

# How to differentiate between benign and malignant echogenic breast lesions - methods based on results of a 11-year radiological-pathological correlation



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## Objectives

- Derive methods to differentiate between different echogenic breast lesions.
- Determine the additional sonographic and mammographic features that warrant biopsy.

## Materials and Methods

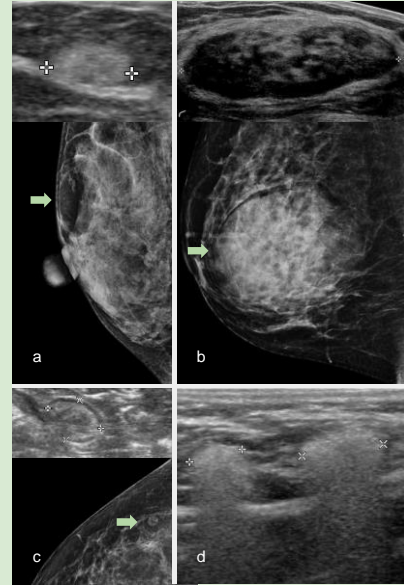
- Retrospective review by searching all breast ultrasonographic examinations from 2008 to 2019 in the RIS system for the terms "echogenic" and "hyperechoic".
- Reports were reviewed manually, then ePR was used to find the lesions that were biopsied in our hospital and their corresponding pathology result.

## Results

- Pathology of echogenic lesions in our hospital are predominantly benign **fat-containing lesions** such as lipoma, angioliipoma, hamartoma, intramammary lymph node, fat necrosis and sebaceous cyst.
- Other echogenic pathology identified include **fibrous** (focal fibrosis, fibrocystic disease, haemangioma), **milk** (galactocele), **silicone** (silicone granuloma), and **blood** (haematoma) containing lesions.
- Less common causes include abscess, granulomatous mastitis, primary breast carcinoma, sarcoma and secondary lymphoma.

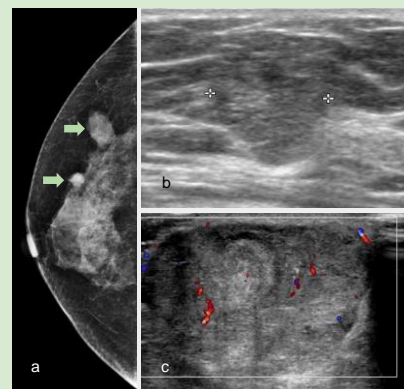
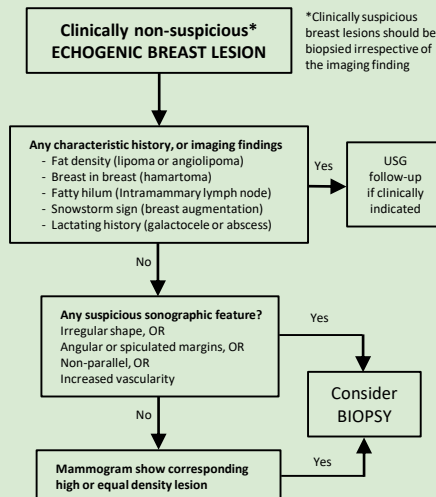
## Results (continued)

- All of the pathologically confirmed malignant lesions with echogenic appearance in our search period has at least one of the following sonographic features - spiculated or angular margins, irregular shape, non-parallel and/or increased internal vascularity. These features also correspond with sonographic features described in the literature to differentiate between malignant and benign lesions.<sup>1,2,3</sup>**
- A corresponding equal or high density mammographic finding is also present in all cases.**



Examples of characteristic imaging features pointing to benignity, such as (a) lipoma showing fat density lesion in mammogram (b) hamartoma showing breast in breast appearance in mammogram (c) intramammary lymph node showing echogenic hilum, and (d) silicone granuloma showing snowstorm appearance in ultrasound.

## Flow chart derived from above results to guide diagnosis and investigation of sonographically echogenic lesions



Imaging features that warrant biopsy, including (a) corresponding high density lesion(s) on mammogram; suspicious sonographic features such as (b) irregular shape, indistinct margins, taller than wide, and (c) increased vascularity.

(Final biopsy results of a, b, and c: invasive ductal carcinoma)

## Conclusion

- Reviewing patient history and recognizing certain specific appearances will help diagnosis of certain benign lesions (such as lipoma, hamartoma, intramammary lymph node, silicone granuloma and galactocele).
- Whenever there is clinical suspicion, suspicious sonographic features, or corresponding equal or high density mammographic finding, biopsy should be considered to exclude malignant causes.

## References:

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