

Primary Ovarian Carcinoma Presenting as Breast Lump

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Summary

Metastases to breast from EOC account for 0.03-0.6% of malignant breast cancers. A 62 year old women presented with lump 6x4 cm mass in upper outer quadrant of right breast. Biopsy revealed invasive ductal carcinoma. CT abdomen and pelvis showed metastatic deposits in omentum, diaphragmatic surface of liver, pelvis and bowel mesentery. Uterus and both adnexal regions appeared normal. Her CA125 was 1918 U/ml, CEA and CA19-9 were within normal range. Biopsy with IHC of omental deposits revealed metastatic papillary adenocarcinoma, primary from ovary, positive for CK7, WT1, PAX8 and negative for GCDFP15, Mammaglobin, Calretinin and CEA. A review of breast biopsy with IHC showed metastasis from ovary and was positive for PAX8 and WT1. Patient underwent standard neo-adjuvant chemotherapy followed by interval debulking. She recurred 5 months after first line treatment and received various second line chemotherapy.

Keywords: Breast metastasis, Ovarian cancer, IHC, Chemotherapy

Introduction

Around three fourth of patients with epithelial ovarian carcinoma (EOC) are diagnosed in advanced stage (FIGO 3/4) at the time of presentation. Ovarian epithelial cancers spread primarily by exfoliation of cells through peritoneal cavity manifesting as peritoneal carcinomatosis (85%). However a minority spread by lymphatic or hematogenous route resulting in distant metastasis. In this regard, metastases to breast from EOC are rare and account for 0.03-0.6% of malignant breast cancers.¹ Nevertheless, their detection and distinction from breast carcinoma is of huge clinical importance because the treatment and prognosis differ significantly. This case report demonstrates a rare case of breast metastases with

advanced ovarian cancer where patient initially presented as breast lump.

Case Report

A 62 year old women presented to surgical OPD (November 2017) with complain of lump in right breast since 4 months. On examination, there was 6x4 cm mass in upper outer quadrant of right breast which was firm, nontender and fixed to underlying tissue. Abdominal examination revealed moderate free fluid and pelvic examination there was forniceal fullness due to ascites. Mammography showed 5x3 cm lesion in upper outer quadrant and 2x1.7 cm lesion in outer inferior quadrant of right breast. Biopsy of breast lesion revealed invasive ductal carcinoma. Her metastatic workup included CT chest, abdomen and pelvis which revealed 48x31 mm and 25x15 mm lesions involving right breast. There were few enlarged nodes in right axilla, largest measuring 14x10 mm. Metastatic deposits were seen in omentum (largest 5x4 cm), diaphragmatic surface of liver (6x5cm), pelvis and bowel mesentery (4x3 cm). Uterus and both adnexal regions appeared normal. Her CA125 was 1918 U/ml, CEA and CA19-9 were within normal range.

Biopsy with immunohistochemistry (IHC) of omental deposits revealed metastatic serous papillary adenocarcinoma, primary from ovary (genital origin) which was positive for Ck7, WT1, PAX8 and negative for GCDFP15, Mammaglobin, Calretinin and CEA (Figure 1). With this new evidence, a review

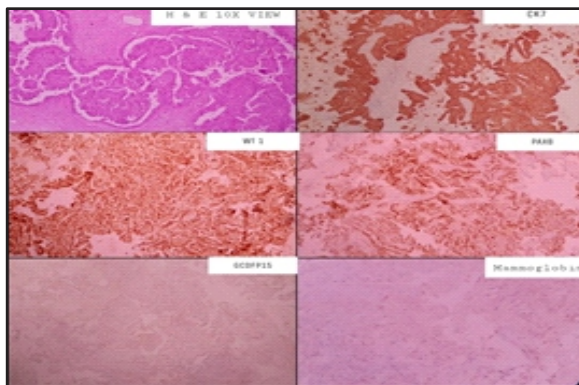


Figure 1: Histologic microphotograph of biopsy specimen

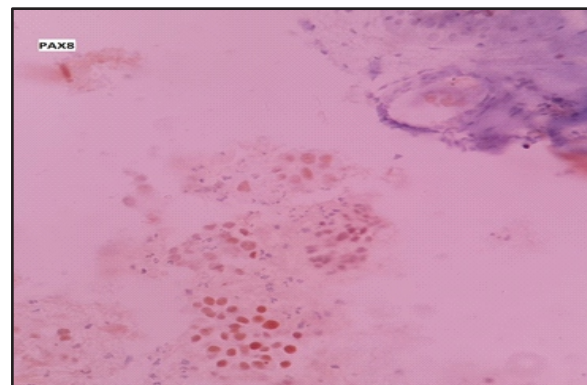


Figure 2: Clinical picture before treatment

of breast biopsy with IHC was done which suggested metastasis from ovary and was positive for PAX8 (Figure 2) and non specific stained for WT1.

Patient was planned for standard neo-adjuvant chemotherapy (carboplatin and paclitaxel). Post chemotherapy (3 cycles), her CA-125 was 390 U/ml and mammography showed a 2x1.7 cm residual lesion in upper outer quadrant of right breast. Her post chemotherapy CT of abdomen and pelvis revealed multiple metastatic deposits in pelvis, largest measuring 46x32 mm in right side and 41x24 mm on left side. There was mild omental infiltration and mild ascites. Rest abdomen was normal. After a thorough tumor board discussion, patient was planned for interval debulking with simple right mastectomy. After the informed consent, patient underwent total abdominal hysterectomy with left salpingo-oophorectomy and right ovarian mass (5x4cm) removal with pelvic peritonectomy, total omentectomy and resection of cancer deposits. She was suboptimally cytoreduced with residual disease along inferior surface of bilateral hemidiaphragm and between fundus of stomach and spleen. Thus, right mastectomy was abandoned. She further received 3 cycles of adjuvant chemotherapy. Her post treatment CT revealed 12x18 mm residual lesion in right breast with no residual disease in abdomen and pelvis. Her CA-125 levels were 38.43 U/ml. Patient was kept under observation following which she recurred within 5 months. Her CA-125 level raised to 143 U/ml and CT showed 7.5 x 3.5 cm lesion in pelvis abutting the rectum, metastatic infiltration at subdiaphragmatic surface of liver, bowel serosa in right iliac fossa and surface of sigmoid colon. Bilateral lung fields showed multiple metastatic deposits. She was started on second line chemotherapy with gemcitabine followed liposomal doxorubicin and oral etoposide successively till December 19.

Discussion

Breast cancer is one of the commonest primary malignancies in women, yet metastasis to breast are rare. A study by Hadju and Urban with 4,051 breast cancer women found an overall incidence of primary gynecologic cancers metastatic to breast of 0.17%, with only 0.07% of metastatic from primary ovarian cancer.²

In contrast to primary breast cancers, metastasis to breast generally are solitary, superficial, firm, well-circumscribed and multinodular. Furthermore, the most common location of metastasis is upper outer quadrant of breast seen in 62% of patients.³ Our patient also presented with a firm, well defined nodule in upper outer quadrant of right breast.

The majority metastasis are unilateral solid cancer, however bilateral, inflammatory and ductal

carcinoma in situ-like presentation has also been described.^{4,5} DeLair et al evaluated 85 patients with nonmammary metastases to breast and found that the most common type of metastasis was primary ovarian serous epithelial carcinoma followed by melanoma and sarcoma, respectively. The above patient also had a primary ovarian serous papillary adenocarcinoma metastasizing to breast.

Breast metastasis from a primary ovarian cancer generally is diagnosed an average of 2 years after initial diagnosis of ovarian cancer.⁴ However our patient had breast metastasis at initial presentation only and was being first evaluated as primary breast malignancy.

In mammographic evaluation, metastatic cancer to breast are frequently well-circumscribed, non-calcified dense masses and lack speculation, microcalcifications and architectural distortion.⁵ The breast metastasis generally lacks a characteristic morphologic pattern and may have overlapping morphology with primary breast cancer which can make the diagnosis difficult. However, IHC is helpful as certain markers like PAX8, WT-1 (85%) have been generally found positive in ovarian carcinoma but are negative in primary breast malignancies.⁶ Bhargava et al reported that mammaglobin and GCDFP-15 were positive in 93.1% and 84.5% of primary breast cancers but not in breast metastasis.⁶

Secondary breast involvement from an ovarian cancer suggests advanced stage disease and has been reported with a poor prognosis in most of studies. Micha et al found that after detection of metastatic breast disease from ovarian primary cancer, survival ranged from 13 days to 3.5 years, with most dying within 1 year.³ However, Karam et al reported 10 cases of metastatic breast cancer and noted that median overall survival after breast metastasis in ovarian cancer was 26 months, suggesting that metastatic breast cancers from ovarian cancer are not associated with a poor prognosis.⁷ Our patient had completed primary treatment for ovarian cancer, had received various second line of chemotherapy and is still alive after 20 months of initial diagnosis of breast metastasis (December 19).

Breast metastasis should be distinguished from primary breast cancers to avoid any unnecessary surgical procedures as it influences the management and prognosis. Klein et al found 1-year survival rate of 40% for patients with ovarian cancer who also had breast metastasis, as opposed to 4-year survival rate of 75% for patients with primary breast cancer.⁸ Ovarian metastasis to breast should be treated as a systemic disease, with appropriate chemotherapeutic agents. Mastectomy of breast mass is likely best reserved for patients who are unresponsive to systemic therapy and require palliation.³

Conclusion:

EOC with breast metastasis is a rare diagnosis. It carries grave prognosis, therefore differentiation with primary breast malignancy is essential. Given the similarities between breast and ovarian cancer morphology, IHC markers are helpful in making a distinct diagnosis.

Conflicts of interest:

There were no conflicts of interest.

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