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Metaplastic Breast Carcinoma with Osteoclast Giant Cells – A Rare Case Report

KEYWORDS: metaplastic, breast , osteoclast giant cells

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ABSTRACT *Metaplastic Breast Carcinoma is a rare and histologically diverse subtype of breast carcinoma. This category of malignancy encompasses tumors in which adenocarcinoma is found to co-exist with an admixture of spindle cell, squamous cell, chondroid or bone forming neoplastic cells. A 35 years old female presenting with complaints of reddish scaly area over her left breast since 3 months and mass since 1 month. On physical examination an irregular patch of rough skin, reddish orange in color and a hard mass over the lower outer quadrant of left breast was observed. For this mastectomy was done. The resected specimen of breast showed friable tumor mass. On histological examination adenocarcinoma with numerous osteoclastic giant cells were seen, suggestive of metaplastic carcinoma of breast.*

INTRODUCTION

The term "metaplastic carcinoma" is used for thosecarcinomas which, in addition to epithelial elements, displaysarcomatous elements including cartilage, bone, myxoidstroma, and a spindle cell component. These tumors are uncommon, andrepresent less than 0.2% of symptomatic invasivecarcinomas. They usually form large, firm, nodulartumors, often measuring as much as 5 cm in diameter.Fixation to skin or deep fascia is not uncommon. On microscopy, two main subtypes of metaplasticcarcinoma can be recognized and used for classification:a monophasic "sarcomatoid" or spindle cell carcinoma,and a biphasic "sarcomatoid" carcinoma (which has alsobeen referred to as "carcinosarcoma" or "malignantmixedtumor")

The mesenchymal elementis usually fibrosarcomatous; more rarely angiosarcomatous,leiomyosarcomatous, osteo sarcomatous,chondrosarcomatous or rhabdomyosarcomatous patternsmay be seen. The osteoclastic giant cell subtype shows intraductal or infiltrating carcinoma contiguous or mixed with spindle cell or sarcomatousstroma plus osteoclastic cells.

CASE REPORT:

A 35 years old female presenting with complaints of reddish scaly area over her left breast since 3 months and mass since 1 month. On physical examination an irregular patch of rough skin, reddish orange in color and a hard mass over the lower outer quadrant of left breast was observed. For this mastectomy was done. The resected specimen of breast showed friable tumor mass. On histological examination adenocarcinoma with numerous osteoclastic giant cells were seen, suggestive of metaplastic carcinoma.

GROSS FINDINGS

Mastectomy specimen of patient name karuna ,age 35 yrs was received in our institution. Biopsy sepecimen measures 23 x 18 cm.overlying skin eclipse measures 14x 7 cm. nipple areola complex not identified. On cut section there is friable greyish white to greyish black growth with few greyish white areas in periphery , altogether measuring 12x 6.5 cm. growth is reaching upto skin, is about 1cm from superior margin, 5cm from inferior margin ,6 cm from lateral margin and 1.5 cm from medial margin and extending upto base. One lymph node is identified.

Mastectomy specimen demonstrates greyish white to greyish black friable growth measuring 12 x 6.5 cm rest of breast parenchyma glistening white to yellow in color.

PATHOLOGICAL FINDINGS

Biopsy tissue was formalin fixed and routinely processed and loafing was done. All the histological slides was reviewed for various microscopic features.Section shows epithelial tissue elements admixed with mesenchymal elements showing numerous osteoclast like giant cells.margin of resection are free. Lymph node section shows reactive hyperplasia of lymph node. These microscopic findings suggest strong possibility of metaplastic carcinoma.

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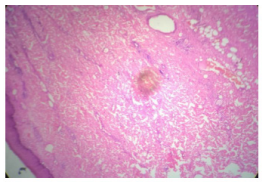
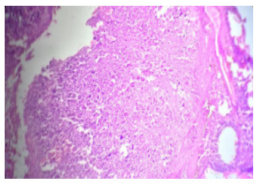
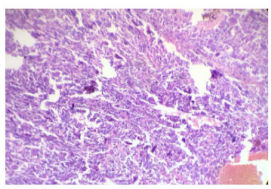


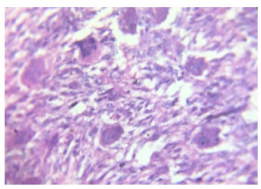
Low power view shows skin lined breast parenchyma with scattered neoplastic cells



10 x view shows malignant mesenchymal tissue



10 x view shows scattered osteoclast giant cells with malignant mesenchymal tissue.



40 x view shows osteoclast giant cells

DISCUSSION

Metaplastic breast cancer (MpBC) is a rare, histologically diverse breast cancer which represents less than 1% of breast cancers.Histologically it is poorly differentiated heterogenoustumor containing ductal carcinoma cells admixed with spindle,squamous, chondroid or osseous elements

The more popular Wargotz and Norris classification differentiates Metaplastic breast cancers into 5 subtypes: spindle-cell, squamous cell, carcinosarcoma, matrix-producing and MpBC with osteoclastic giant cells. Spindle cell type is the most common type and shows cells forming poorly cohesive sheets or predominant spindle cell morphology.

MPC with OGCs was first described as a subtype of MPC by Wargotz and Norris in 1990, based on the clinical and pathological evaluation of 29 cases . They described this subtype histologically as containing a predominantly sarcomatous or spindle cell background, admixed with infiltrating ductal or intraductal carcinoma, and also admixed with cellular stroma that contained OGCs. Hemorrhage and hemosiderin deposition were common in these cases. The world health organisation classified metaplastic breast cancer into a) Epithelial type metaplastic breast cancerwhich include: Squamous cell carcinoma ,Adenocarcinoma with spindle cell differentiation, Adenosquamous carcinoma b)Mixed-type metaplastic breast cancerwhich include:Carcinoma with chondroid metaplasia, Carcinoma with osseous metaplasia, Carcinosarcoma

MBCs usually are high-grade neoplasms that present with a large size mass, most of them arising de-novo. E-cadherin is a very useful stain in the classification of breast carcinomas with mixed pattern .

Prognosis

Patients with MBC generally have poorer outcome when compared with high-grade invasive ductal carcinoma and they rarely benefit from conventional chemotherapy or hormonal therapy .Pathological classification of MBC and its differential diagnosis is challenging due to the diversity of the histological patterns, rarity of the diagnosis and lack of consensus on the most appropriate classification for this group of tumors. Tumor stage, histologic subtype and size of the tumor have appeared to be important prognostic factors.

Tumor size has been found to be a very important prognostic factor. Kaufman et al, Wargotzet al and Oberman found that the size of the tumor at the time of initial treatment best correlated with prognosis.Chao et al found that patients with a size less than 5 cm had a better survival rate.

Many studies have indicated that status of the axillary lymph nodes in the patients with metaplastic carcinoma do not correlate with prognosis.

Differential Diagnosis

Invasive ductal carcinoma-NOS

Invasive ductal carcinoma - NOS is the most common type of breast malignancy. Characteristic imaging features of IDC include irregular shape and spiculated margins, pleomorphic calcifications, and posterior acoustic shadowing. These characteristics are not common in MPC MPC presents with larger tumor size, less nodal involvement, higher tumor grade, and hormone receptor negativity compared to IDC. .

Sarcoma

Breast sarcomas are neoplasms of stromal origin, that comprise <1% of breast malignancies. Similar to MPC, they present clinically as aggressive rapidly enlarging masses. .

Fibroadenoma

A fibroadenoma is a benign fibroepithelial tumor composed of stromal and epithelial elements. It is the most common breast mass in women under 35 years old. It often presents on physical exam as a mobile, painless, firm rubbery mass. As mentioned, fibroadenomas can mimic the early stages of MPC. However, unlike MPC, they do not rapidly enlarge.

Phyllodes

Phyllodes tumors are fibroepithelial neoplasms. Imaging, clinical, and pathologic differentiation from the more common benign fibroadenomas can be difficult .

While fibroadenomas can mimic the early stages of MPC, phyllodes can mimic the counterpart later stages of MPC. Similar to MPC, they often clinically present as a rapidly enlarging circumscribed mass . Unlike MPC, the majority are pathologically benign (although they can be locally aggressive), with a minority pathologically borderline or malignant.

Complicated cyst

Complicated cysts are benign breast cysts filled with internal debris composed of proteinaceous, fatty, or cellular (blood or inflammatory) components They do not contain any solid component, but sonographic features can sometimes be difficult to differentiate from a solid mass on ultrasound.

Conclusion:

MpBC is a rare disease entity accounting for less than 1% of all breast carcinomas. MpBC comprise of ahetero-geneous and histologically diverse group consisting of both epithelial and mesenchymal elements. MpBC is characterized by a larger size at presentation, lower rates of axillary nodal involvement, higher rates of both local recurrence and metastasis and higher rates of ER, PR and Her2 negativity. All MpBC's are aggressive, have a poorer prognosis and show a sub-optimal response to systemic therapies

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when compared to other invasive breast cancers. Further research is needed for formulating comprehensive treatment plans and specific treatment guidelines which are lacking at present.

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