Secretory Carcinoma of the Breast

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ABSTRACT

Secretory carcinoma of the breast is a rare variant with excellent prognosis and indolent clinical behavior. At the microscopic level, the presence of intracellular and extracellular secretory material is the most remarkable feature. We report a case of secretory carcinoma of the breast in a 90 year old female, with classic cytological findings.

Key words: secretory carcinoma, cytological findings

INTRODUCTION

In 1966, McDivitt and Stewart described an uncommon variety of mammary carcinoma in children which they designated “juvenile carcinoma”. Same pattern has been observed in adults and hence the descriptive term “secretory carcinoma” replaced the designation of “juvenile carcinoma”.

Two distinctive features characterize this neoplasm. The presence of large amounts of intracellular and extracellular secretions; and the granular or vacuolated eosinophilic cytoplasm of the cells. These neoplasms had a less aggressive behavior and a better prognosis. Treatment is by local excision. Metastasis to axillary nodes and recurrence is uncommon.

CASE REPORT

A female patient aged 90 years came to the department of Pathology for FNAC with complaints of swelling in the right breast since four months associated with pain and fever on and off. No history of trauma or nipple discharge. No history of similar swellings in the past. On examination, nodular, firm, irregular swelling measuring 10 cm x 7 cm was present in the upper outer quadrant of the right breast. Skin over swelling appeared red, shiny and stretched.

Areola along with nipple was pushed medially. Swelling was tender, no local raise in temperature was noted. Right axillary lymph node was enlarged and firm in consistency measuring 3 cm x 4 cm, freely mobile. On aspiration, 5 ml of turbid, mucoid fluid was aspirated. Swelling reduced on aspiration. FNAC was repeated from solid parts of swelling, smears prepared and stained with H & E and Leishman’s stain.

On microscopic examination, smears are highly cellular against a hemorrhagic background, revealed clusters, sheets and papillary structures composed of ductal epithelial cells with moderate to abundant amount of pale, vacuolated and eosinophilic cytoplasm, round nucleus with prominent nucleoli and vesicular chromatin. Intracytoplasmic mucinous globules are noted in many
clusters. Bubble like pink acellular material was also noted in the background. No myoepithelial cells seen. These cytological features were suggestive of secretory form of breast carcinoma.

**DISCUSSION**

In 1966, McDivitt and Stewart described 7 cases of breast carcinoma with a distinct morphology in young children and named the disease “juvenile carcinoma”. Average age was 9 years. Subsequently, a number of breast carcinomas with similar morphology were reported in adults. Regardless of the patient’s ages, the tumors were all morphologically characterized by the presence of abundant eosinophilic secretions in intracellular vacuoles and intracellular spaces. The descriptive term “secretory carcinoma”, therefore replaced the original designation of “juvenile carcinoma”. According to the 2012, WHO classification of breast tumors, secretory carcinomas are considered one of the rarest types of breast carcinoma accounting for less than 0.15% of all breast carcinomas. Despite the low frequency, secretory breast carcinoma elicit pathologic interest because of their unique morphology and excellent prognosis. The basal like immune profile and characteristic molecular expression are further intriguing aspects of this rare type of breast carcinoma.

**Clinical features**

Affects both children and adults of both sexes. Most reported cases are in young women with a median age of 25 years. In males, median age is 19 years. Typical presentation is in upper outer quadrant as a slow growing, painless, well circumscribed, mobile palpable mass. Axillary lymph node metastasis is uncommon, especially if tumors are less than 2 cm; in the occasional case in which lymph node metastasis does occur, it rarely involves more than 3 lymph nodes. No clinical evidence of hormonal abnormality has been documented.

**Radiological features**

These present as discrete, lobulated, solitary mass with smooth or irregular borders, which mimic a fibroadenoma. Non palpable lesions may present as asymmetric densities or rarely, microcalcifications. In children or male patients, a retroareolar, dense mass is the usual finding. USG shows a well circumscribed hypoechoic mass.

**Gross features**

Appears as a solitary, discrete, firm mass with varying degrees of nodularity. Tumor size ranges from 0.5cm to 16cm. Margins are usually well delineated but can be infiltrative.

**Microscopic features**

Arranged in microcystic, ductal and solid patterns. Hyalinized fibrous tissue is frequently identified centrally and papillary architecture is sometimes seen peripherally. The tumor cells are polygonal, with vacuolated pale pink or amphophilic cytoplasm. Nuclei are small, round and cytologically bland; with minimal atypia. Mitotic activity is low. Eosinophilic, diastase resistant, and positive PAS secretions are seen within the intracytoplasmic vacuoles, ductular structures and extracellular microcystic spaces. These secretions show variable reactivity to mucin stains.

**Immunohistochemical features**

Stain negative for ER, PR and ERBB2 (triple negative breast cancer)

Express basal cell markers, including cytokeratins 5/6, 14 & 17, c-kit (CD117), EGFR and vimentin.

Immunopositive for alpha-lactalbumin and S-100, E-cadherin.

Not reactive for GCDFP-15 or BRST-2 or CEA.

**Pathogenesis**

Chromosomal translocation t (12; 15) that results in a fusion of ETV6 and NTRK3 when two loci come together, their gene fusion encodes a chimeric tyrosine kinase, which has potent transforming activity for fibroblasts and breast ductal epithelium through activation of the Ras-Mek1 and P13k-Akt pathways.

**Differential diagnosis**

Benign lesions: -lactational change, lactational adenoma, juvenile papillomatosis with apocrine metaplasia, collagenous spherulosis and cystic hypersecretory hyperplasia.

Malignant lesions: - lipid rich carcinoma, mucinous carcinoma, acinic cell carcinoma, apocrine carcinoma & cystic hypersecretory carcinoma.

**Treatment**

In children, local excision with sentinel lymph node mapping. In adults, simple mastectomy or modified radical mastectomy for tumors more than 2cm along with adjuvant chemotherapy.

**Prognosis**

Usually excellent prognosis. Involvement of more than 3 lymph nodes may indicate the risk of systemic metastasis and a poor outcome.
CONCLUSION

Secretory carcinoma of the breast is a rare entity with excellent prognosis and due to typical features seen in FNAC that shows abundant intracytoplasmic eosinophilic vacuoles and bubble like pink acellular material could be easily diagnosed on taking FNAC samples from solid areas of the swelling and confirmed by histopathology.

CONFLICT OF INTEREST:
The authors declared no conflict of interest.

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