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Case Report

Invasive solid papillary breast carcinoma without neuroendocrine differentiation

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ABSTRACT

Background: Solid papillary carcinoma (SPC) is considered a rare malignant breast tumor. This tumour can be either in situ or invasive .Both usually show excellent prognosis. Solid papillary carcinoma often shows neuroendocrine differentiation.

Case Presentation: 74-year-old lady an ulcerative retroareolar mass in the right breast. CECT Thorax revealed a large lobulated fungating ulceroproliferative mass lesion in the right breast with pectoral muscle involvement.without neuroendocrine differentiation.

Conclusion: SPC with invasion is an uncommon variant of papillary carcinoma with frequent mucinous differentiation. Neuroendocrine differentiation although supports the diagnosis of solid papillary carcinoma may or may not be present.

1. Introduction

Solid papillary carcinoma (SPC) is an unusual malignant breast tumor, comprising 1.1% to 1.7% of all malignant breast tumor.[1] SPC commonly affects postmenopausal women in the seventh decade of life or later.[2,3] As per the 5th edition of WHO classification of breast solid papillary carcinoma can be in situ or invasive. This tumour has an indolent nature and excellent prognosis.

This is a case of a 74-years Indian female with solid papillary carcinoma with invasion.

2. Case Presentation

A 74-year-old female presented with a 7 x 7 cm ulcerative retroareolar mass in the right breast associated with bloody discharge, prickling pain and retraction of the nipple. She was admitted for evaluation of the lesion. An excison biopsy was performed.

CECT Thorax revealed a large lobulated fungating ulceroproliferative mass lesion in the right breast measuring 4 x 5 cm in size with pectoral muscle involvement (Figure 1).

An excisional biopsy from the lesion showed a tumor arranged in a papillary configuration. These papillae were lined by multiple layers of epithelial cells having elongated nuclei, opened-up chromatin, prominent nucleoli, and eosinophilic cytoplasm. Focal cytoplasmic mucin was noted. No myoepithelial cells were seen in the stalk and periphery of the tumor. This was confirmed by negative p63 (myoepithelial marker). Stroma was markedly inflamed.

Immunohistochemistry for ER and PR showed positivity. Her 2 Neu was negative. IHC for, TTF -1, PAX 8 and CDX 2 was negative, thus ruling out thyroid, ovarian or gastrointestinal origin of the tumour. A diagnosis of papillary neoplasm with the possibility of papillary carcinoma of the breast was given.

Right simple mastectomy was there after performed and sent for histopathological evaluation.

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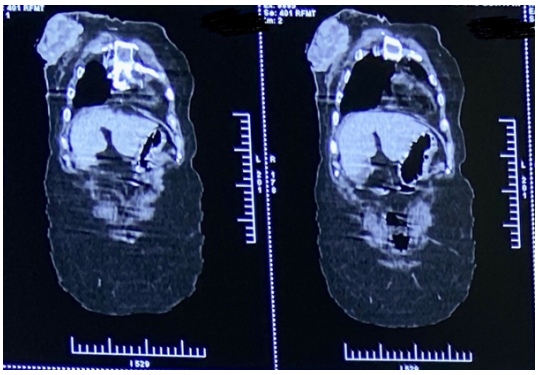

Figure 1: Coronal view of a large lobulated mass lesion in the right breast in Contrast enhanced CT chest.

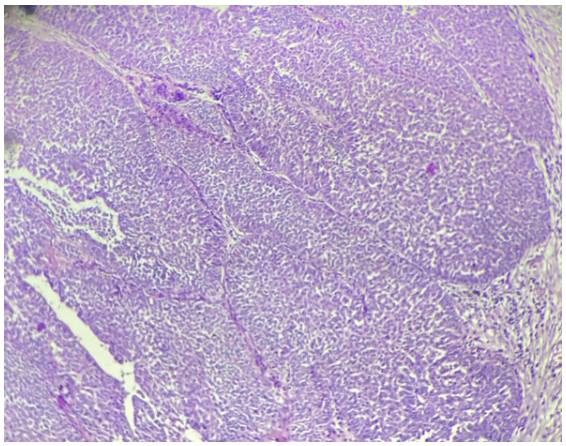

Figure 2: (H & E, 20X) Expansile well circumscribed tumour nodules in a solid growth pattern with inconspicuous fibrovascular nodules

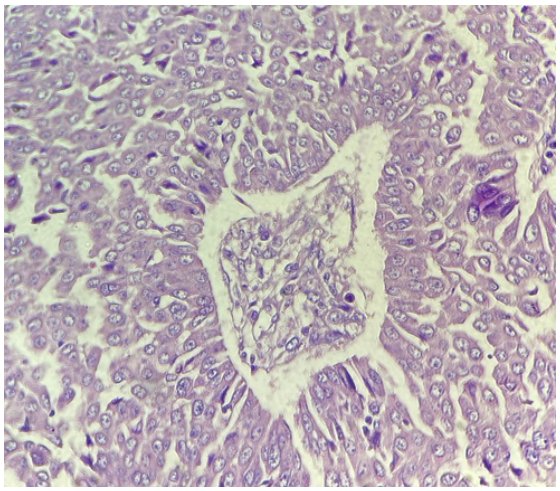

Figure 3: (H & E stain, 40 X) Tumour cells within and around the papillae are monomorphic round with mild to moderate nuclear grade, vesicular chromatin and eosinophilic granular cytoplasm

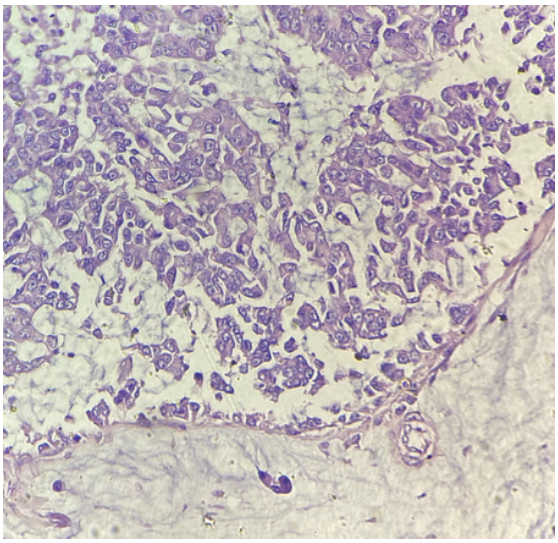

Figure 4: (H and E stain, 40 X) Pools of mucin noted in between tumour cells and outside the nodules.

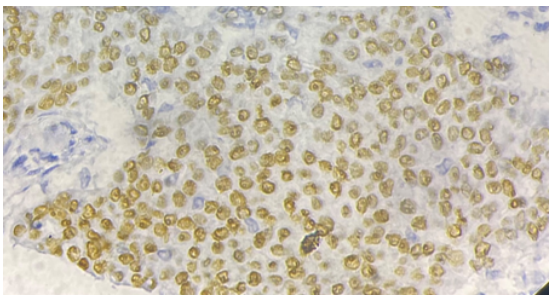

Figure 5: (40X) ER showing positivity

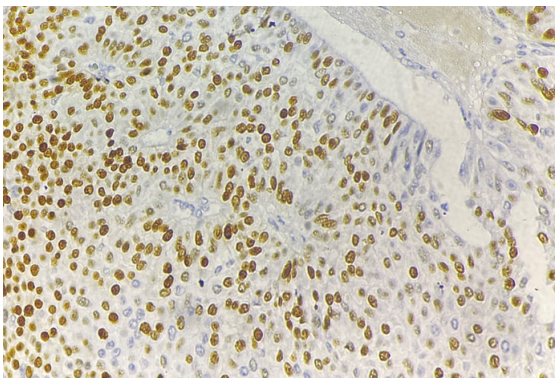

Figure 6: (40X) PR showing positivity

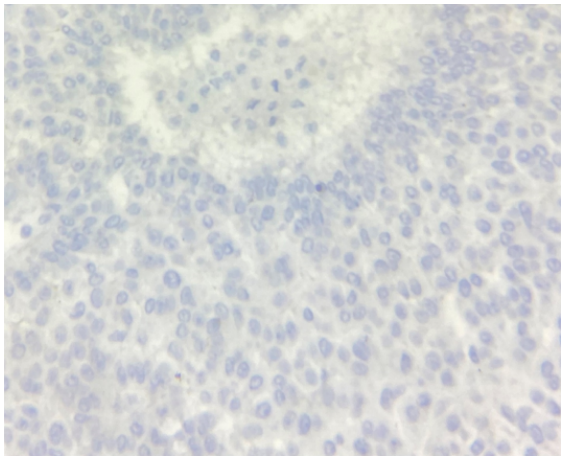

Figure 7: (40x) Her2neu showing negativity

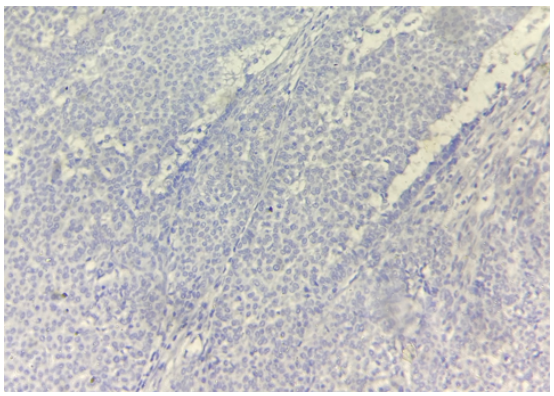

Figure 8: (40x) Synaptophysin showing negativity.

Grossly, the specimen measured 19 X 13X 5 cm with the tumour occupying the retroroareolar and central quadrant. This tumour was well circumscribed and measured 3 X 3.5 cm with multiple greyish white nodules.

Microscopically this tumor revealed expansile well-circumscribed nodules in a solid growth pattern with inconspicuous delicate to fine slender papillae with fibrovascular core. (Figure 2). The individual tumor cells were monomorphic round with mild to moderate nuclear grade, vesicular chromatin, and eosinophilic granular cytoplasm. (Figure 3). Extracellular mucin deposits were noted focally. (Figure 4) Partly, the tumour nodules were lined by intact myoepithelium highlighted by 34BetaE12. (Myoepithelial marker). Nipple Areola Complex invasion by tumour cells was seen.

On application of the Immunohistochemistry panel, ER (Figure 5) and PR showed nuclear positivity (Figure 6), Her 2 Neu was negative. (Figure 7) Ki 67 proliferative index was approximately 14 %. Neuroendocrine marker synaptophysin (Figure 8) was negative in this patient.

3. Discussion

The term "Solid Papillary Carcinoma" (SPC) was coined by Maluf and Koerner[3] in 1956 in order to classify a separate entity in the breast, occurring especially among elderly females.

On microscopy, it shows a solid cellular nodule of neoplastic cells with inconspicuous fibrovascular cores forming circumscribed nodules.[3] Most of these tumors show increased cellular proliferation with inconspicuous to absent papillary configuration.[4]

SPC is an extremely rare breast tumor that is usually seen in postmenopausal women between 60 and 80 years of age. Our patient is post-menopausal and 74 years old.[1–6] SPC originates from the ductal epithelium. The tumor size ranges from less than 10 to 150 mm.[3,5]

Clinically, these tumors present as a palpable, centrally located mass or as bloody nipple discharge[6] similar to our study.

Grossly, the tumors can be solitary or multiple and are well-circumscribed, nodular, and soft masses with blood and serous fluid. The cystic component may be filled with gelatinous material due to mucinous differentiation.[2]

Solid papillary carcinomas show a less aggressive nature. They arising usually from large or dilated ducts. The cells grow in a solid pattern with almost no intervening papillary framework[5] Cells are ovoid or spindled may show streaming, similar to florid ductal hyperplasia.[6] Nuclear palisading around the stromal cores and pseudo rosette formation around capillaries may also be seen.[5]

Otsuki et al[7] (2007) compared 20 Japanese patients with solid papillary carcinoma with invasion. The invasive component showed mucinous carcinoma in five cases and neuroendocrine cell carcinoma was seen in 10 cases. These results indicate that SPC is a potential precursor lesion for neuroendocrine carcinoma as well as mucinous carcinoma.

SPC characteristically shows intracellular mucinous differentiation, which, when present as consistent with our case report, clinches its diagnosis. Extracellular mucin production can also be seen.[4]

Although Neuroendocrine differentiation has been reported in approximately half of all SPC cases in the current literature.[2,6] Not all SPC exhibit neuroendocrine differentiation. The usual, invasive carcinomas of no special type also exhibit neuroendocrine differentiation in approximately 20% of the cases. Therefore, neuroendocrine differentiation is clearly not specific or essential for the diagnosis of solid papillary carcinoma.[2] In the present case synaptophysin and chromogranin were negative, hence showing no neuroendocrine differentiation.

The absence of myoepithelial cells by immunohistochemistry around tumors that retain a smooth peripheral contour may be a sign of invasion, although not definitive.[6] Other features of invasion like high nuclear grade, singly lying cells and desmoplastic role may also be

considered.

Frank invasion is diagnosed in papillary carcinomas when malignant cells are clearly present beyond the fibrous capsule of the lesion.[8] Our case report showed frank invasion of tumour cells infiltrating beyond the Nipple areola complex. (T4b)

Solid papillary carcinoma is normally positive for estrogen and progesterone receptors and negative for Her-2/neu as similar to our study.[6]

Low–nuclear-grade DCIS and mucinous carcinoma may be a differential diagnosis of small-size SPC. However, SPC has a monomorphic proliferation of cells with an in apparent fibrovascular configuration.[9]

The treatment protocols of SPC are still not well-established and vary from breast-conserving surgery to mastectomy depending upon the extent of the invasive component with or without adjuvant endocrine/chemotherapy.[4] In the case of our patient, neoadjuvant chemotherapy along with mastectomy was performed.

4. Conclusion

Solid papillary carcinoma with invasion is an uncommon variant of papillary carcinoma seen usually in post-menopausal women with frequent mucinous differentiation. Neuroendocrine differentiation although supports the diagnosis of solid papillary carcinoma is not definitive for diagnosis. Although it shows indolent behavior, frank invasion can show a relatively poor prognosis.

5. Abbreviation

SPC: solid papillary carcinoma; DCIS: ductal carcinoma in situ

6. Source of Funding

None.

7. Conflict of Interest

None.

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