

Carcinosarcoma of the Breast in a Pregnant Patient: A Case Report and Review of Literature

Daniel Fegely^{1*} and Adriana Suarez-Ligon²

¹St. John's Episcopal Hospital, Far Rockaway, NY, Trinitas Regional Medical Center, Elizabeth, NJ, USA

²Department of Surgery, Rutgers-New Jersey Medical School University Hospital Cancer Center, USA

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*Corresponding author

Daniel Fegely, St. John's Episcopal Hospital, Far Rockaway, NY, Trinitas Regional Medical Center, Elizabeth, NJ, USA, Tel: 6105872661; Email: drfegely@gmail.com

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Abstract

Breast carcinosarcoma is a rare tumor of the breast consisting of 0.08 to 0.2% of all cases of breast cancer [1]. The incidence of this type of tumor is very low and in this case the patient presented with the malignancy in her 3rd trimester of pregnancy. Due to her presentation while pregnant the case becomes even more rare.

Introduction

Metaplastic carcinoma of the breast, also known as carcinosarcoma, is a rare breast tumor that when encountered needs to be treated in a timely and appropriate manner. It is defined as a malignancy with two distinct cell lines, one of breast carcinoma of ductal type and one of sarcoma. The patient in this case presented with the diagnosis of carcinosarcoma in the 3rd trimester of pregnancy. She felt the mass in her breast and had it subsequently biopsied, presenting to the breast clinic after diagnosis. The management of patients with breast carcinosarcoma are discussed along with a review of literature.

Case Study

The patient was a 38 year old Ecuadorian female from home with no past medical history who presented to breast clinic for evaluation of right triple negative breast cancer. At time of presentation patient was in the 3rd trimester of her 4th pregnancy (G4P3). She first noticed the palpable mass 1 month prior. Patient had ultrasound evaluation of both breasts prior to clinic visit in August which showed 2.8 x 1.8 x 2.7 cm irregular mass at the 8 o' clock position 7 to 8 cm from the nipple of the right breast (Figure 1). No masses were seen in the left breast. She then underwent ultrasound guided core biopsy of the right breast. Pathology showed invasive ductal carcinoma (Grade III, moderate to poorly differentiated) with a malignant stromal component consistent with metaplastic carcinoma (carcinosarcoma). Receptors were ER, PR and Her2 negative. Patient was diagnosed with Stage IIa, cT2N0M0, triple negative cancer of the right breast. She was slightly anxious regarding her diagnosis and ready for treatment.

She had no past medical history. Her past surgical history consisted of 3 C-sections (2001, 2006, and 2014). Patient denied any use of contraceptives or hormone replacement. She was G4P3, currently in the 3rd trimester of her 4th pregnancy, with menarche at 14 and first pregnancy at 21 years of age. Patient denied smoking, drinking, or drug use. She denied family history of breast or ovarian cancer. Her maternal grandmother had a diagnosis of leukemia. Her father, mother, 3 sisters, and 2 brothers were alive and healthy.

Exam was positive for a palpable mass in the right breast located in the lower outer quadrant measuring 2.5 cm. The mass was mobile and well circumscribed. No skin changes or nipple discharge were noted. The right axilla was without lymphadenopathy. Exam was also positive for a gravid abdomen consistent with gestational age for her 3rd trimester.

It was decided that the patient should undergo neoadjuvant chemotherapy as soon as possible as she was in the 3rd trimester. Timing of delivery of the child was deferred to the Obstetrics Physician. Patient delivered the child via C-section at 34 weeks in September, 10 days after the clinic visit. In November she had a port placed for neoadjuvant chemotherapy. Patient had a CT of the chest, abdomen, and pelvis which was negative for metastasis (Figure 2).

She then received 4 cycles of Adriamycin and Cytoxan finishing in December. Roughly halfway through the chemotherapy treatment the patient had a repeat breast ultrasound which showed the mass to be increased in size to 5.1 x 3.7 x 5.1 cm (Figure 3). Patient had a PET scan done in January which was positive only for a right breast mass (Figure 4).



Figure 1: US of the right breast showing 2.8 x 1.8 x 2.7 cm irregular mass.



Figure 3: Repeat US of the right breast showing 5.1 x 3.7 x 5.1 cm irregular mass.

In January she was taken for a right skin sparing mastectomy with right axillary sentinel lymph node biopsy using 5 cc isosulfan dye and placement of tissue expander. Of the 3 sentinel lymph nodes taken all were negative. Final pathology of the mass showed metaplastic carcinoma (carcinosarcoma). The epithelial component was invasive ductal carcinoma grade III/III (Mitotic rate 3, Nuclear pleomorphism 3, Glandular/Tubular differentiation 2, Histologic grade 3) and the mesenchymal component was poorly differentiated sarcoma. The mass was 6.2 cm at the widest diameter with necrosis and areas of infarct present. Final tumor stage was pT3N0Mx, Stage IIB, ER (+) (<5%), PR (-), Her2 (-). Patient had genetic testing and was found to be BRCA (-).

Two weeks after surgery the patient complained of right sided chest pain radiating to her back. Work up for pulmonary embolism was negative but CTPA showed sub-centimeter right lung nodules with largest 4 mm. MRI thoracic spine was done and was negative for metastasis. Patient had the tissue expander removed 5 weeks post operatively, in February, and her pain resolved. In March the patient began radiation therapy to the right chest for local control. She was started on Taxotere chemotherapy in April and was scheduled to have a total of 4 cycle.

Review of Literature

There is debate from which cell lineage carcinosarcoma develops. The myoepithelial cells are thought to be derived from a single stem

cell origin like spindle cells [2]. There has also been report that the cells can also develop from cystosarcomaphyllodes, fibroadenoma and cystic structures [3,5]. The development and cell lineage of carcinosarcoma continues to be in debate and needs continued investigation.

This patient presented during the 3rd trimester of pregnancy which complicates the case. It was determined to start chemotherapy as soon as possible and even in the 3rd trimester if needed. The patient did deliver via C-section prior to chemotherapy starting. She was started on Adriamycin and Cytoxan for 4 cycles. The tumor did continue to grow. Ordinary breast chemotherapy was determined to not show significant benefit with carcinosarcoma [6,7]. In another study, Rayson, et.al., it was shown that carcinosarcoma shows a poor response to conventional chemotherapy and these patients could be appropriate candidates for new therapeutic regimens [8,9]. Anthracycline/Taxane based chemotherapy is recommended [4,10]. The patient was scheduled for 4 cycles of Taxotere chemotherapy.

In addition to chemotherapy, radiation of the breast should be done. It is shown that adjuvant radiation improved both overall survival and survival specific to disease in patients receiving treatment for metaplastic breast carcinoma [3,11]. This improvement

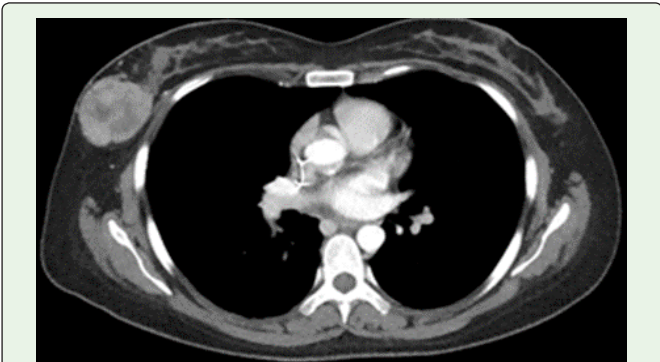


Figure 2: CT of the Chest transverse image showing a mass in the right breast.

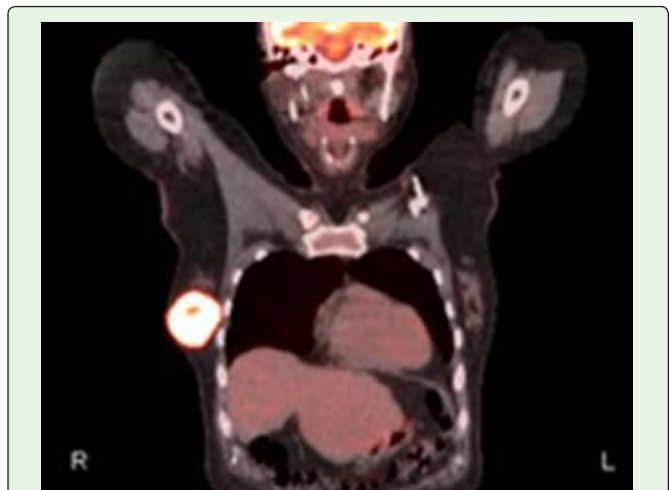


Figure 4: PET scan showing a right breast mass.

was seen regardless if lumpectomy or mastectomy was performed. Radiation should be done after the excision of the tumor regardless of procedure. The patient did receive radiation therapy to the right chest after removal of the tissue expander was performed.

Breast carcinosarcoma median age of diagnosis centers around 55 years of age and patients usually present with a rapidly growing mass of large size that is painful [8,12]. In Savas et. al. there were 2100 diagnoses of breast cancer between January 2000 and March 2013. Of these 2100 patients only 10 were diagnosed with carcinosarcoma which is an incidence of 0.47%. Mean age of diagnosis in the study was 59.7 (± 13.4) years of age. At the 36 month follow up the disease free survival rate was 52.5% (± 18.6). The survival rate at 36 months was 71.1% (± 18), at 60 months was 52.5% (± 18.6), and overall was 53.3% (± 20.5) [6]. Breast carcinosarcomas have defined themselves to be aggressive and treatment resistant tumors which are similar to poorly differentiated and receptor-negative breast tumors [6,7].

Discussion

The patient in this case was a 38 year old female who was diagnosed with carcinosarcoma of the right breast in the 3rd trimester of pregnancy. The patient was young for the diagnosis as median age is regarded to be around age 55 [8,12]. Carcinosarcomas are also rare consisting of only 0.08 to 0.2% of all cases of breast cancer [1]. What makes this case even rarer is that the patient presented during pregnancy. Thankfully for the patient she presented during her 3rd trimester and gave birth via C-section before starting chemotherapy. The tumor did not respond to traditional breast chemotherapy and increased in size during the period of treatment. She then underwent a skin sparing mastectomy with sentinel lymph node biopsy and reconstruction. The tissue expander was removed and the patient received localized radiation which has shown to increase overall survival [3,11]. The patient also received Taxotere chemotherapy which is recommended for carcinosarcoma [4,10]. This patient presented during pregnancy but due to presentation in the 3rd trimester the treatment was not delayed.

Conclusion

Carcinosarcoma of the breast is a rare disease consisting of 0.08 to 0.2% of all diagnosed breast malignancies. The cell lineage is thought to be from spindle cells and also may develop from phyllodes tumors, fibroadenomas, and cystic structures of the breast. The tumor needs to be removed and the patient should receive localized radiation therapy along with Anthracycline/Taxane based adjuvant chemotherapy for the best chance of survival. The tumors are aggressive and resistant to treatment with 52.5% survival at 5 years in one study [6].

Summary

Breast carcinosarcomas are rare tumors and have been found to act like poorly differentiated and receptor-negative breast tumors in

regards to treatment. The patient should receive surgical intervention and adjuvant radiation therapy should be administered. Adjuvant Anthracycline/Taxane based chemotherapy is recommended as normal breast chemotherapy regimens have not shown significant benefit. Carcinosarcoma of the breast continues to be a rare and challenging malignancy to treat and needs continued investigation.

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