Case Report

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A Case Series on Rare Types of Carcinoma Breast

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Abstract

Carcinoma Breast is a common occurrence in women. Most common pathological type being invasive ductal carcinoma: No Special Type. Carcinoma breast is a systemic disease and its management requires a multimodal treatment including surgery, chemotherapy, radiotherapy, hormonal therapy and immune therapy based on the type and stage of the disease. Here we are presenting a case series of rarer pathological types of carcinoma breast namely. 1: Solid papillary carcinoma with neuroendocrine differentiation, 2: Metaplastic carcinoma of breast, 3: Invasive carcinoma breast mimicking as sclerosing adenosis.

Keywords: Carcinoma breast; Solid papillary carcinoma; Metaplastic carcinoma; Sclerosing adenosis.

Case 1

A 75 year old female with no known co-morbidities came with complaints of lump in left breast for past 4 months. No history of nipple discharge or nipple retraction. No other complaints pertaining to the breast lump or metastasis. she attained menarche at 13 years, married since 22 years of age, P2L2, breastfed both children for 1year each, attained menopause at 49 years of age. Examination of breast revealed a hard lump of size 4x4cm in lower outer quadrant. No evidence of skin or chest wall involvement. No clinically palpable lymph nodes in axilla. Her sonomammogram revealed 3.7x3.7cm lesion between 5-7 o clock position, BIRADS.[4] FNAC from the lump showed carcinoma breast. Pt was planned for left modified radical mastectomy. Her post-op histopathological report revealed solid papillary carcinoma with neuroendocrine differentiation. No perineural/lymphovascular invasion. 13 axillary lymph nodes were examined out of which none were involved. IHC study: CK5/6 weak focal positive, ER 90% positive, PR 90% positive, Her2neu negative, ki67 30%, synaptophysin moderate to strong positive. Post operatively patient underwent chemotherapy.

Case 2

A 49 year old female, with no known co-morbidities came with complaints of lump in right breast for two months. History of pricking pain over the lump present. No other positive history pertaining to the breast lump or metastasis. No history of usage of oral contraceptive pills. Attained menarche at 12 years of age. Married since 20 years of age. P3L3,

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all full term vaginal delivery. Breastfed all three children for 15months. Not attained menopause yet. Examination of right breast revealed a lump of size 4x3cm at upper outer quadrant. No evidence of skin or chest wall involvement. No clinically palpable lymph nodes in axilla. Her sonomammogram revealed 5.2x3.4cm lesion, BIRADS.[5] FNAC showed carcinoma breast.

Core needle biopsy showed features suggestive of invasive carcinoma - no special type. The patient underwent right modified radical mastectomy. Her histopathological examination revealed metaplastic carcinoma with 30% squamous epithelial component, comedo and solid patterns seen. Perineural and lymphovascular invasion could not be made out. 12 nodes were examined and none were involved. IHC study: CK 5/6 positive in squamous differentiated cells, her2neu complete strong positive, ki67 90%, ER negative, PR negative. Postoperatively patient underwent adjuvant chemotherapy+radiotherapy.

Case 3

A 41 year old female, with no known co-morbidities came with complaints of lump in right breast for two months. No other positive history pertaining to the breast lump or metastasis. No history of usage of oral contraceptive pills. Attained menarche at 14years of age. Married since 21 years of age. P3L2, all full term vaginal delivery. Breastfed all two children for 12 months. Not attained menopause yet. Examination of right breast revealed a lump of size 4x3 cm at upper outer quadrant.

No evidence of skin or chest wall involvement. No clinically palpable lymph nodes in axilla. Her sonomammogram revealed a 3x2.3 cm lesion in right upper outer quadrant, BIRADS.[4] FNAC showed features of proliferation breast disease with atypical. Core needle biopsy showed features of sclerosing adenosis. Incisional biopsy was done, which revealed invasive carcinoma - no special type.

Then patient underwent right modified radical mastectomy and the post operative histopathology also confirmed the diagnosis of invasive carcinoma. Adjacent breast tissue showed fibrocystic changes. 18 nodes were examined and one node was positive for malignancy. IHC study: ER 90% positive, PR 90% positive, Her2neu 40% weak incomplete positive, ki67 40%. Post operatively patient underwent adjuvant chemotherapy.

Discussion

Breast carcinoma can be broadly classified as non-invasive and invasive type.

Non invasive carcinoma includes

- Lobular carcinomain situ
- ductal carcinoma in situ.

Invasive type includes

- Invasive ductal carcinoma - not otherwise specified
- Tubular carcinoma
- Mucinous or colloid carcinoma
- Medullary carcinoma
- Invasive papillary carcinoma
- Adenoid cystic carcinoma
- Metaplastic carcinoma

Mixed connective tissue and epithelial tumors

- Phyllodes tumor
- Carcinosarcoma
- Angiosarcoma
- Adenocarcinoma

Solid papillary carcinomas constitute less than 1% of carcinoma breast cases and are characterized by round, well defined nodules composed of low-grade ductal cells separated by fibrovascular cores. Pathologically they exhibit low grade features and often display neuroendocrine and mucinous differentiation. Pathologically tumor size varies from less than 1cm to 15cm in literature. When mucinous differentiation is present, it can be grossly appreciated.

Microscopically they appear as multiple nodules. Cells are ovoid or spindled, occasionally with a streaming appearance. Less commonly observed features are organ oil pattern, microcystic spaces, foamy macrophages and microcalcifications. They are ER and PR positive and Her2neu negative.[1] Mucicarmine stain is positive in cased with mucinous differentiation. They have a favorable outcome.

Distant metastasis can occur without axillary lymph node involvement. Complete excision of the lesion or total/partial mastectomy is the treatment of choice. The role of postoperative radiation and endocrine therapy remains controversial and limited to solid papillary carcinomas with an invasive component. Solid papillary carcinomas with invasive component will have a poorer prognosis.[2]

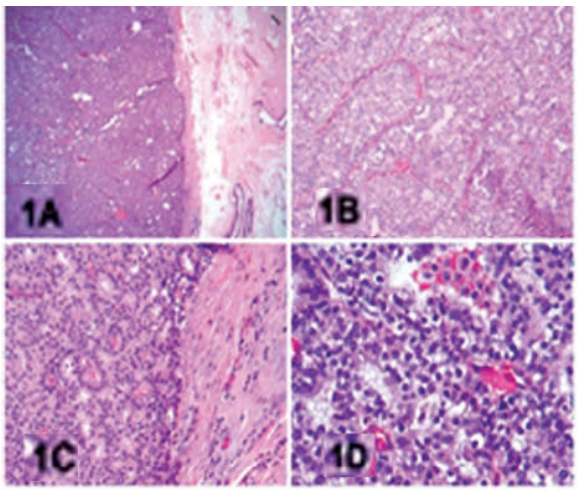


Fig. 1: A, Solid papillary carcinoma displaying well-defined pushihg borders surrounded by a fibrous wall at the periphery of the tumor, B, A complex network of intermingled branching hyalinized fibrovasvcular stroma supporting a soli d proliferation of low-grade ductal cells. Papillary fronds are not seen. C, Areas of the tumor showing perivascular p seudorosette formation. D, Another area of the tumor displaying clear cell changes (hematoxylin-eosin, original magnificationsx50 (A), x 200 (c), and x 400 (D).

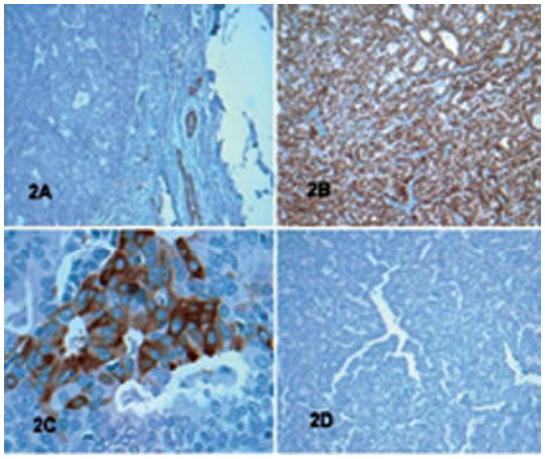
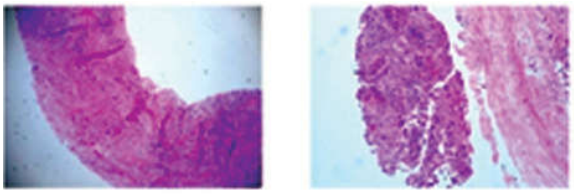


Fig. 2: A, Immunostain for calponin, a myoepithelial cell marker, is negative along the epithelial-stromal interface of the tumor. Internal control staining surrounding small blood vessel is seen. B, Strong and diffuse staining with estrogen receptor. C, Tumor cells are focally positive for synaptophysin. D, Immunohisto chemistry for basal cell-type keratin cytokeratin 5\6 is negative as seen in papillary carcinomas (hematoxylin-eosin, original magnification x 630 (c) and x 100 [D].

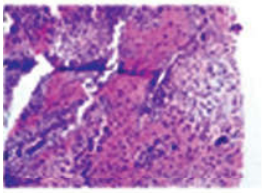
Metaplastic carcinoma also constitute less than 1% of carcinoma breast. They are very aggressive and has the worst prognosis. They contain sarcomatous (from mesnchyme) and carcinomatous (from epithelium) components within the same tumor.[3] They are ER, PR negative and Her2neu negative. But they have worse prognosis than non-metaplastic triple negative tumors. Metaplastic breast carcinoma is further classified as mixed metaplastic carcinoma, low grade adenosquamous carcinoma, fibromatosis like, squamous cell carcinoma, spindle cell carcinoma, metaplastic carcinoma with mesenchymal differentiation.

They show markers of both epithelial and mesenchymal origin namely cytokeratin, S100, vimentin.[4] They are typically chemo resistant, high propensity to metastasize, increasedblocoregional/ distal tumor recurrence and far more aggressive. Post operative management should include chemotherapy, radiotherapy and immune therapy. These tumors are mostly chemo resistant because of large primary size, higher histological grade, less nodal involvement, heterogeneity, p53 overexpression and ki67 overexpression.[5]

Post operative radiotherapy has better overall survival rates. Molecular pathways and alterations involved in metaplastic breast carcinoma are epithelial mesenchymal transition, EGFR signally pathway, NOS signalling pathway, WNT Beta Catenin signalling, PD1 and PDL1 overexpression. Newer treatment modalities include Nivolumab (anti CTLA4 antibody) and Pembrolizumab (anti-PD1 antibody).[6]



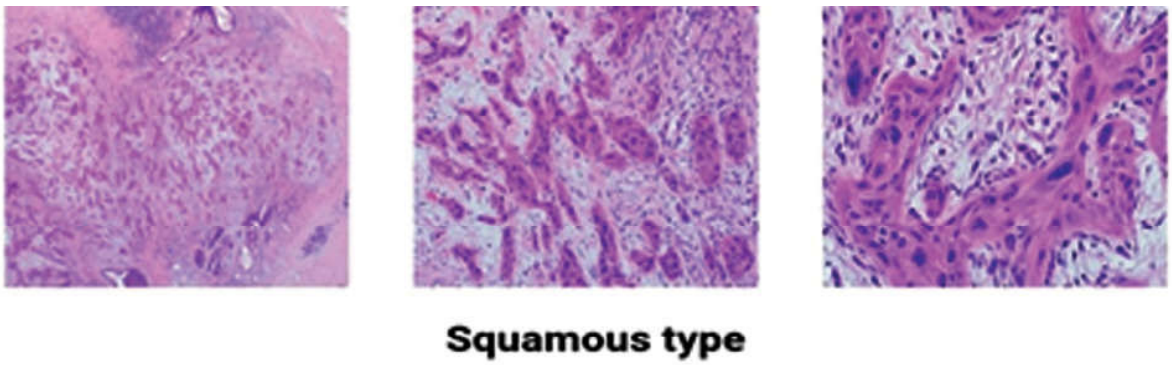
Metaplastic carcinoma with squamous differentiation



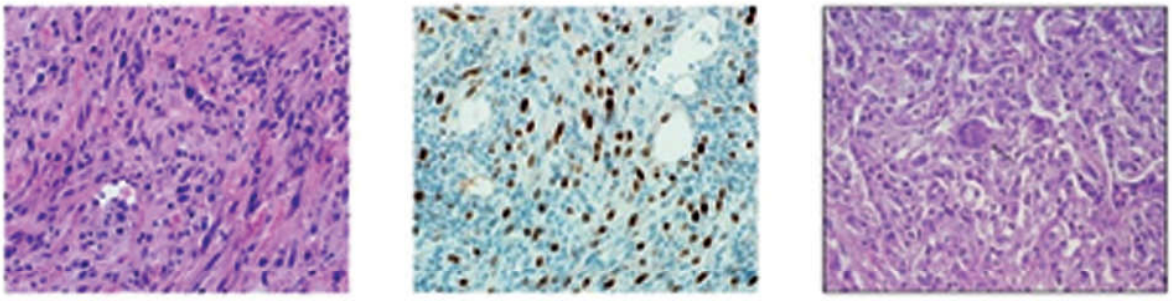
Matrix producing metaplastic carcinoma

Figure :

Sclerosing Adenosis is considered as a disorder of both proliferation and involution phases of breast cycle. It is considered as a proliferation breast disease without atypia.[7] It is prevalent during childbearing and perimenopausal years and it has no malignant potential. It is characterized by distorted breast lobules and can present as a palpable mass.[8] It can also be associated with



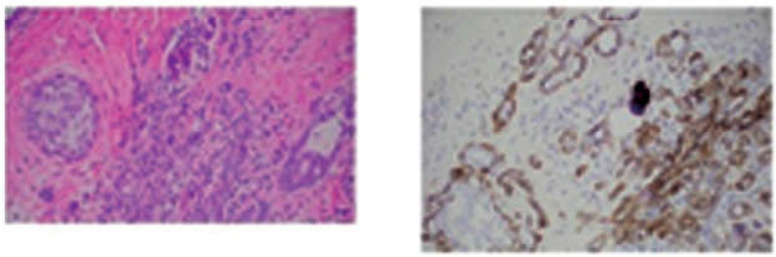
Squamous type



Spindle cell type



Sclerosing adenosis with DCIS



calcifications. It can be managed by observation as long as the pathological and imaging findings are concordat. There can be central sclerosis and varying degrees of epithelial proliferation, apocrine metaplastic and papilloma formation. Sclerosing lesions less than 1cm in diameter are called radial scars. Distinguishing between invasive carcinoma and sclerosing adenosis is challenging based on core-needle sampling and imaging. Often, either a vacuum assisted biopsy or surgical excision is necessary to exclude the possibility of carcinoma.[9]

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