

CASE REPORT

When breast cancer gets complicated. A case report of synchronous bilateral breast cancers with discordant tumor markers from the primary to nodes with findings of a sentinel internal mammary subpectoral lymph node

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Abstract

This case reviews synchronous bilateral breast cancer with left infiltrating ductal carcinoma ER+/PR–, Her2– and right invasive lobular carcinoma ER+/PR–, Her2–. Independent primary bilateral breast tumors are present in 0.2–3.2% of breast cancer. Biopsy also showed differing ER status on the left breast versus the node which was triple negative. The final sentinel node was a left internal mammary node. Recent studies have found that the ER, PR and HER2 status of the primary tumor do not always correlate to the ER, PR and HER2 status of the metastatic sites. This can have deleterious effects on survival. There are no clear guidelines on course of treatment for these complex cases. A review of the current literature is supportive of treating the highest-risk breast malignancy. Despite the unusual pathology and severity of disease, our patient is doing well with treatment.

CASE REPORT

The patient is a 47-year-old perimenopausal Caucasian female who presented to ED with a painful and erythematous left breast with purulence and fevers. She had a left breast mass in the same area for ~4 months. The patient is healthy except for smoking. No family history of breast cancer, no exposure to hormones, nulligravid. Menarch at age 12. Bactrim was prescribed and the symptoms did improve. Ultrasound was concerning for abscess versus tumor. FNA was performed and

grew peptostreptococcus. Cytology revealed inflammatory cells but no malignancy.

While the acute infection subsided, the large firm mass and palpable lymphadenopathy were unchanged. Repeat US with biopsy was performed. Ultrasound exhibited a solid mass of the central left breast measuring 12.0 × 5.0 × 8.9 cm³. Two abnormal left axillary lymph nodes were biopsied. Biopsies demonstrated poorly differentiated ductal carcinoma. Breast prognostic markers exhibited ER+, PR–, HER2 negative and Ki67 29.5%. Left

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axillary node was triple negative (ER–, PR–, Her2 negative). Patient was referred to oncology and chemotherapy was placed for neoadjuvant chemotherapy.

Patient was diagnosed as stage IIIB (T4b, N1, M0). Metastatic workup was otherwise negative. She was treated with dose dense Doxorubicin and Cyclophosphamide followed by Paclitaxel. MRI of breasts was performed a month into chemotherapy. Two new masses were identified in the contralateral breast: central lesion of $2.5 \times 1.7 \times 1.9 \text{ cm}^3$ and a tail lesion of 1.5 cm. Right axillary lymph nodes appeared normal. Right breast US and biopsy were performed showing atypical ductal hyperplasia and atypical lobular hyperplasia.

Patient tolerated the chemotherapy well, with plans for surgical intervention followed postoperatively with Capecitabine. She remained fully active. The left breast mass responded to treatment and slowly decreased in size. Repeat MRI of bilateral breasts was completed after chemo. The central right breast mass appeared less prominent with no new areas of enhancement. There was complete resolution of the adenopathy of the left axilla. The large central left breast mass decreased to $4.0 \times 3.1 \times 5.1 \text{ cm}^3$.

The patient proceeded with bilateral mastectomies and left sentinel lymph node dissection following lymphoscintigraphy and isosulfan blue dye injection. Resection was followed by immediate breast reconstruction with tissue expanders. Right SLND was not planned as the biopsy had shown precancerous lesions. Left SLND revealed no uptake with dye or neoprobe in the axilla. Final left sentinel node was identified in the internal mammary chain, subpectoral.

The patient's postoperative course was without complication. Surgical pathology showed two foci of high grade invasive ductal carcinoma of the left breast with the closest margin being 0.15 mm. The internal mammary subpectoral sentinel lymph node on the left exhibited patches of tumor cells present. Right breast specimen exhibited lobular ductal hyperplasia, atypical ductal hyperplasia, and 5 mm foci of infiltrating lobular carcinoma which was ER+/PR–, Her2–. The patient completed four rounds of adjuvant Paclitaxel and Capecitabine and continues on adjuvant Letrozole. The patient was given 5040 cGy to the left chest wall and the left supraclavicular fossa with 6 MV photons and 18 MV photons in 180 cGy daily fractions as per the 3D Eclipse treatment plan. The patient also received 28 fractions as a left posterior axillary boost with 13 cGy per fraction with 18 MV photons. Final reconstruction was completed without difficulty.

DISCUSSION

ER, PR, and HER2/neu guide management of breast cancer [1]. This can become complicated when treating SBBC. Proven treatment options do exist. When limited to Stages I–II carcinoma, studies show breast-conserving therapy (breast-conserving surgery with radiation) to be as effective in SBBC as in unilateral disease [2]. Additionally, due to the fact that the prognosis of SBBC most closely mirrors the prognosis of the patient's higher-risk malignancy, it is advised to aggressively treat the higher-risk cancer [1].

The previously reported rates for tumor discordance also put patients at risk for developing triple-negative breast cancer. Triple-negative breast cancer is a subtype of breast cancer associated with a poorer prognosis than other cancer subtypes [3].

Additionally, triple-negative breast cancer is associated with higher rates of recurrence within the first 3 years [3]. As of yet, there are no targeted treatments for triple negative breast cancer. Interestingly, BRCA mutations carry an increased risk of triple negative breast cancer, with 20% of triple negative breast cancer being BRCA positive [4]. For this reason, it is advisable that any patient with triple negative breast cancer undergo genetic testing [4]. Understandably, discordant tumors complicate patient treatment and prognosis.

Internal mammary lymph nodes positive for metastasis can be found in up to 28% of patients with breast cancer. Metastasis to these nodes are associated with poorer outcomes, regardless of axillary lymph node status. Even if the sentinel lymph node is internal mammary, it does not replace the need to investigate axillary lymph node involvement, as this will provide additional information on staging. That being said, if the axillary sentinel lymph node is negative following a positive internal mammary lymph node biopsy, current evidence does not support performing a complete axillary lymph node dissection due to the risks of lymphedema and there is no proven diagnostic benefit [5].

As a general rule, diagnostic tests are performed if the information they provide can alter a patient's therapeutic choices. As such, there is a growing pool of evidence demonstrating that confounding factors, including internal mammary lymph nodes, discordant hormone receptor and her2 status, and synchronous bilateral breast cancer can affect patient prognosis, but no clear guidelines exist on how these statuses alter patients' therapeutic options. A review of the current literature is supportive of treating the highest-risk breast malignancy present. In Stages I and II breast cancer, bilateral breast-conserving therapy has been proven to be as successful as unilateral breast-conserving therapy [1, 2]. Future research should be performed to evaluate appropriate therapeutic management for these patients.

CONFLICT OF INTEREST STATEMENT

None declared.

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