RARE CASE REPORT-METAPLASTIC CARCINOMA OF BREAST WITH MESENCHYMAL DIFFERENTIATION (CHONDROID AND OSTEOID)
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Abstract: Metaplastic carcinoma of the breast is a rare subtype of breast cancer, which is characterized by estrogen receptor, progesterone receptor and HER2 negativity accounting for 0.2 to 1 of breast malignancy. Most reports divide metaplastic carcinomas into two broad categories those that show squamous differentiation and those that feature heterologous elements, such as cartilage, bone, muscle, adipose tissue, vascular elements, and even melanocytes.

Keyword: Metaplastic carcinoma breast, Differentiation, Heterogenous

CASE REPORT
A 41 year old female presented to our department with lump in right breast at 12'o clock position with no palpable axillary lymphadenopathy. Mammography showed a 6 cm solid nodule with irregular borders with BIRADS IV category. Trucut biopsy revealed features of suggestive of malignancy. She was investigated further with complete blood investigations, liver function test, renal function test, CT chest and abdomen and bone scan. She was clinically staged as T3N0M0 (stage IIB). She underwent modified radical mastectomy and specimen was sent for histopathology (HPE).

Mammogram

HISTOPATHOLOGICAL EXAMINATION
Gross examination of specimen showed a 7x3cm mass, microscopy revealed ductal carcinoma with foci of squamous differentiation, chondroid, osteoid metaplasia with comedonecrosis, increased mitotic activity, multinucleated giant cells and necrosis. All skin margins, nipple areola were free of tumour invasion. Ten LN resected & were negative for malignancy.

low power view with small islands of squamous cells, osteoid & chondroid stroma

DIAGNOSIS AND TREATMENT
Based on these findings histopathological diagnosis of Metaplastic carcinoma of breast with squamous and heterologous metaplasia with pathological staging of pT3N0M0 (IIb) was made out. There was no immunoreactivity for estrogen, progesterone & Her 2 neu. IHC (immunohistochemistry) was positive for CK 14, CK 17. Six cycles of adjuvant chemotherapy FAC/(5 fluorouracil, adriamycin, cyclophosphamide) was given. Flap (chest wall) and drainage (axillary and supraclavicular lymph node) radiotherapy was delivered in twenty five fractions in 2 GY per fraction to total dose of 50 GY and the patient was kept on follow up. As the pathological specimen showed negativity for ER, PR and HER 2 NEU receptor no hormonal or targeted therapy was given to the patient. Among the routine examination of 664 breast cancers in our department from 2005 to 2013, only one such case was observed, which coexhibited both squamous and cartilaginous metaplasia in one tumor and thus this case merits presentation because of its rarity.

DISCUSSION
Metaplastic carcinoma of the breast is a rare type of breast cancer accounting for 0.2 to 1% of breast malignancy. Most reports divide metaplastic carcinomas into two broad categories: those that show squamous differentiation and those that feature heterologous elements, such as cartilage, bone, muscle, adipose tissue, vascular elements, and even melanocytes.

FOUR VARIANTS OF METAPLASTIC CARCINOMA
1. matrix producing carcinoma
2. carcinosarcoma
3. squamous cell carcinoma
4. spindle cell carcinoma

Multinucleated giant cell
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.
CELL OF ORIGIN FOR MBC
Two major types of cells in the human breast 1. luminal cells 2. basal/myoepithelial cells. When basal/myoepithelial breast cells become cancerous they no longer resemble breast tissue; instead they look more like cells of the skin and form rare metaplastic breast cancers. In contrast, when luminal breast cells become cancerous, they retain the structure and molecular features of more common types of breast cancers.

TYPE 3 EPITHELIAL MESENCHYMAL TRANSITION

Epithelial-mesenchymal differentiation
source: New Insights into the Regulation of Epithelial Mesenchymal Transition by KangAe Lee and Celeste M. Nelson 2009. The invasive carcinoma stage involves epithelial cells losing their polarity and detaching from the basement membrane. The composition of the basement membrane also changes, altering cell-ECM interactions and signaling networks. The next step involves EMT and an angiogenic switch, facilitating the malignant phase of tumor growth. In cancer, features of EMT have been observed in breast, ovarian, colon, and esophageal cancer models.

SALIENT FEATURES OF METAPLASTIC BREAST CANCER
1. Presents as well circumscribed or irregular spiculated mass in mammography.
2. Rapidly growing tumors & large palpable masses.
3. Lymph node metastasis depend on the epithelial component, mostly they present without lymphadenopathy.
4. Estrogen and progesterone receptors, Her2/neu were usually negative in the metaplastic carcinomas of the breast. Eggers and Chesney found that the hormone receptors were positive only in the neoplasms with mixed patterns of carcinoma and squamous metaplasia, and especially in those with predominance of the former component. However, metaplastic breast tumors do tend to express the HER1/EGFR receptor at a considerably higher rate than most other types of breast carcinoma, and this is a somewhat unique histological identifier for this type of breast cancer, and may lead to some new and potentially beneficial treatment strategies. 'Triple-negative' cancers behave in an aggressive fashion with somewhat distinctive patterns of metastasis (including to the brain). Triple negative tumors often seem initially receptive to chemotherapy, but are also prone to early relapse. Despite the perception of a worse prognosis, all metaplastic breast cancers are treated similarly to other invasive breast cancers.

DIFFERENTIAL DIAGNOSIS
Pure sarcoma
Phyllodes tumour
Nodular fascitis
Fibromatosis
Pleomorphic adenoma
Adenomyoepithelioma

CONCLUSION
In conclusion metaplastic carcinoma breast although rare, have to be diagnosed and excised at the earliest as these tumours have poor outcome. Surgical and adjuvant treatment should follow the guidelines of management of invasive ductal carcinoma of breast.

REFERENCES