SIGNET RING CELL CARCINOMA BREAST: A rare subtype.

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.

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.

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 : $pT_2N_{0.}$. NPI score 3.6.

ON Immunohistochemistry:

ER – Negative

PR – Negative

Her2neu- Negative

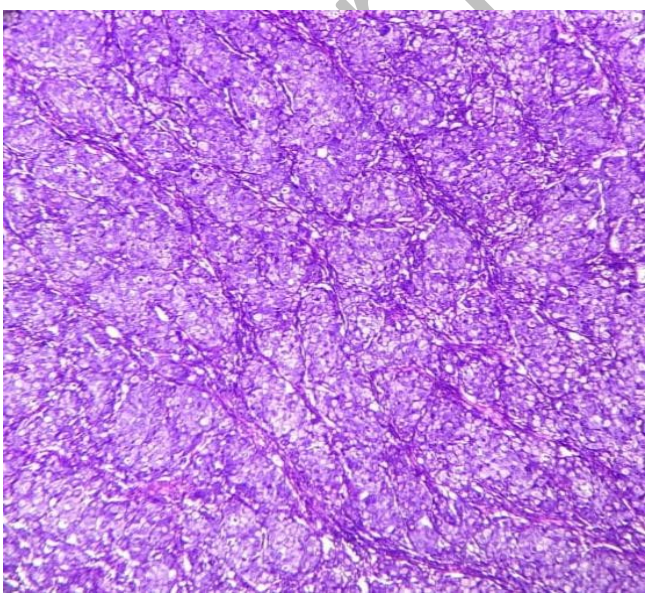
CDX2- Negative

CK7- Positive

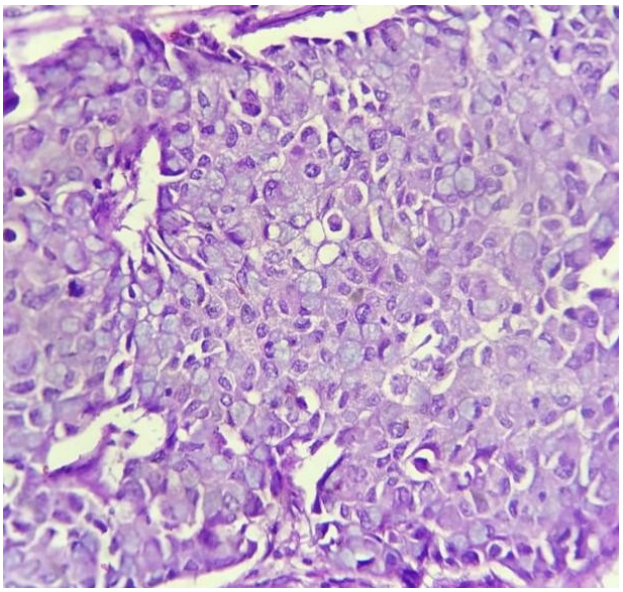
MUC1 – Positive

E Cadherin – Positive

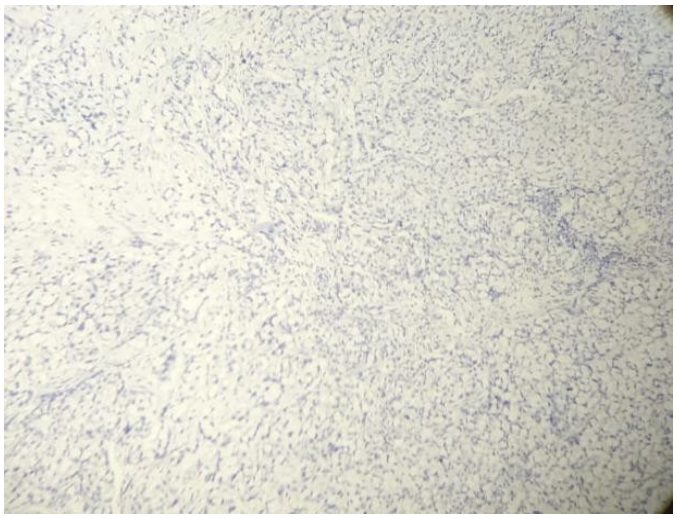
Ki67 ~ 50%

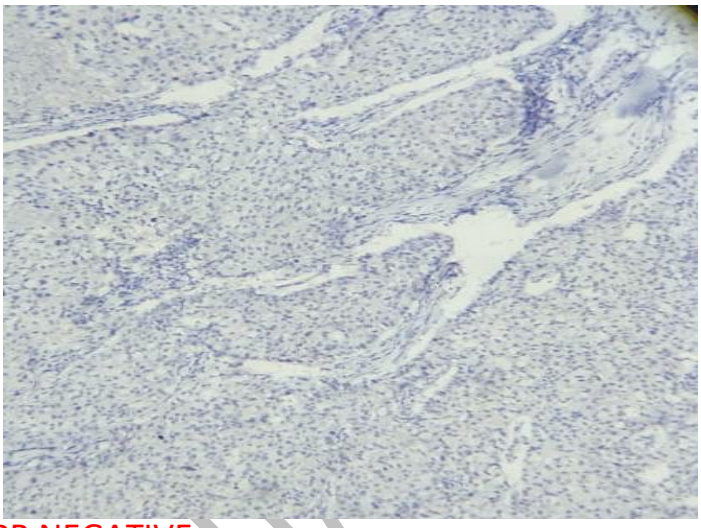


SIGNET RING CELL CARCINOMA –LOW POWER

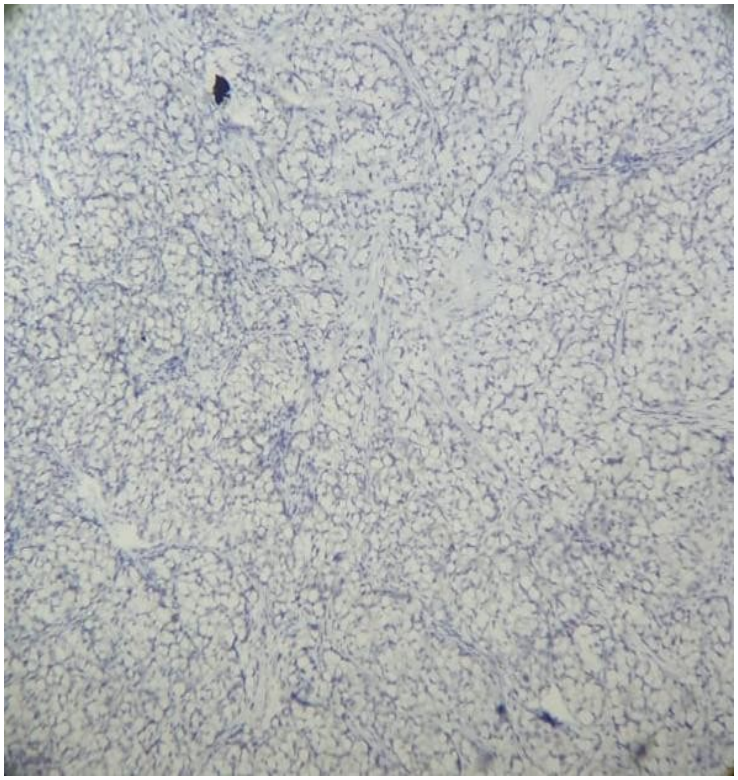


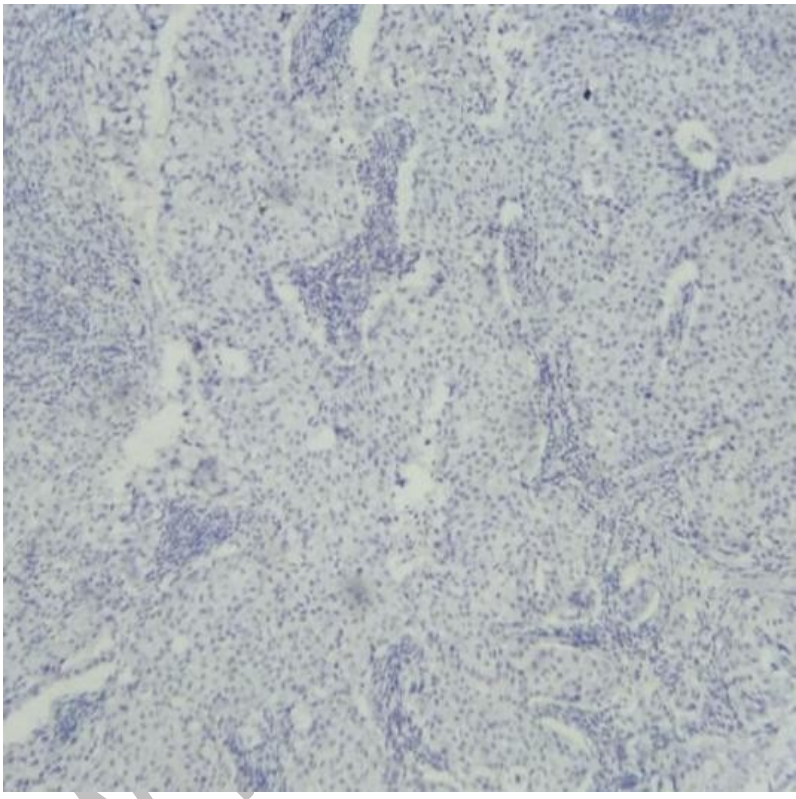
SIGNET RING CELL CARCINOMA –HIGH POWER





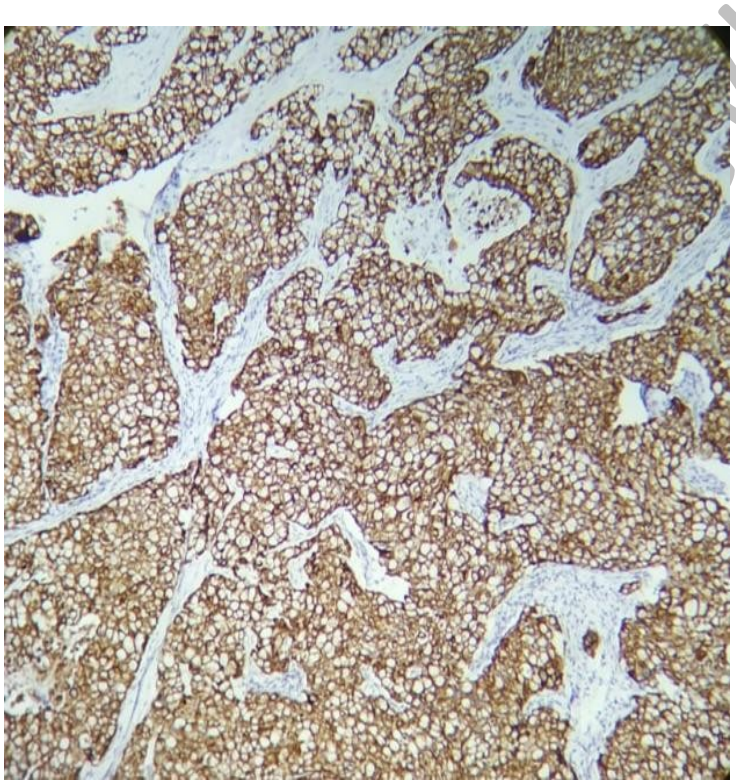
ER NEGATIVE PR NEGATIVE

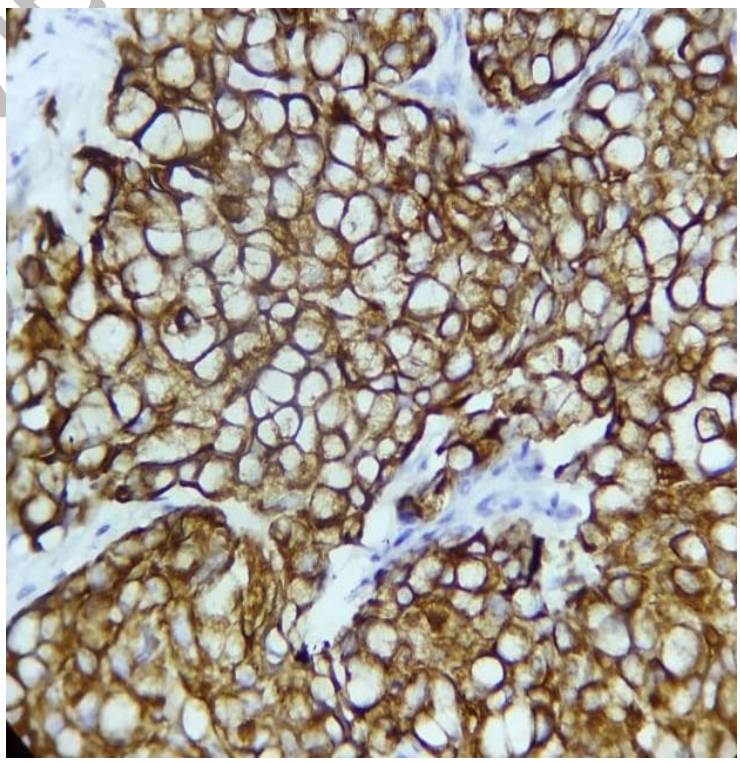




HER2N NEGATIVE

CDX2- NEGATIVE





CK7 POSITIVE

MUC1 POSITIVE

Discussion:

In pure SRCC of the breast, the lesion is more aggressive than mucinous carcinoma, invasive ductal carcinoma of no special type and classic invasive lobular carcinoma . It is important to distinguish primary and metastatic tumors because of their significant difference in therapy and prognosis. Immunohistochemistry may be particularly helpful in differentiating the tumors. Treatment and prognosis of SRCC of the breast has been reported less frequently in the literature on account of its rarity. However, Eltorky et al. reported that both the pathologist and the clinician should be aware of the prognostic influence of hormone receptor studies in the management of SRCC of the breast. Signet ring cell carcinoma of the breast can be divided into primary and metastatic tumors. A variety of immunohistochemical markers have been applied to distinguish signet ring cell carcinoma from different organs. Signet ring cell carcinoma of the breast, stomach and colon show different CK7 and CK20 expression patterns. ER is very often positive in primary Signet ring cell carcinoma of the breast, but commonly negative in gastric and colonic signet-ring cells. While primary Signet ring cell carcinoma of the breast is typically positive for CK7 but negative for CK20, the gastrointestinal Signet ring cell carcinoma are commonly positive for CK20 but usually negative for CK7. In combination with ER staining, CK7 and CK20 expression patterns can be used to distinguish Signet ring cell carcinoma gastrointestinal from Signet ring cell carcinoma of the breast. ER is usually expressed in carcinoma of the breast, approximately 20% of the breast can be negative for ER. In recent years, new antibodies have been found useful in the differential diagnosis. Adenocarcinomas of the breast usually express MUC1 In this case report, neoplastic cells showed negative reaction for ER, PR, HER2neu and CDX2, and positive reaction for CK7, E cadherin, MUC1. The combination of immunomarkers can substantially increase the sensitivity and specificity for diagnosing SRCCs of these organs. Chu et al. found that SRCC of the breast can be distinguished from gastrointestinal SRCC, if ER andMUC1 are used as markers for SRCC of the breast, and MUC2 and CDX2 can be used as markers for gastric and colon SRCCs.

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.

Refrences:

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2. Chu PG, Weiss LM: Immunohistochemical characterization of signet-ring cell carcinomas of the stomach, breast, and colon. Am J Clin Pathol 2004, 121:884–892.
3. Hull MT, Seo IS, Battersby JS, Csicsko JF: Signet-ring cell carcinoma of the breast: a clinicopathologic study of 24 cases. Am J Clin Pathol 1980, 73:31–3