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Case Report:

Metaplastic Carcinoma of the Left Breast with Extensive Chondroid Differentiation

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Abstract:
Metaplastic breast carcinoma is very rare neoplasm which contains mixture of carcinomatous (epithelial) and sarcomatous (mesenchymal) elements in variable proportion. Metaplastic carcinoma with chondroid differentiation is even rarer. We report a case of metaplastic carcinoma with extensive chondroid differentiation as there is paucity of information regarding pathological features and clinical outcomes for these rare tumors. Tumor had characteristic definite areas of classic infiltrating duct carcinoma with abundant chondromyxoid matrix, focal areas of chondrosarcoma and cartilagenous metaplasia. Tumour cells were immunoreactive for S-100, ER, and PR. When pathologist encounter breast tumor with chondroid differentiation, careful gross sampling, histopathology and immunoreactivity for mesenchymal and epithelial component are most useful to differentiate metaplastic carcinoma from malignant phylloides tumors and malignant adenomyoepithelioma.
Key Words: Metaplastic carcinoma; Chondroid differentiation

Introduction:
Metaplastic carcinomas are highly heterogeneous group of tumours that are characterized by an admixture of adenocarcinoma with dominant areas of spindle cells, squamous and/or mesenchymal differentiation.[1,2] Heterologous mesenchymal element ranges from areas of bland to frank sarcoma such as chondrosarcoma, osteosarcoma, rhabdomyosarcoma, leiomyosarcoma, fibrosarcoma along which cartilagenous and osseous metaplasia are most commonly encountered.[3] Thus metaplastic carcinoma of breast is a rare entity with positive distinguishing features of having epithelial and mesenchymal tissue types incorporated within one tumor.[4] We report a case of metaplastic carcinoma with extensive chondroid differentiation that is chondrosarcoma and chondroid metaplasia along with classic infiltrating duct carcinoma. Differential diagnosis was difficult and possible diagnosis include malignant phylloides tumour, pure primary chondrosarcoma, malignant adenomyoepithelioma. Immunohistochemistry for epithelial and mesenchymal components i.e., CK and S-100 are helpful and diagnostic. We report this case because of its rarity.

Case Report:
A 33 years old female presented in surgical oncology department of Krishna hospital, with a lump in left breast for last 6 months. There was no history of nipple discharge or any other breast problem. Patient was married and had two children. There was no family history of breast cancer. On examination a firm to hard, non tender lump measuring 5 x 3 cm was noted in the lower inner quadrant of left breast. It was not attached to underlying structure. Skin and areola was free from lesion. Mammography showed asymmetrical lesion that appeared to be malignant. Left axillary lymph nodes were palpable. A clinical diagnosis of carcinoma left breast was proposed. Chest X Ray, USG abdomen and pelvis, biochemical and hematological investigations were within normal limits.

Pre–operative FNAC was done in our hospital reported as positive for malignant cells suggestive of duct carcinoma. A wide excision of left breast lump with axillary clearance was done. Specimen measured 7 x 5 x 3 cm, partially covered with skin measuring 5 x 2 cm and on cut section showed a grey white, glistening tumor measuring 4 x 3 x 2 cm. [Figure 1]

On histopathological examination, the tumour composed of cells arranged in glandular, tubular, whorls and nests (50% area of infiltrating duct carcinoma). Individual cells were round to oval with moderately pleomorphic to vesicular nuclei with occasional prominent nucleoli and moderate amount of eosinophilic cytoplasm. Admixed with this tumor, there was malignant cartilage forming tumor composed of variable size nodular masses on basophilic cartilaginous matrix. Nodules composed of immature chondroblasts arranged in lacunae with moderately pleomorphic nuclei with uni or multiloculated cytoplasm [Figure 2,3].

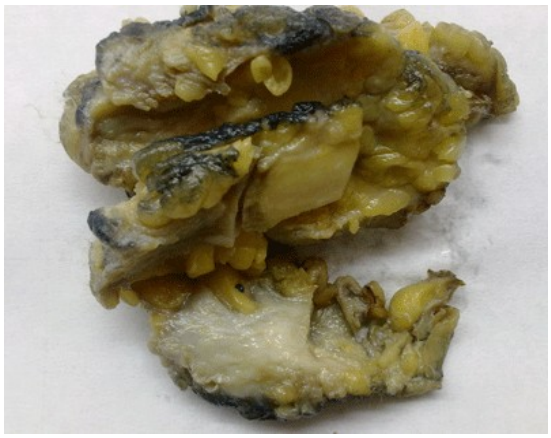

Figure 1: Gross photograph of cut specimen of carcinoma breast with grey white glistening appearance

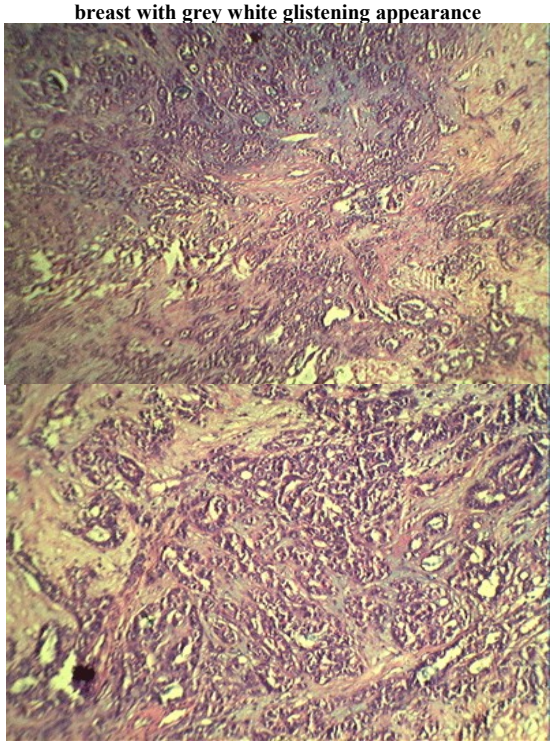

Figure 2, 3: Photomicrograph of tumor showing infiltrating duct carcinoma and metaplastic carcinoma with extensive chondroid differentiation that is chondrosarcoma focus. (Hematoxylin & Eosin Staining at 40 X magnification)

Sheets of cartilaginous matrix and chondroid metaplasia were seen with desmoplasia. Frequent mitotic figures and occasional necrosis were noted. Section from axillary dissection showed 3 lymph nodes, which were free from tumor. Overlying skin was free from tumor.

Final diagnosis of metaplastic carcinoma with extensive chondroid differentiation was made. Postoperative radiotherapy was given and the patient is on regular follow up with a further treatment plan consisting of chemotherapy.

Discussion:

Metaplastic carcinoma of the breast is a rare type of breast cancer accounting for 0.2 to 1% of breast malignancy.[1,4-6] The term metaplastic carcinoma first introduced by Huvos et al.[7,8] In fewer than 5 % of all mammary adenocarcinoma, part of all carcinomatous epithelium is transformed to nonglandular growth pattern by a process referred to as metaplasia.[1] There are four variants of metaplastic carcinoma: matrix producing carcinoma, carcinosarcoma, squamous cell carcinoma and spindle cell carcinoma.[4] Metaplastic carcinoma with chondroid differentiation (MCCD), a matrix producing carcinoma is distinctive form of metaplastic carcinoma consisting of overt carcinoma with transition to an abundant cartilaginous, osseous or both cartilaginous or osseous stromal matrix in the absence of intervening spindle cell component.[5]

Metaplastic carcinoma of breast comprise of a heterogeneous group of neoplasms that are regarded as ductal carcinoma that undergo metaplasia into non-glandular growth patterns.[9-11] The mixed cell origin is corroborated with IHC staining for mesenchymal cells (Vimentin), epithelial cells (Cytokeratin) and myoepithelial cells (S-100 protein). In most of metaplastic carcinoma, the foci of transition between invasive ductal carcinoma and metaplastic elements are detected and for this reason extensive sampling should be performed[12], as demonstrated in present case. Metaplastic carcinoma with chondroid differentiation is a distinctive form of metaplastic carcinoma with a relatively favorable prognosis than other subtypes of metaplastic carcinomas.[1]

Differential diagnosis for metaplastic carcinoma with chondroid differentiation are malignant phylloides tumour, primary chondrosacoma and malignant adenomyoepithelioma mainly.[1]

Malignant phylloides tumor with heterologous sarcomatous component of chondrosarcoma is very rare and differentiated from metaplastic carcinoma with chondroid differentiation by moderate to marked stromal atypia, high mitotic (>10/10 hpf) count, cellular overgrowth and infiltrative border.[1,13,14] Primary chondrosarcoma of breast is differentiated from metaplastic carcinoma with chondroid differentiation by absence of direct transition between carcinomatous and mesenchymal components in the former and IHC is helpful of both mesenchymal and epithelial masses to differentiate between the two.[13] Malignant adenomyoepithelioma are rarely encountered. Tumors with only myoepithelial characteristic have been described. Adenomyoepithelioma is characterized by two components, glandular lined by epithelial cells with apocrine features surrounded by myoepithelial cells. Myoepithelial cells are in nests with clear cytoplasm. Histopathologically it is different from metaplastic carcinoma with chondroid differentiation.[5,14] The average 5 year survival with metaplastic carcinoma with chondroid differentiation is reported to be 68 %, which is relatively more favorable than previously reported for metaplastic carcinoma.[9,14]

To conclude, when pathologist encountered a malignant breast tumors with chondroid elements, metaplastic carcinoma with chondroid differentiation (MCCD) should be considered, even though epithelial component may be present, due to its rarity, different prognosis and paucity of literature.

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