Annals of Diagnostic Pathology 25 (2016) 20–25

Contents lists available at ScienceDirect

Annals of Diagnostic Pathology

Lobular neoplasia diagnosed on breast Core biopsy: frequency of carcinoma on excision and implications for management

Benjamin C. Calhoun, MD, PhD [a,*], Angela M.B. Collie, MD, PhD [b], Abberly A. Lott-Limbach, MD [c], Esther N. Udoji, MD [d], Leah R. Sieck, MD [e], Christine N. Booth, MD [a], Erinn Downs-Kelly, DO [f]

[a] Department of Pathology, Robert J. Tomsich Institute of Pathology and Laboratory Medicine, Cleveland Clinic, Cleveland, OH
[b] Ameripath Indiana, Indianapolis, IN
[c] Department of Pathology and Laboratory Medicine, University of Rochester, Rochester, NY
[d] Breast Imaging Section, Department of Radiology, University of Chicago, Chicago, IL
[e] Department of Breast Imaging, Imaging Institute, Cleveland Clinic, Cleveland, OH
[f] Department of Pathology, Huntsman Cancer Hospital, University of Utah, Salt Lake City, UT

ARTICLE INFO

Available online xxxx
Keywords:
Breast
Screening
Diagnosis
Core biopsy
Atypical lobular hyperplasia
Lobular carcinoma in situ
Lobular Neoplasia

ABSTRACT

The appropriate follow-up and treatment for patients with a core biopsy diagnosis of lobular neoplasia (atypical lobular hyperplasia or lobular carcinoma in situ) remains controversial. Several studies have attempted to address this issue, with recommendations ranging from close clinical follow-up or surveillance to mandatory surgical excision in all cases. We report the findings at our institution, where virtually every core needle biopsy diagnosis of lobular neoplasia results in follow-up excision. The goal of the study was to identify potential predictors of upgrade to a more significant lesion. We identified 76 patients over a 15-year period with a core biopsy diagnosis of pure lobular neoplasia and no other high-risk lesions. Subsequent surgical excision identified 10 cases (13%) that were upgraded to carcinoma. Upgrade diagnoses included invasive ductal carcinoma (n = 1), invasive lobular carcinoma (n = 4), ductal carcinoma in situ (n = 3), and pleomorphic lobular carcinoma in situ (n = 2). All 10 upgraded cases had imaging findings suspicious for malignancy including irregular masses, asymmetric densities, or pleomorphic calcifications. Of the 10 upgraded cases, 7 were diagnosed as lobular carcinoma in situ on core biopsy. The data support a role for radiologic-pathologic correlation in the evaluation of suspicious breast lesions and suggest that the extent of lobular neoplasia in core biopsy specimens may be an indicator of the likelihood of upgrade to carcinoma.

1. Introduction

Pathologists frequently encounter risk-associated lesions in percutaneous core needle biopsies (CNBs) of the breast performed to evaluate abnormalities detected in screening mammography and other imaging studies. Nonmalignant histologic findings with significant breast cancer risk include atypical ductal hyperplasia (ADH), atypical lobular hyperplasia (ALH), and lobular carcinoma in situ (LCIS). Standards for the management and surveillance of patients with these histologic markers of breast cancer risk are not well defined, and recommendations for surgical biopsy or continued clinical and radiologic follow-up vary [1,2]. The rate at which ALH and LCIS are "upgraded" to carcinoma in excision specimens also varies widely in the literature. Many CNB studies lack clear criteria for excision, careful radiologic-pathologic correlation, and clinical follow-up for patients who did not undergo surgery [1]. Some studies suggest that women diagnosed as having lobular neoplasia on CNB should uniformly undergo surgical excision [3]. The data from other studies indicate that clinical and radiologic follow-up is sufficient, provided that there was no worrisome mass lesion or residual suspicious calcifications [4].

Approximately 1% of 23 324 CNB in the Breast Cancer Surveillance Consortium were diagnosed with ALH/LCIS [5]. Although ALH and LCIS have distinct histologic definitions and associated with different breast cancer risk implications, the 2 entities are frequently present in the same specimen, merging with each other in a spectrum often referred to as lobular neoplasia [6-8].

Atypical lobular hyperplasia may be an incidental finding or may be associated with calcifications detected by screening mammography [9]. Histologically, ALH is characterized by a monomorphic epithelial cell proliferation that lacks cellular cohesion, often contains intracytoplasmic vacuoles, and expands less than 50% of a terminal-duct lobular unit [10]. In the Nashville cohort, the invasive cancers that developed after a diagnosis of ALH were low grade and often special histologic types with a favorable prognosis and excellent overall survival [11]. For many decades, the cancer risk associated with ALH

* Corresponding author at: Department of Pathology, Robert J. Tomsich Pathology and Laboratory Medicine Institute, Cleveland Clinic, 9500 Euclid Avenue, Mail Code L25, Cleveland, OH 44195. Tel.: +1 216 636 9914; fax: +1 216 445 3707.
E-mail address: calhoub@ccf.org (B.C. Calhoun).

http://dx.doi.org/10.1016/j.anndiagpath.2016.07.009
1092-9134/

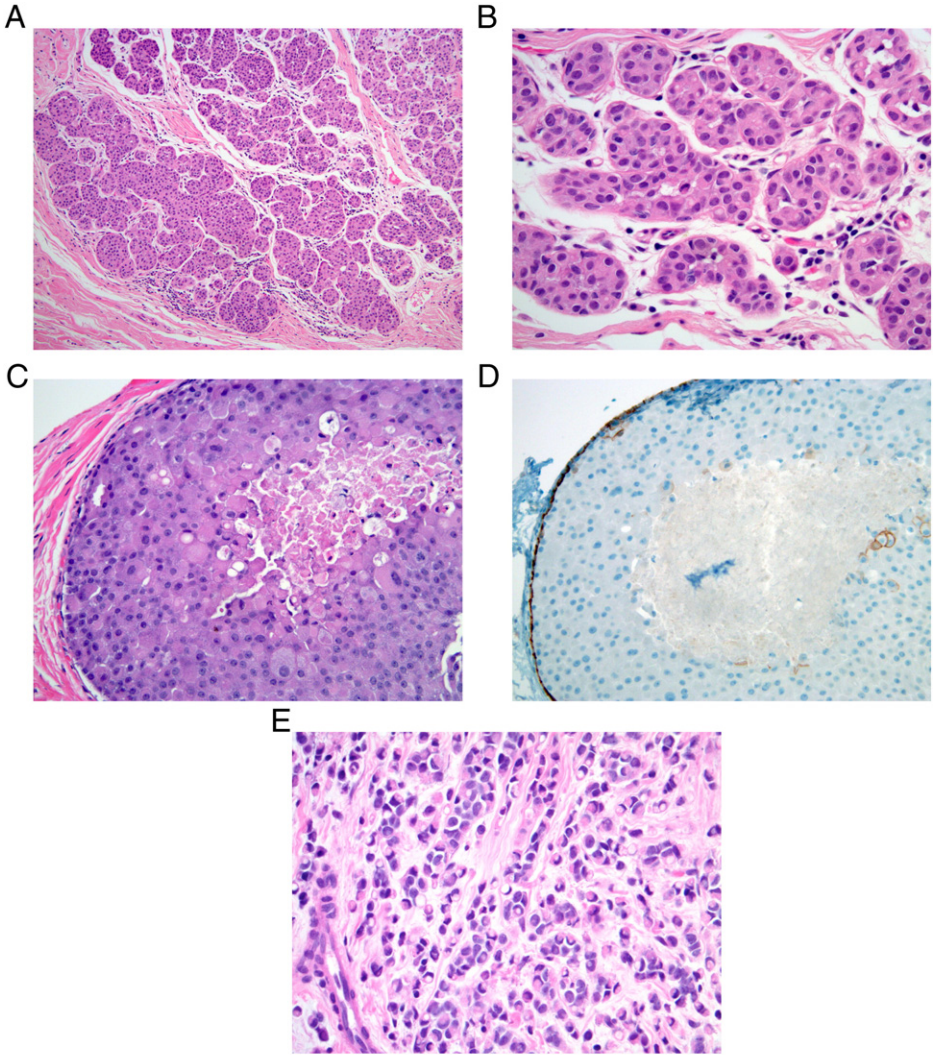

Fig. 1. Representative images of microscopic findings: lobular neoplasia, hematoxylin and eosin stain at ×40 and ×100 magnification, respectively (A and B); pleomorphic LCIS with central necrosis, hematoxylin and eosin stain at ×200 magnification and E-cadherin stain at ×200 magnification, respectively (C and D); and invasive lobular carcinoma, classical type, hematoxylin and eosin stain at ×400 magnification (E).

was thought to be equal for bother breasts. However, long-term follow-up from the Nashville cohort and the Nurses' Health Study showed that invasive cancer developed in the ipsilateral breast in approximately two-thirds of patients [12,13]. Some studies have reported that 15% to 20% cases with ALH diagnosed on CNB are upgraded to carcinoma [14-16]. Other studies with careful radiologic-pathologic correlation have reported upgrades rates less than 2%, especially when ALH is an incidental finding [17-21]. Many experts now recommend observation for patients with incidental ALH diagnosed on CNB in the absence of other indications for excision [22].

Clinically, although the diagnosis contains the word carcinoma, classical LCIS is regarded as a generalized marker of risk for the development of carcinoma in either breast [7]. Histologically, LCIS is an atypical epithelial proliferation cytologically similar to ALH but with expansion of greater than 50% of the terminal-duct lobular unit [10]. Similar to ALH, LCIS may be an incidental finding or may represent the targeted lesion often associated with calcifications [23-25]. The extent or number of foci of LCIS in CNB is also correlated with the risk of upgrade in some studies [23]. The upgrade rate for LCIS has been reported to range from 0 to 33% [14-17,26]. However, many studies lack radiologic-pathologic correlation to exclude cases with imaging or clinical findings that increased the likelihood of finding cancer on excision [3]. In studies with careful radiologic-pathologic correlation, the upgrade rate for LCIS was much lower (<4%) [19,20,25]. Several studies suggest that patients with incidental LCIS on CNB that lack other indications for excision may be offered observation as a safe alternative to surgery [19,20,22,24,25,27].

We assessed the findings at our institution, where virtually every CNB diagnosis of lobular neoplasia results in follow-up surgical excision, in an effort to identify potential predictors of an upgrade to carcinoma.

2. Materials and methods

2.1. Patients and specimens

After obtaining institutional review board approval, we searched the anatomic pathology database for breast CNBs with subsequent surgical excision between 1993 and 2012. Cases were excluded if the patient had a concurrent cancer diagnosis elsewhere in the ipsilateral or contralateral breast, if the CNB had additional high-risk lesions (ADH, flat epithelial atypia, radial scar, or papilloma), or if the lobular neoplasia had features of pleomorphic LCIS including high-grade nuclei or necrosis. After histologic review, a total of 76 patients with pure lobular neoplasia (ALH or LCIS) as the most significant lesion on CNB were identified (Fig. 1). The extent of involvement by lobular neoplasia present in