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Breast Calcifications on Mammography

By Jonas Wilson, Ing. Med.

Up to 80% of breast calcifications found on mammography (breast X-ray) are focally active processes of a benign nature. Mammography is a great tool used in order to detect breast pathologies before they are even palpable. There are two general types of mammography: diagnostic and screening.

Screening is usually conducted in women who have no symptoms to identify potentially malignant pathologies at early and possibly curable stages. Diagnostic mammography is done on symptomatic patients to typify pathologies found and arrive at a correct diagnosis.

In order to detect breast calcifications efficiently, a good mammography machine should have a proper source image distance, a small focal spot, and dedicated mammography grids. In addition to these, the magnification, proper processing of mammographic films, a viewing box, little ambient light, and a computer-aided diagnostic system are imperative necessities.

Detected calcifications are categorized and described on the basis of the lexicon indicated in BI-RADS (Breast Imaging and Reporting Data System), which is a system used worldwide to ensure a common language between the concerned healthcare professionals.

The Approach to Breast Calcifications

While breast calcifications are very common and can develop at any age, they can occasionally be a sign of early cancer. Hence, calcifications that are found on mammography need to be carefully distinguished and this is done based on their distribution, size, number, and morphological characteristics.

In addition to these, the stability of the calcifications should be followed on subsequent mammograms at regular intervals. On the mammogram, the radiologist sees breast calcifications as white spots that vary in their features based on the aforementioned characteristics.

The morphological features of breast calcifications as seen on a mammogram can be classified into three major groups, namely, probably malignant, intermediate, and probably benign. Calcifications that are categorized as probably malignant or probably intraductal tend to be irregular and pleomorphic (varied in size and shape).

Furthermore, they are amorphous (without clearly defined form) microcalcifications with fine, linear, and branching characteristics and irregular or jagged edges. These lesions are very concerning and a biopsy, diagnostic mammography with spot compression (to view specific area of interest) and a follow-up mammography in 6 months are conducted.

The probably benign or probably intralobular calcifications tend to be punctate, round and smooth microcalcifications that can also be coarse (within degenerating fibroadenomas) or lucent-centered (dermal calcifications), egg shell (thin and rim-like within cysts or fat necrosis), dystrophic, large and rod like (due to secretory disease), sutural, vascular (railroad track calcifications) or milk of calcium (tiny sea-cup calcifications). Intermediate calcifications are amorphous, indistinct, granular microcalcifications.

Calcifications by distribution may be grouped or clustered when five or more calcifications are seen in a small area corresponding to roughly 1 cm³. Group or clustered calcification in a loose configuration are more likely to be benign, whereas those in more compact configurations tend to be more likely due to malignant disease.

Linear and segmentally distributed calcifications are arranged in a line or branching pattern, indicating that the deposits are in a duct and these tend to be malignant, since most of the common malignancies are ductal. Regional calcifications are more likely to be benign and diffuse or scattered calcifications are almost always benign.

In terms of size, calcifications seen on mammography that are less than 200 micrometers in diameter tend to be mostly malignant. Calcifications that are fairly stable for more than two years on close following are in favor of most likely to have an etiology that is benign.

What is important to note is that malignant etiologies can be multifocal and as a consequence, the entire breast should always be screened in order to rule out the possibility of multicentric disease.

Reviewed by Susha Cheriyaedath, MSc

Sources

- <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2797739/>
- <http://radiopaedia.org/articles/mammography>
- www.cancer.ca/.../?region=on

Further Reading

- [Calcifying Disorders: An Overview](#)
- [Diagnosing Calcification](#)
- [Causes of Calcification](#)
- [Calcification of the Arteries](#)
- [Calcification and the Joints](#)
- [Calcification and the Kidneys](#)
- [Calcifying Disorders: An Overview](#)
- [Treating Calcification](#)
- [Breast Calcifications](#)

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