound; Invasive Lobular Carcinoma; Ultrasound-guided Core-needle Biopsy