



A RARE OCCURRENCE OF SIGNET RING CELLS IN INVASIVE LOBULAR CARCINOMA OF BREAST

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Abstract

Invasive lobular carcinomas of the breast are well known for their high malignant potential and tendency to metastasize early which stratifies them as cancers with risky prognosis and requires usually a complete mastectomy followed by radiotherapy. It is usually chemoresistant. Signet ring cells are seen usually associated with primary G.I tract malignancies and its prevalence in breast primary is very rare. When signet cells are more than 20%, we can call it a SRCC. This is an isolated case of signet ring cell in invasive lobular carcinoma of breast with a short duration of one month in a 55 year old, with no relevant past or family history. The patient underwent a patey's modified radical mastectomy and has been undergoing chemotherapy post surgery. Due to the lack of proper separate classifications and very little knowledge of the disease variant, this case report serves in increasing data regarding such tumours and also may help in future stratification of the SRCC to better prognosis of the same.

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1. Introduction

Breast cancer is one of the most common malignant neoplasms with over 1 million new cases documented across the world and is also the leading cause of death in women worldwide. From being 4th in list of most common cancers in India in the late 90s, it has now risen drastically to occupy the first position. According to world cancer report 2020, most efficient way of dealing with breast cancer is early detection and rapid intervention, however the survival rate of breast cancer in India is poor because of late stage during presentation and non compliance of patients to treatment protocols.

The different types of breast cancer with relation to invasion of basement membrane are: ductal carcinoma in situ (DCIS), invasive ductal carcinoma (IDC), lobular carcinoma in situ (LCIS), invasive lobular carcinoma (ILC). Out of these 4 variants invasive lobular carcinoma accounts for 10% of breast cancers and is the second most common type of invasive breast cancer. The classical form of ILC is characterized by small relatively uniform neoplastic cells that invade the stroma and in a “single file” pattern resulting in linear strands.

The prognosis of ILC has been described to be equal or better than IDC (Invasive ductal carcinoma), but outcome differences are difficult to determine because of variations in the histologic criteria used to define ILC. Signet ring cell is a cell with excessive intracellular mucin, known to commonly occur in gastric carcinoma but its occurrence in a breast cancer without a gastric primary is a rare occurrence. Signet ring cell carcinoma (SRCC) can arise from virtually all organs, but from breast is rare until 2003, WHO has placed SRCC under mucin producing carcinoma and separated it from other carcinomas. To date only a few cases have been reported.

FNAC done revealed C3 atypia



FIG : 1 Moderate cellularity. Cells are arranged in small groups, with vacuolated cytoplasm and nuclear atypia. Impression : C3 atypia

Case Report

A case report of a 55 year old woman who had no known comorbidity presented with history of pain and lump in left breast for 1 month, which she noticed during self- examination. The lump in left breast present for 1 month had attained present size with a rapid rate of growth but no swelling evident in opposite breast. It was associated with pricking type of non- radiating pain. She had loss of appetite without any altered bowel habits or other complaints (pain in abdomen, jaundice, vomiting). No ulcerations/nipple discharge and no other swelling in neck/axillary region on both sides. No myalgia, loss of consciousness or any UL/LL limb weakness. Patient has no known comorbidities. The patient had no previous history of breast problems or any history of similar illness in past. Patient is married, multiparous(3 children) and post menopausal. Her parents died due to natural causes and her first and second degree relatives have no history of any systemic illness/genetic disorders/carcinoma (as per patient disclosure). Patient was also not on any medications and also hadn't received any treatment for any ailments. On local examination, the left diseased breast appeared symmetrical, normal in shape and position in comparison to opposite side. Nipple, areola, skin over the breast were found to be normal on inspection. Palpation revealed a firm, 3x2cm mass in upper inner quadrant of breast about 1 cm from nipple areola complex, without evidence firm consistency without any warmth, tenderness, no fixity to underlying structures and there was no clinically palpable axillary or supraclavicular lymphadenopathy. Also there was no tethering of skin or peau d' orange appearance. The contralateral breast, axilla were normal.

USG of the right breast showed a hypochoeic area measuring approximately 3.2x1.7cm mass in the upper inner quadrant of the breast. Demonstrating a circumscribed complex echoic mass with posterior enhancement, uneven density.

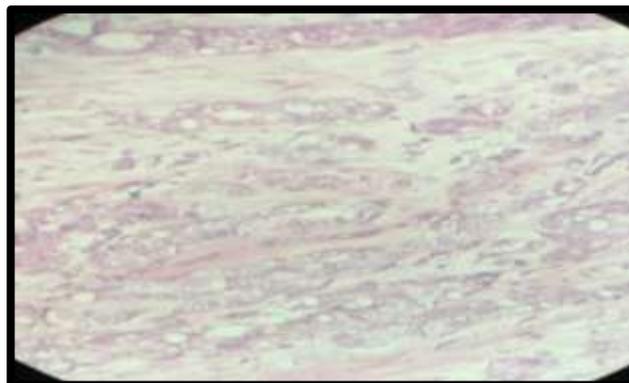
Incision biopsy was taken which revealed findings s/o Invasive Lobular carcinoma with signet ring cell appearance. Hormonal status showing ER positive status with negative PR and Her2 neu receptor.



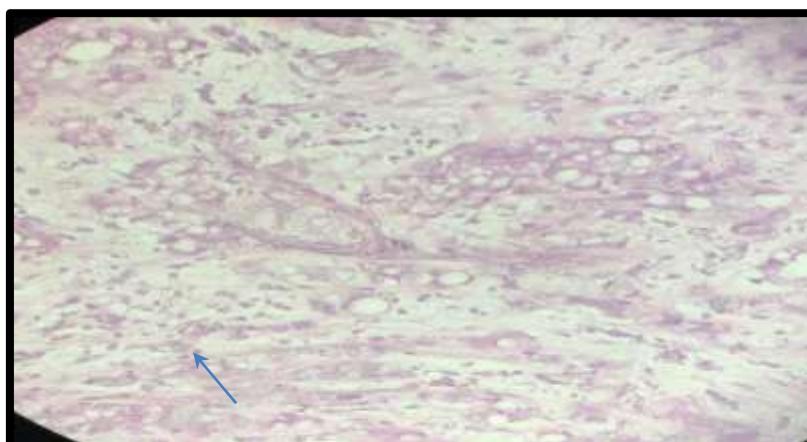
Multiple grey brown to grey black soft tissue bits largest measuring 2.8x1.4x1cm and smallest measuring 0.7x0.5x0.3cm. C/S: Grey white area present with irregular margin measuring 2.3x1.2x0.8cm.

Microscopic Features

Malignant epithelial cells arranged in the form of cords, small clusters, **Indian file pattern** in a background of dense fibrotic and myxoid stroma.



The malignant epithelial cells have eosinophilic to vacuolated cytoplasm, enlarged round to oval nucleus, fine chromatin and mild nuclear atypia. Numerous **signet ring like cells** with vacuolated cytoplasm and eccentrically compressed nucleus present.



IMPRESSION: Invasive Lobular Carcinoma With Signet Ring Cell Morphology

SURGICAL PROCEDURE: After biopsy confirmation patient underwent “**Patey’s Modified Radical Mastectomy**”. Post OP recovery was uneventful with breast drain removal done on POD-7 as seroma collection reduced. Prophylactic measures were followed to prevent lymphoedema.

POST OP SPECIMEN: Left breast with Axillary tail of spence

TUMOUR SIZE: 23x12x8mm

TUMOUR FOCALITY: Single

MARGINS: Superior, inferior, medial, lateral and deep resected margins free of tumour.

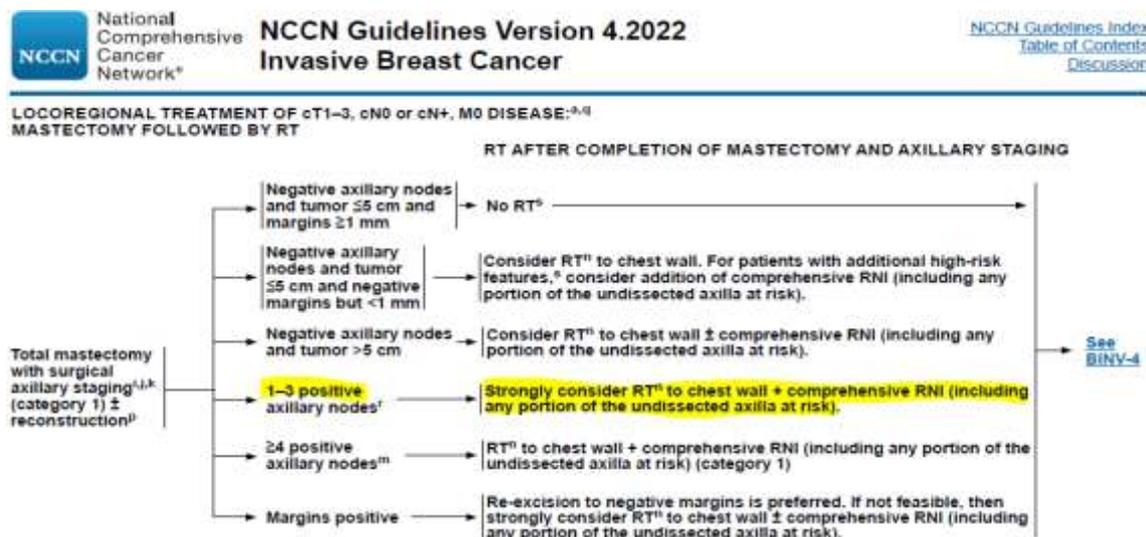
MICROSCOPIC FINDINGS: Granulation tissue and multinucleated giant cells surrounded by breast tissue.No evidence of residual tumour.

PATHOLOGICAL STAGE: pT1N1aMx

2. Discussion

Until now , only a few cases of signet ring cell carcinoma (SRCC) have been published in literature and prevalences can range from 2 to 4.5% of total breast cancers. SRCC of breast can be divided into primary and metastatic tumours. A variety of histochemical markers can differentiate breast SRCCs from SRCCs of gastrointestinal tract, like GCDFP-15 which is positive in breast SRCCs and negative in G.I tract. Other markers are CK7 and CK20. Regardless of tissue origin, SRCCs frequently metastasize to regional nodes, peritoneal surfaces, ovaries and lungs. In pure SRCC of breast lesion is more aggressive than classic invasive lobular carcinoma. The presence of 10% or more signet ring cells has been reported to be a poor prognostic factor in stage 1 of invasive lobular carcinoma. Treatment is done with a joint consensus of pathologist and surgeon

Patients with ILC were more likely treated electively with mastectomy, and because of the diffuse nature of the disease, and the poorer response to chemotherapy, these patients were rarely candidates for breast-conserving surgery. The type of surgery does not affect overall survival. Patients with infiltrating lobular carcinoma treated with breast conservation surgery have a greater risk of local recurrence than patients treated by mastectomy despite clear margins and adjuvant radiotherapy. The authors believe that total mastectomy is the treatment of choice for infiltrating lobular carcinoma patients and, in particular, in the group of patients younger than 50 years and in patients who have high-grade tumours. ILC responds less frequently to primary chemotherapy. A positive hormone-receptor status has previously been associated with a lower chance of pathologic response to primary chemotherapy hence RT is considered in this case



Prognosis

According to Frost AR, Terahata S, Yeh IT, et al in their study of The significance of signet ring cells in invasive lobular carcinoma of the breast. Archives of Pathology & Laboratory Medicine. 1995 Jan;119(1):64-68. PMID: 7802556. When patients were stratified by pathologic stage, patients with stage I disease and 10% or more signet ring cells were more likely to have recurrences or

metastases than those patients with stage I tumors and fewer than 10% signet ring cells. There was no relationship between signet ring cells and disease progression in stages II, III, and IV. These results indicate that the presence of 10% or more signet ring cells represents a poor individual prognostic factor in stage I invasive lobular carcinomas.

3. Reference

AS, V., Das, R., MS, S., Rao, K. A., & TB, S. (2013). Prediction of Zn concentration in human seminal plasma of Normospermia samples by Artificial Neural Networks (ANN). *Journal of assisted reproduction and genetics*, 30, 453-459. \