Case Report:

Apocrine carcinoma of breast: specific histopathological subtype

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Abstract:
Invasive apocrine carcinoma are rare morphologically distinct type of breast malignancy with an incidence of 0.5% of all invasive breast carcinoma.\textsuperscript{1} We report a case of invasive apocrine carcinoma in a 55 years female presenting a lump in left breast with nipple retraction and discharge since one and a half month .This report emphasizes on the rarity and distinct morphology of apocrine carcinoma so that it can be diagnosed separate.

Keywords: Apocrine carcinoma, Breast, Invasive

Introduction:
Apocrine phenotype in breast is common and can be seen in a broad spectrum of lesions, ranging from simple cyst to invasive carcinoma. Pure invasive apocrine carcinoma is a rare, morphologically distinct type of invasive carcinoma with an incidence of 0.5% of all invasive breast carcinoma.\textsuperscript{2} On cytopathology, it can mimic a high grade breast malignancy or IDC with apocrine differentiation as apocrine cancer shows growth patterns same as in common IDCs, and ductal carcinoma in situ (DCIS) occasionally accompanies the apocrine phenotype . The apocrine cancer cells possess large round nuclei and plump, eosinophilic granular and sharp bordered cytoplasm, occasionally associated with an apical decapitation secretion pattern (apical snouting).\textsuperscript{3}

Apocrine carcinoma are estrogen receptors (ER) negative ,progesterone receptor(PR) negative but positive for androgen receptor (AR) . Over expression of human epidermal growth factor receptor type 2 (HER -2) is frequently seen in apocrine carcinoma. It is also reactive for GCDFP-15 (Gross cystic disease fluid protein-15).\textsuperscript{4}

Case report:
A 55 years female presented to surgical OPD of our hospital with history of lump in outer half (upper and lower) of her left breast with nipple retraction and discharge since one and a half month .On local examination, lump was hard, non-tender and increased in size gradually .There was no redness and rise in temperature. Preoperative diagnosis was given as left breast carcinoma. On cytopathology, it was given as positive for duct carcinoma. Left Modified radical mastectomy (MRM) was done with left axillary clearance and sent for histopathological examination in our hospital. Histopathological report was given as invasive
Apocrine carcinoma with metastasis to two out of ten lymph nodes.

Gross: Left MRM specimen measured 18x16x4 cm and weighed 480 gm, covering skin measured 13x6.5 cm, nipple was retracted and eroded. On serial cut sections, revealed a tumor measured 7x5x4 cm which was hard and located in outer half of breast (Fig-1). Tumor had pushing borders. Representative bits were processed and H&E stained tissue sections were studied. Three bits were also sent for ER, PR and AR.

Light microscopy: Sections from MRM stained with H&E, showed predominantly malignant apocrine cells arranged in sheets, tubular and glandular pattern (Fig-2). The large tumor cells have abundant pale, eosinophilic and granular cytoplasm. The nuclei are vesicular and nucleoli are prominent. (Fig-3, 4)

Immunohistochemistry of given sections showed ER, PR and AR negativity.

Discussion:

Apocrine carcinoma is a histologically defined type of breast carcinoma and it encompasses a range of growth pattern identical to the common IDCs. JA Mossler et al discussed in 1980 that apocrine carcinoma has distinct histologic and ultrastructural features that distinguish it as a specialised form of IDC. The finding of a uniform pattern of apocrine differentiation with dense granularity typifying the majority of cells characterizes this variant.

Apocrine carcinoma is a well differentiated tumor that is most easily recognized by the characteristic pale granular eosinophilic cytoplasm. The morphological features are extensively identical to those seen with apocrine metaplasia in benign lesions of the breast.

The standardized criteria for the diagnosis of apocrine carcinoma given by Japaz et al, 2005 was as follows:-

1. Apocrine features consisting of 75% of cells
2. Large cells with eosinophilic granular cytoplasm
3. Nucleus to cytoplasmic ratio of 1:2 or more
4. Nucleus large, round and vesicular may be pleomorphic
5. Sharply defined borders.

Minor and non-mandatory criteria include prominent nucleoli in >50% of fields and apical cytoplasmic snouts into luminal spaces. Our case showed these features and fits into the criteria. Apocrine carcinoma expresses AR positivity but ER and PR negativity. HER-2 overexpression is frequently seen. Due to AR positivity, apocrine carcinoma shows a unique response to androgen (fluoxymestrone) administration as a part of treatment given by Durham and Fechner in 2000. R. Yerushalmi discussed that axillary lymph node metastasis incidence varies from <1% to 4% but there is extremely sparse information in the literature.

Lee et al could not demonstrate any difference in prognosis in their cases of apocrine carcinoma whereas Geshniker and Haagensen did think there was better prognosis. Invasive apocrine carcinoma has a similar prognosis as IDC (NST), while some studies show a slightly better prognosis for apocrine carcinoma. Overall there is no statistical advantage when matched stage and grade.

Conclusions:

Apocrine carcinoma is a very rare entity of breast carcinoma. It has a distinct morphology and hormonal profile (ER-, PR- and AR+) which separates it from IDC (NST) of breast.
Fig-1: Gross photograph of MRM specimen showing tumor(arrow) with pushing margins.

Fig-2: Photomicrograph showing tumor with sheets, tubular and glandular pattern of malignant cells. (H&E, 40x)

Fig-3: Photomicrograph showing sheets and glandular pattern of apocrine carcinoma cells with pale granular and eosinophilic cytoplasm.(H&E, 100x)

Fig-4: Photomicrograph showing large tumor cell with vesicular nuclei with prominent nucleoli.(H&E,400x)

References:


