Pathologic Quiz Case

A 75-Year-Old Woman With a Breast Lump

Hassan Nakhla, MD; Vishal S. Chandan, MD; Patricia J. Numann, MD; Steve K. Landas, MD

A 75-year-old woman with a family history of breast cancer presented with a lump in the left breast first noted 4 weeks earlier. Two previous breast biopsy specimens taken 12 and 20 months earlier were noted to have fibrocystic changes with no evidence of malignancy. Physical examination revealed a 1.5-cm, solitary, discrete, firm mass in the lower and outer quadrant of the left breast. No axillary lymphadenopathy was detected. An excisional biopsy was performed 2 weeks after the initial core biopsy. Gross examination showed a well-circumscribed, 1.6 × 1.1 × 1.0-cm, firm, gray nodule. No hemorrhage or necrosis was noted.

Histologic examination revealed an invasive proliferation of circumscribed nests, islands, and cordlike clusters of tumor cells, forming solid, cribriform, tubular, and trabecular arrangements (Figures 1 and 2). The tumor cells were small and darkly staining, with vesicular nuclei and scant cytoplasm (Figure 3). There was mild pleomorphism with inconspicuous nucleoli and occasional mitotic figures. The lumens of the tubules and cribriform spaces were filled with either eosinophilic hyaline material or mucoid secretory material. The tumor cells did not express estrogen, progesterone, or HER-2/neu receptors (immunohistochemical method).

What is your diagnosis?
Pathologic Diagnosis: Adenoid Cystic Carcinoma of the Breast

Adenoid cystic carcinoma (ACC) of the breast is a rare tumor that accounts for less than 0.2% of breast carcinomas.1 Geschickter2 first applied this term in 1945 to tumors of the breast in reference to lesions he classified as adenocystic basal cell carcinoma.

Adenoid cystic carcinoma occurs in women between 25 and 80 years of age (mean age, 50–63 years). Adenoid cystic carcinoma has been reported in men and children.2 It usually presents as a palpable, discrete mass. Although calcification may develop in these tumors, only a few have been detected by mammography. Grossly, the lesions vary from 1 to 12 cm (mean size, 1–3 cm). Most of the tumors are well circumscribed and firm. Cut section may reveal small cystic areas, whereas larger tumors may have areas of gross cystic degeneration.1 Microscopically, half of ACC cases show an invasive growth pattern despite the gross circumnsection. Microcystic areas formed by coalescent spaces in dilated glands are seen in 25% of tumors. Although perineural invasion may be seen in a few tumors, lymphatic invasion is extremely uncommon.1 The tumor consists of a mixture of proliferating glands (adenoid component) and stromal or basement membrane elements (cylindromatous component). A variety of architectural patterns can be seen, ranging from cribriform, solid, trabecular, to basaloid type. Sebaceous and adenosquamous differentiation has also been described.4 Ro et al5 suggested that ACC of the breast be graded on the basis of the proportion of the solid growth of the tumor (grade I, no solid element; grade II, <30% solid element; grade III, ≥30% solid element).

The differential diagnosis includes intraductal carcinoma, invasive cribriform carcinoma, and collagenous spherulosis.6 A fine needle aspiration biopsy specimen of ACC is characterized by clusters of epithelial cells oriented around solid spheres of basement membrane material.2 Immunohistochemically, cytokeratin expression is seen in the cytoplasm of the cells with abundant eosinophilic cytoplasm, whereas S100 protein and smooth muscle actin are expressed by the basaloid cells.8,9 Most of the tumors are negative for hormone receptors.3

Adenoid cystic carcinoma is one of the least aggressive mammary carcinomas, and mastectomy is curative in nearly all cases. However, there have been a few isolated cases of chest wall recurrence and axillary or systemic metastases after mastectomy.3 The treatment of ACC depends on the circumstances in a given patient. Wide excision or mastectomy is indicated for relatively large lesions and for tumors with an invasive growth pattern. Radiotherapy has been used as an adjuvant; however, there is currently too little experience to judge the effectiveness of radiation in treating this tumor.10

References