Clinical Application Of Breast Ultrasonography In Comparison With Mammography In Middle Age Women And Women With Dense Breast Based On Bi-Rads Final Assessment

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Summary & conclusion

Ultrasound was used primarily as a method for differentiating cystic lesions from solid masses and for guiding interventional procedures (aspiration, localization, and core biopsies). Breast US is currently considered to be an invaluable tool in breast imaging and a first-line examination, such as mammography, with a role in both detection and characterization of breast masses. The development of high-frequency transducers has improved spatial resolution, so that lesions less than 1 cm in size can be identified.

Mammography is the best imaging modality capable of detection of micro calcifications. However, it is unable to detect all breast cancers. Dense breast parenchyma acts as an important factor limiting the sensitivity of mammography. Ultrasound detects some cancers in dense breast tissue that are missed by mammography. It has a low cost and is more readily available. However, it is operator dependent and often will not detect DCIS.

Our study evaluated the value of ultrasonography in the differentiation between benign and malignant lesionsin comparison with mammography using the BI-RADS lexicon in women aged 30-48 years old or older females with dense breasts on mammography examination.

Breast Imaging Reporting and Data System (BI-RADS) lexicon for breast USwasestablished by the American College of Radiology (ACR) in 2003 analogous to the one for mammography in an attempt to standardize image interpretation.

The US lexicon includes descriptors for masses, calcifications, special cases, and final assessments.Six morphologic features are used to describe solid breast masses: shape, orientation, margin, lesion boundary, internal echo pattern and posterior acoustic features.

Management is based on worst feature(s) present. Cancers generally have multiple suspicious findings. The final assessment is based on combination of features:

1: Negative examination, routine screening is recommended.

2: Benign finding, routine screening is recommended.

3: Probably benign finding, low probability of malignancy, risk of malignancy is < 2%, short-interval follow-up is recommended.

4: Suspicious finding, risk of malignancy is 2- 95 %. Biopsy should be considered.

5: Highly suggestive of malignancy, risk of malignancy is $\geq$ 95 %. Appropriate action should be taken.

Our group included cases presenting with breast symptoms and/or signs, they underwent breast Mammography and Ultrasonography with the results compared. The sensitivity and specificity test for US in diagnosis of breast lesions in comparison to mammography illustrates US probability of being true positive (67.1%) more than being false positive with sensitivity (94.3%) and specificity (40%).

In conclusion,our study results indicate that the clinical application of BI-RADS final assessment to breast sonography was successful for differentiating benign from malignant solid masses.

Our study illustratesthe probability of breast ultrasound BI-RADS lexicon of being true positive (67.1%) more than being false positive test for diagnosis of suspicious breast lesions with sensitivity (94.3%) and specificity (40%).Proper classification of BI-RADS final assessment will help referring physicians, radiologists, and patients to understand their management options and implications.

We hope that this scheme have the potential to help decrease the number of biopsies performed for benign solid masses. Some women and their physicians will insist on excisional biopsy of a palpable mass in the breast because of fear, physician uncertainty, or traditional standard-of-care protocols despite improvements in diagnostic criteria for determining whether a solid mass is benign or malignant.