



RESEARCH ARTICLE

SIGNET RING CELL CARCINOMA BREAST: A RARE SUBTYPE

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Abstract

Breast carcinoma is the most commonly diagnosed cancer in females. It is the leading cause of female cancer death worldwide. It is associated with various factors such as hormones, reproductive, diet, and environmental and genetic factors. Breast tumors are classified as Epithelial tumor, mesenchymal tumor, fibroepithelial tumors, lymphoma and tumors of nipple. Out of which Invasive ductal carcinoma is the most common type of breast cancer. We reported a case of 60-year-old female of Signet ring cell carcinoma breast who was treated in our institute. Signet ring cell carcinoma breast is a rare and aggressive tumor. It is a subtype of mucin-producing carcinoma. It may be associated with ductal carcinoma and lobular carcinoma or may be pure signet ring cell carcinoma of the breast which is very rare and has a poor prognosis.

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Introduction:-

Signet ring cell carcinoma of breast is a rare and aggressive tumor. It is classified under mucin-producing carcinoma. It can be found in association with infiltrating lobular carcinoma, and ductal carcinoma but can be in its pure form which is extremely rare.

Case Presentation:

We report a case of 60-year female who was normal. Two months back then she developed a mobile lump of irregular shape in her left breast. There was a history of trauma 2 months back in the same breast. But no history of nipple discharge, pain or weight loss. She was a known case of hypertension and on treatment for the same. She is a non-smoker and non-alcoholic.

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On examination:

There was a mobile hard lump with irregular margins at the 2 o'clock position in the upper inner quadrant of the left breast. No axillary lymph nodes were palpable. The contralateral breast was normal.

On USG:

There is a well-defined, solid fixed mass in the upper outer quadrant of left breast. Then on Fine needle aspiration features were suggestive of carcinoma breast.

Then we received a modified radical mastectomy with an axillary lymph node specimen. On histopathology, features are suggestive of "Invasive signet ring cell adenocarcinoma" of Grade 2 (Tubular differentiation score 2, Nuclear pleomorphism – Score 2, Mitotic Score 2). Microscopically skin, nipple areola complex and all the margins are free from tumor infiltration.

Total 20 lymph nodes isolated and none of them show tumor infiltration. There was no lymphovascular invasion. Pathological stage classification : pT₂N₀. NPI score 3.6.

ON Immunohistochemistry:

ER – Negative

PR – Negative

Her2neu- Negative

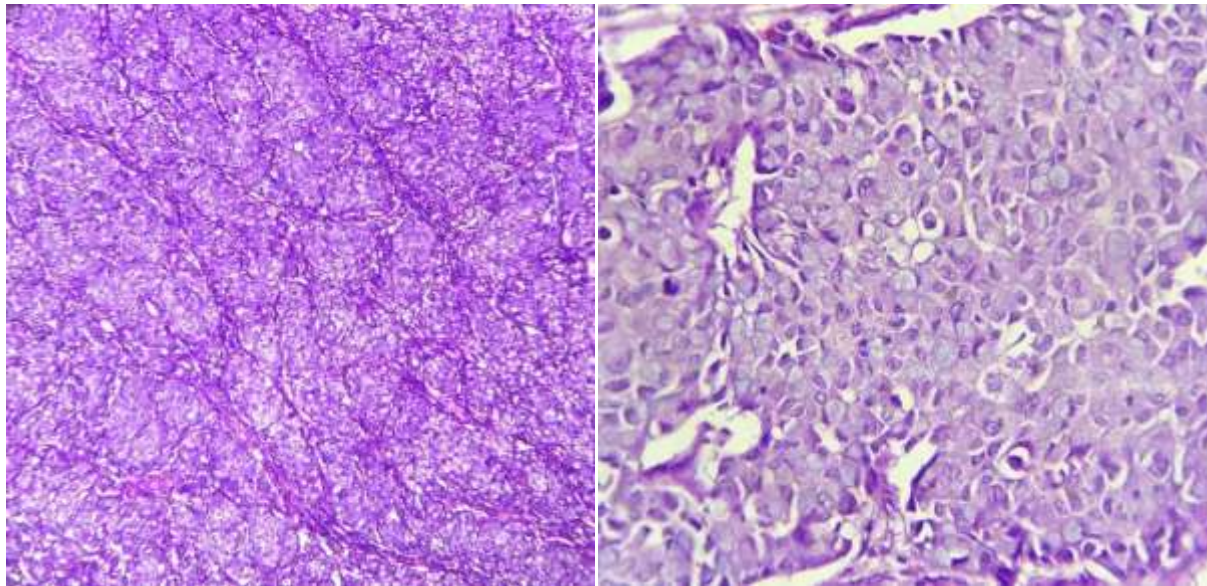
CDX2- Negative

CK7- Positive

MUC1 – Positive

E Cadherin – Positive

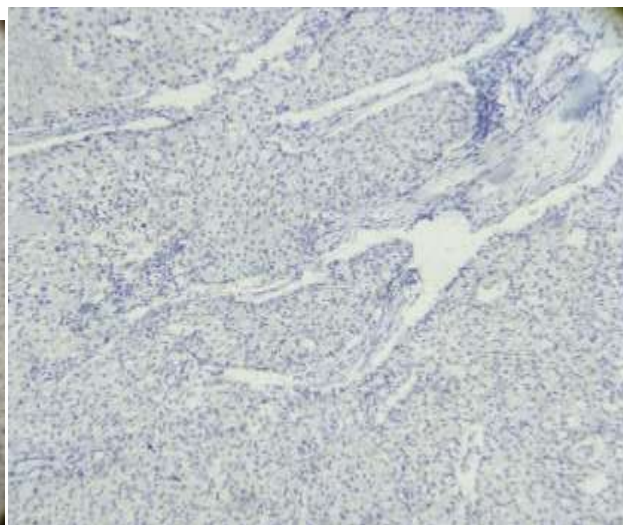
Ki67 ~ 50%



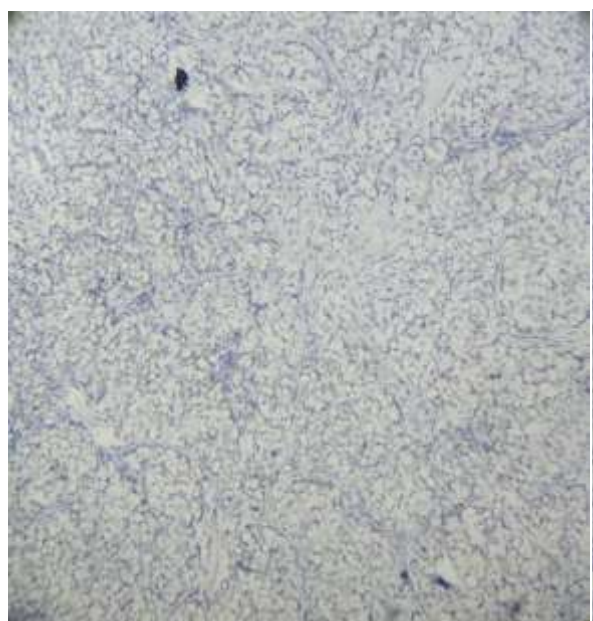
SIGNET RING CELL CARCINOMA –LOW POWER SIGNET RING CELL CARCINOMA –HIGH POWER



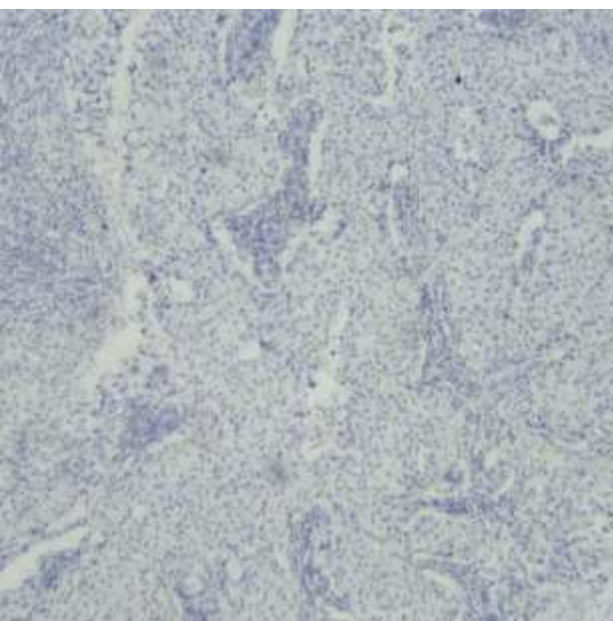
IMMUNOHISTOCHEMISTRY: ER NEGATIVE



IMMUNOHISTOCHEMISTRY: PR NEGATIVE



IMMUNOHISTOCHEMISTRY:HER2NEGATIVEIMMUNOHISTOCHEMISTRYCDX2- NEGATIVE



Discussion:-

Compared to mucinous carcinoma, invasive ductal carcinoma of any kind, and classic invasive lobular carcinoma, the lesion in pure SRCC of the breast is more aggressive. Because primary and metastatic tumors differ greatly in terms of treatment and prognosis, it is critical to distinguish between the two.

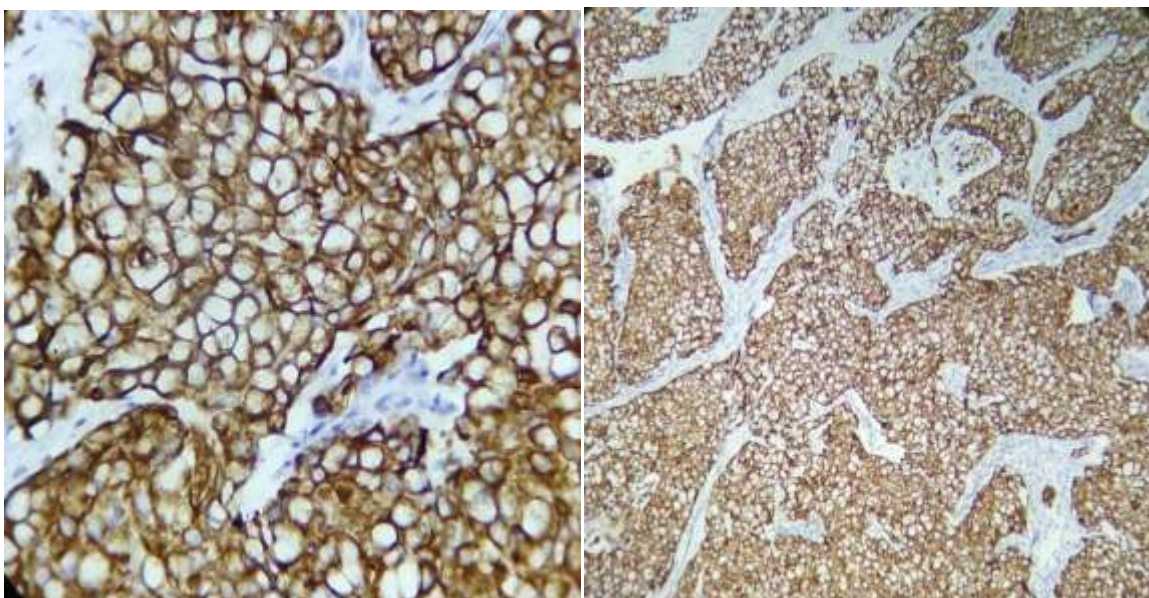
Differentiating the tumors may be especially aided by immunohistochemistry. Due to its rarity, there have been fewer reports on the treatment and prognosis of SRCC of the breast in the literature. However, Eltorky et al. stated that in the treatment of SRCC of the breast, the pathologist and the clinician should both be aware of the prognostic significance of hormone receptor studies. There are two types of breast signet ring cell carcinoma: primary and metastatic.

Signet ring cell carcinoma has been differentiated from other organs using a range of immunohistochemical markers. Different patterns of CK7 and CK20 expression are seen in breast, stomach, and colon signet ring cell carcinomas. In gastric and colonic signet-ring cells, ER is often negative, but it is frequently positive in primary Signet-ring cell carcinoma of the breast. In contrast to gastrointestinal Signet ring cell carcinoma, which is

frequently positive for CK20 but typically negative for CK7, primary Signet ring cell carcinoma of the breast is usually positive for CK7 but negative for CK20.

Signet ring cell carcinoma of the breast and Signet ring cell carcinoma of the gastrointestinal tract can be differentiated using CK7 and CK20 expression patterns in conjunction with ER staining. About 20% of the breast may test negative for ER, which is often expressed in breast cancer. New antibodies have been discovered recently that are helpful in differential diagnosis. Breast adenocarcinomas typically express MUC1. Neoplastic cells in this case report reacted positively to CK7, E cadherin, and MUC1 and negatively to ER, PR, HER2neu, and CDX2.

The sensitivity and specificity for identifying SRCCs of various organs can be significantly improved by combining immunomarkers. Chu et al. discovered that if ER and MUC1 are utilized as markers for breast SRCC and MUC2 and CDX2 are utilized as markers for stomach and colon SRCCs, then SRCC of the breast may be differentiated from gastrointestinal SRCC.



IMMUNOHISTOCHEMISTRYCK7 POSITIVEIMMUNOHISTOCHEMISTRYMUC1 POSITIVE

Conclusion:-

Signet ring cell carcinoma of breast is a rare tumor with poor prognosis and must be differentiated from other metastatic signet ring cell carcinomas. The prognosis of this tumor is usually poor but early detection may provide a good result. It is important to differentiate this type of tumor according to the pathological and clinical characteristics.

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