CLINICAL VIGNETTE

Adenoid Cystic Carcinoma of the Breast

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Case Report

A 54-year-old postmenopausal woman presented with left breast pain. Mammogram performed, one year after a prior normal mammogram, revealed a 43 mm hypoechoic left breast mass. Subsequent biopsy revealed a low-grade adenoid cystic carcinoma (ACC), Estrogen Receptor (ER) negative, Progesterone Receptor (PR) negative, and HER2 negative with borderline ki67 at 10%. MRI demonstrated a 6 cm left breast mass with no adenopathy. Her family history included only one relative with malignancy; her paternal grandmother with breast cancer at age 40. Extensive genetic testing panel was negative. She underwent a left mastectomy with sentinel node evaluation. Pathology revealed a 5.8 cm low grade (4/9) ACC with perineural invasion,0/2 sentinel nodes, margins negative. CT scan of chest, abdomen and pelvis was performed for staging and was negative. She therefore had Stage IIB T3N0M0 disease. She was treated with adjuvant radiation therapy and no adjuvant systemic treatment. At this point she has remained in remission for 3 years.

Discussion

Breast cancer is a heterogeneous disease consisting of a variety of pathologic subtypes, with most being categorized at carcinomas. Biologic behavior and treatments vary based on subtype. A small portion of breast carcinomas include salivary gland type tumors, which may be benign or malignant. Adenoid cystic carcinoma of the breast is the most common type of these salivary gland tumors of the breast. It is quite rare, accounting for less than 0.1 % of all breast cancers, and therefore the published literature does not include a large number of patients. This type of breast cancer occurs mainly in postmenopausal women, with an average age of onset of 60, and has a favorable prognosis.

The histologic pattern of ACC of the breast is identical to that of ACC of the salivary glands, with both epithelial and myoepithelial components. Generally, these tumors are negative for ER, PR HER2, with a basal-like phenotype. Yet in contrast to typical triple negative breast cancer, ACC is often negative for both TP53 and Androgen Receptor, but positive for EGFR and CD 117.[1] ACC is not associated with BRCA positivity. Mitotic activity is usually low. Almost all express the c-KIT proto-oncogene and chromosomal translocation that is seen in ACC of the salivary gland, resulting in fusion transcripts of the genes MYB and NFIB. This MYB-NFIB gene fusion is the only consistent gene alteration reported in cases of ACC of the breast.[1] ACC is not felt to have an in-situ precursor lesion, although ACC in situ has been described.

From a clinical perspective, approximately half of the patients with ACC present with a subareolar mass, and breast pain or tenderness is more common than in typical breast cancer. The prognosis of ACC is generally better than that of other breast malignancies. This disease often remains localized. Tumors are commonly less than 5 cm, with incidence of axillary nodal metastasis of only 8% that is usually seen in primary tumors exceeding 1.4 cm in size. Distant metastases have been reported in fewer than 20% of patients, with lung and bone the most common sites for distant spread. Given the very low risk of axillary node metastases in tumors under 1.5 cm, some surgeons forgo sentinel node evaluation in small ACC.[2]

Due to the unaggressive nature of these cancers in general, patients are often treated with breast conservation surgery. The role of adjuvant radiation has been debated, but a meta-analysis demonstrated an improvement in disease -free survival and overall survival with radiation therapy.[3] In contrast, there is no definitive role for chemotherapy, although some clinicians have used chemotherapy for high risk or metastatic disease. Ten-year survival exceeds 90% in most published papers, even for those with distant metastases. Although recurrences can occur late, patients who recur often have an indolent disease course.

In comparison to other triple negative breast cancer, ACC generally follows an unaggressive pattern and has a good prognosis. For those rare patients with recurrences, biomarkers in ACC may guide systemic treatment. On extrapolation from treatment in other malignancies, given the frequent expression of EGFR in ACC, EGFR antagonists might prove to be of benefit for treating recurrent or distant disease. Future treatments may be developed to target the MYB-NFIB gene fusion. As next –generation sequencing is further explored in ACC of the breast, as in the treatment of many malignancies, newer targeted treatments may guide future therapy of ACC.

REFERENCES

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