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Diagnosis and Management of Benign, Atypical, and Indeterminate Breast Lesions Detected on Core Needle Biopsy

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Abstract

Imaging abnormalities detected by mammographic screening often lead to diagnostic evaluations, with suspicious abnormalities subjected to image-guided core needle biopsy (CNB) to exclude malignancy. Most CNBs reveal benign pathological alterations, termed *benign breast disease* (BBD). Adoption of CNB presents challenges with pathologic classification of breast abnormalities and management of patients with benign or atypical histological findings. Patient management and counseling after CNB diagnosis of BBD depends on postbiopsy determination of radiologic-pathologic concordancy. Communication between radiologists and pathologists is crucial in patient management. Management is dependent on the histological type of BBD. Patients with concordant pathologic imaging results can be reassured of benign biopsy findings and advised about the future risk of developing breast cancer. Surgical consultation is advised for patients with discordant findings, symptomatic patients, and high-risk lesions. This review highlights benign breast lesions that are encountered on CNB and summarizes management strategies. For this review, we conducted a search of PubMed, with no date limitations, and used the following search terms (or a combination of terms): *atypical ductal hyperplasia*, *atypical hyperplasia*, *atypical lobular hyperplasia*, *benign breast disease*, *cellular fibroepithelial lesions*, *columnar cell lesions*, *complex sclerosing lesion*, *core needle biopsy*, *fibroadenomas*, *flat epithelial atypia*, *lobular carcinoma in situ*, *lobular neoplasia*, *mucocele-like lesions*, *phyllodes tumor*, *pseudoangiomatous stromal hyperplasia*, *radial scar*, and *vascular lesions*. The selection of references included in this review was based on study relevance and quality. We used additional articles culled from the bibliographies of retrieved articles to examine the published evidence for risk factors of BBD.

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Approximately 10% of women in the United States undergoing screening mammography will be recalled for additional diagnostic breast imaging. Of these, 8% to 10% will have findings that prompt a breast biopsy, typically an image-directed, core needle biopsy (CNB). This algorithm yields a breast cancer diagnosis in 4 of every 1000 women who undergo screening mammography.[1] Image-guided (stereotactic, ultrasonographic, or magnetic resonance imaging [MRI]) CNB has become the standard for obtaining pathologic diagnosis in patients with clinically or image-detected breast abnormalities.[2]

The objective of this review was to discuss the current evidence and recommendations regarding the management of various benign breast disease (BBD) lesions identified by CNB on the basis of histological type of the lesion and concordance between imaging and pathology findings. For this purpose, we conducted a search of PubMed, with no date limitations, and used the following search terms (or a combination of terms): *atypical ductal hyperplasia*, *atypical hyperplasia*, *atypical lobular hyperplasia*, *benign breast disease*, *cellular fibroepithelial lesions*, *columnar cell lesions*, *complex sclerosing lesion*, *core needle biopsy*, *fibroadenomas*, *fat necrosis*, *flat epithelial atypia*, *lobular carcinoma in situ*, *lobular neoplasia*, *mammary fibromatosis*, *mucocele-like lesions*, *phyllodes tumor*, *pseudoangiomatous stromal hyperplasia*, *radial scar*, and *vascular lesions*. The selection of references included in this review was based on study relevance and quality. We

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also used additional articles that were identified from the bibliographies of the retrieved articles to examine the published evidence for the risk factors of BBD.

SIGNIFICANCE OF PATHOLOGY AND IMAGING CONCORDANCE REPORTS

Screening mammographic findings such as calcifications, masses, architectural distortion, and focal asymmetries often lead to diagnostic workup, which may include additional imaging such as ultrasound (U/S) and MRI. The Breast Imaging and Reporting Data System (BI-RADS) is used to provide an overall assessment of the lesion. BI-RADS 4 lesions are considered suggestive of malignancy, and biopsy is recommended. This category can be subdivided into 3 subsets: 4A, low suspicion; 4B, moderate suspicion; and 4C, high suspicion. BI-RADS 5 lesions are highly suggestive of malignancy.[3]

All CNB pathology results must be correlated with the prebiopsy BI-RADS impression. This is defined by the radiologist as concordant or discordant. Any lesion with a benign pathologic result but having a prebiopsy classification of BI-RADS 4 (particularly 4B or 4C) or BI-RADS 5 is considered discordant until proven otherwise. Close discussion with the pathologist is required to determine whether there is a definite explanation for the mammographic finding, particularly of architectural distortion or mass.

A benign finding may also be considered discordant even if calcifications are seen pathologically, because a sampling error may miss the most suspicious calcifications, especially if there is a large area of calcifications. Either a repeat CNB should be performed in a different area of the calcifications or further imaging should be performed (eg, U/S to look for an associated mass, MRI, or molecular breast imaging) to determine the most suspicious area from which to take a biopsy sample. Some benign CNB diagnoses require multidisciplinary input from a surgeon, a radiologist, and a pathologist to formulate a management plan.

BENIGN BREAST DISEASE

Most benign findings on CNB correspond to 1 or more components of a pathological spectrum of changes that are collectively termed BBD. On the basis of the presence and degree of epithelial hyperplasia, various BBD lesions are broadly classified as nonproliferative (NP), approximately 65% of the total; proliferative disease (PD), approximately 30% of the total; or PD with atypia, approximately 5% to 8% of the total.[4] The histological manifestations of BBD are protean. Biopsies often contain multiple lesions that represent a mixture of NP and PD. Clinical presentation is highly variable, and many patients are asymptomatic, although the mean age of BBD diagnosis (45-50 years) is considerably less than that of breast cancer diagnosis. In general, the histological lesions comprising BBD present radiographically as masses, asymmetries, architectural distortion, microcalcifications, or combinations thereof. Table 1 summarizes specific histological types of BBD by the most characteristic presenting mammographic feature and the relative risk (RR) for subsequent breast cancer. The risks here are broadly grouped according to histological findings: NP RR, 1.2 to 1.4; PD RR, 1.7 to 2.1; or PD with atypia , RR = 4 or more. Table 2 lists recommendations for the management of breast lesions detected on CNB.

Most experts believe that PD and PD with atypia represent early stages in the complex tumorigenesis of at least some breast cancers. This is based in part on large cohort studies that demonstrate increased breast cancer incidence among women who have undergone a benign breast biopsy (compared with population controls).[5] Using standardized incidence ratios based on long-term follow-up data, these studies calculate RRs (Table 1) for the future development of breast cancer.[4] Breast cancer risk in women with BBD applies to both breasts and persists after 20 years of follow-up.

ARTICLE HIGHLIGHTS

- All core needle biopsy (CNB) pathology results must be correlated with the prebiopsy breast imaging to ascertain concordance.
- Atypical ductal hyperplasia detected by CNB warrants surgical consultation for excisional biopsy.
- Surgical consultation should be obtained for patients with lobular neoplasia detected by CNB.
- Excision of phyllodes tumors or cellular fibroepithelial lesions detected by CNB is advised.
- Atypical hyperplasia and lobular carcinoma in situ warrant discussion of risk-reducing strategies with patients as part of their overall management.