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Case Report

Heterotopic breast tissue versus occult metastatic carcinoma in lymph node, a diagnostic dilemma

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Abstract Breast cancer is the leading cause of cancer in women and the third leading cause of cancer mortality in the United States. We report a case of a patient who underwent bilateral simple mastectomies and right sentinel node biopsy for invasive lobular carcinoma in the right breast. An ipsilateral sentinel lymph node showed a microscopic focus of ductal elements. Although residual lobular carcinoma was identified in the right breast, no ductal carcinoma was identified in either breast. The ducts were discrete distributed in a 3-mm focus in the lymph node parenchyma as well as the subcapsular sinus. By immunohistochemistry, the ducts were positive for cytokeratin, estrogen receptor/progesterone receptor and did not show a myoepithelial layer by P63 or smooth-muscle myosin heavy-chain staining. The differential diagnosis includes heterotopic epithelial inclusions and benign mechanical transport. Mechanical transport of the breast tissue was ruled out because primary tumor type in the breast and the ductal structures in the lymph nodes were of different types. The diagnosis of occult metastatic tumor was based on the lack of the myoepithelial layers associated with the ductal structures. The diagnostic dilemma of the differential diagnoses is discussed, and pertinent literature is reviewed.

Keywords: Sentinel; Lymph node; Metastatic; Breast; Occult carcinoma; Heterotopic

1. Introduction

Breast cancer is the leading cause of cancer in women (excluding nonmelanoma skin cancer) and the third leading cause of cancer mortality in the United States [1]. Approximately 5% to 15% of invasive breast cancers are of the lobular subtype [1]. Although there is significant literature discussing the incidence of occult metastatic breast carcinoma found only in axillary lymph nodes, we have not seen any cases of a primary pure lobular carcinoma with metastatic ductal carcinoma found in the sentinel or regional lymph nodes. There is a recent case report of an invasive ductal and invasive lobular carcinoma simultaneously present both in the same primary breast mass and the same axillary lymph node [2]. In contrast, this case report describes a patient with invasive lobular carcinoma with an ipsilateral lymph node showing a microscopic focus of breast ductal structures suggestive of metastasis of an occult primary ductal carcinoma.

1.1. Clinical history and pathologic findings

The patient is a 54-year-old African American woman with an abnormal mammogram of her right breast who had an excisional biopsy in an outside hospital in 1999. In 2000, a diagnosis of multifocal lobular carcinoma in situ and calcifications associated with benign ductal hyperplasia was made at University of California, Los Angeles, Medical Center in a consultation review. Due to abnormal follow-up mammograms showing new punctate calcifications in the prior excisional surgical sites, the patient had multiple subsequent reexcisional biopsies. The last lumpectomy specimen showed invasive and in situ lobular carcinoma of classic type (Fig. 1), positive for pancytokeratin, estrogen receptor/progesterone receptor (ER-PR), and negative for Her2/neu overexpression. The fluorescence in

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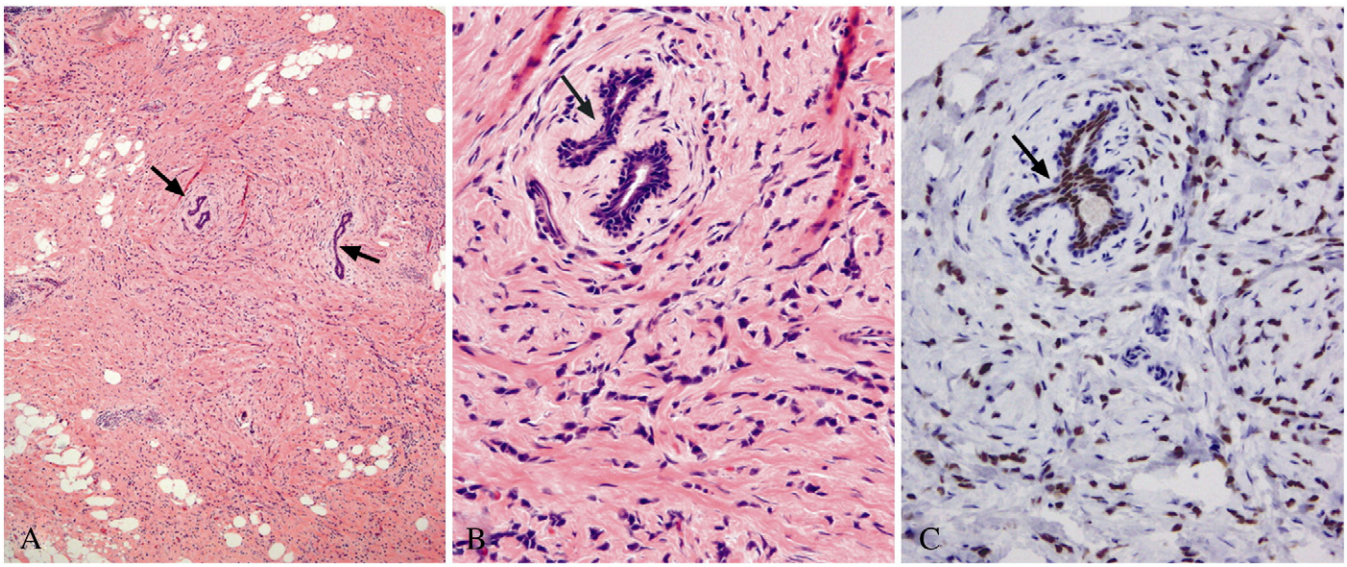

Fig. 1. Hematoxylin and eosin section from the wide excision of the right breast showing invasive lobular carcinoma. (A) A uniform fibrotic histology with intermingling fat cells and normal ducts (arrows) at a low magnification. At higher magnification (B), classic type lobular carcinoma as small single cells in a file throughout the picture with no ductal formation that are ER-PR positive (panel C). The tumor was positive for keratin and negative for Her2/neu overexpression by immunohistochemistry and negative for gene amplification by FISH.

situ hybridization (FISH) study was also negative for Her2/neu gene amplification.

The patient underwent bilateral simple mastectomies with a right sentinel lymph node biopsy in January 2005. The right mastectomy specimen showed invasive lobular carcinoma of classic type, measuring 2.3 cm in greatest dimension. The tumor was well differentiated with a Bloom-Richardson score of 5/9 (tubule formation, 3; nuclear pleomorphism, 1; and mitotic count, 1). There was invasion of the tumor into a vascular wall and no definite lymphovascular invasion. No foci of ductal or tubular carcinoma were present throughout the histologic sections. The left mastectomy specimen showed mild fibrocystic changes and was negative for malignancy. The hematoxylin and eosin (H&E) slides of right sentinel node were reviewed and originally called negative for metastatic carcinoma. Later, when the pancytokeratin stains became available, the slides were subsequently reviewed. These slides, however,

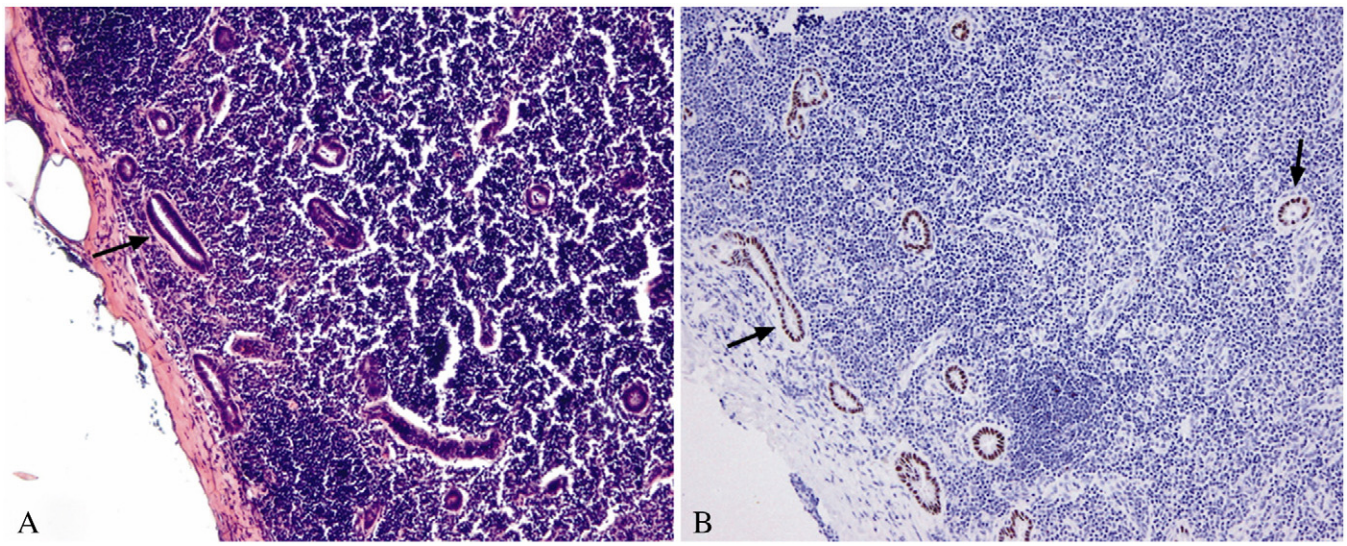

Fig. 2. Hematoxylin and eosin (A) and ER-PR (B)–stained sections from the right sentinel lymph node biopsy showing discrete ductular structures in the subcapsular sinuses and the parenchyma (arrows). There were no associated hemosiderin-laden macrophages, multinucleated giant cells, altered lymphocytes, or damaged red blood cells microscopically. The immunohistochemical reactions as well as FISH of the ductal structures were similar to that in Fig. 1. Due to histologic dissimilarity between the ipsilateral breast carcinoma (Fig. 1) and lack of the immunohistochemical stains for the myoepithelial layers, a diagnosis of occult metastatic ductal breast carcinoma was made.