

Case Report

Rapidly progressive metaplastic breast cancer: a case report from Latin America

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ABSTRACT

Breast cancer is the most prevalent oncological pathology today; however, it is a broad pathology with different presentations according to the histological and molecular type. Metaplastic triple negative breast cancer is rare and has an aggressive presentation. We present this case given the low frequency of cases. We also present our management and outcomes. We present the case of an 85-year-old patient with an ulcerated exophytic mass in the right breast with progressive growth. The initial study was a biopsy, which evidence a triple negative invasive ductal breast carcinoma. Additional studies were negative for metastasis. The initial treatment was a surgical procedure, since the patient rejects initial management with chemotherapy. The pathology of the surgical piece confirms a metaplastic triple negative breast cancer. The patient has an adequate postoperative clinical evolution. Later she is taken to radiotherapy. At 3-month follow-up, the patient had adequate response. We present this case to create awareness of this type of cancer. This type of cancer must be known and suspected when dealing with a patient with triple negative breast cancer in order to carry out timely treatment, mainly with surgical management.

Keywords: Metaplastic breast cancer, Rapid progression, Surgery, Radiotherapy, Breast cancer treatment

INTRODUCTION

Breast cancer is a broad pathology and is classified according to its histological type and molecular biology according to the receptors it expresses.¹ Currently and according to GLOBOCAN 2020, breast cancer is the most prevalent oncological pathology worldwide.²

Regarding the histological type, ductal cancer corresponds to 70% of the cases.³ Metaplastic breast cancer is one of the less frequent variants, representing less than 1% of cases.⁴

Regarding the molecular profile, the most frequent type is breast cancer that expresses positive hormone receptors. Usually, this type of cancer has a good prognosis. It is followed by breast cancer that expresses Her 2 positive receptors. The expression of this receptor represents a

more aggressive disease, but in which there is an additional treatment possibility.⁵ Up to 20% of breast cancer is Her 2-receptor positive.¹ The most aggressive type is the triple negative, which occurs in approximately 20% of patients with breast cancer.⁶

Overall, it is important to consider that metaplastic breast cancer is usually triple negative and that this type occurs in approximately 1% of patients.⁴ This type of tumor was initially described in 1973 and is characterized by presenting a partial or total differentiation of the tissue that conforms it to a squamous, spindle cell, mesenchymal epithelium or other lines.^{7,8}

Being a triple negative breast cancer, these tumors have a poor prognosis and are characterized by being aggressive, chemo resistant and usually having metastatic involvement. Metaplastic cancers usually present as high-

grade lesions, except for squamous and fibromatosis-like variants.⁴ It is also important to mention that this type of cancer tends to have TP53, pik3CA, and PTEN genetic alterations that may be possible drug targets in treatment, but which have not yet been established.⁹

Given that metaplastic triple negative breast cancer has a presentation of less than 1%, this clinical case is presented to tell our experience in the treatment established and the outcomes of the patient.

CASE REPORT

We present a case from Latin America. This patient was diagnosed and treated in “Hospital Universitario San Ignacio” in Bogota, Colombia. An 85-year-old patient with a 6-month evolution of a mass in the right breast with rapid and progressive growth. Initial physical exam revealed an ulcerated exophytic mass in the right breast with no purulent discharge of 8×8 cm that replaced the entire mammary gland associated with loss of the nipple and with a 1×1 cm axillary adenopathy. Initial studies with breast biopsy confirm invasive ductal breast carcinoma, initially grade 3 and triple negative. Additional studies without signs of distant metastasis. It is initially staged as a T4dN1M0. Management with chemotherapy was initially considered, however the patient did not accept it.

Subsequently, the patient presented clinical deterioration with infection in the tumor that required hospitalization by the emergency department. It is proposed to carry out a surgical procedure with modified radical mastectomy. She had clinical deterioration with soft tissue sepsis, for which the surgical procedure was initially postponed. Broad-spectrum antibiotic management was established with improvement. Subsequently, she is taken to a modified radical mastectomy. Despite the size of the breast cancer, it was possible complete closure of the skin. The patient presented adequate clinical evolution. She was discharged in the third day after surgery.



Figure 1: Initial clinical presentation of the breast cancer.

The final pathology evidenced a grade 3 cartilage matrix-producing metaplastic breast carcinoma with ki 67 of 80% triple negative with involvement of an axillary node. It was considered a complete oncological surgery, so adjuvant management was given later only with radiotherapy. At the 3-month follow-up, the patient had adequate clinical evolution, without signs of relapse or distant metastasis.



Figure 2: Postoperative follow up.

The patient gave her consent and signed the informed consent form for publication of this case.

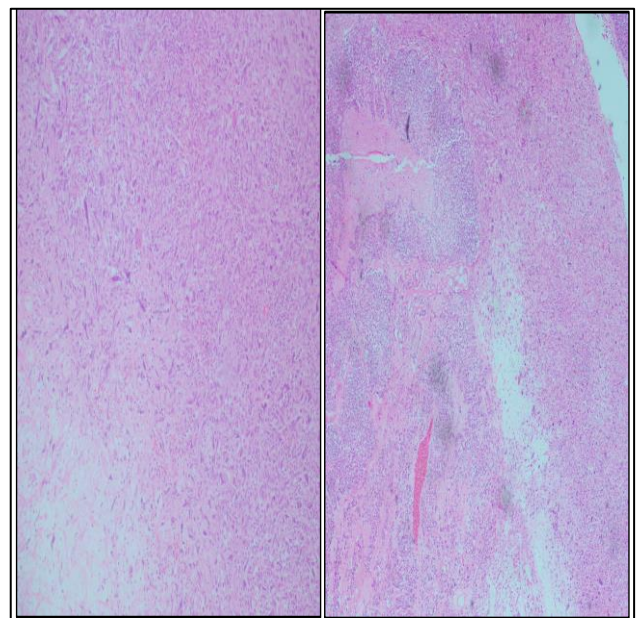


Figure 3: Malignant tumor lesion with proliferation of cells with spindle cell characteristics with marked cytological atypia, atypical mitosis and necrosis interspersed with areas of osseocartilaginous differentiation.

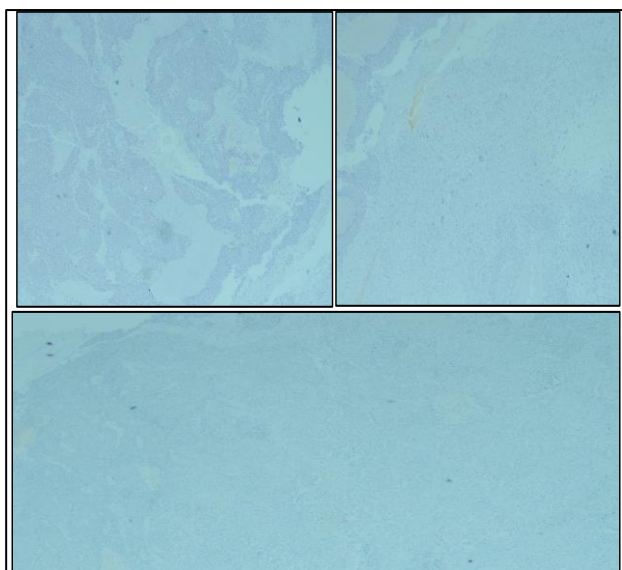


Figure 4: Negativity for estrogen, progesterone, and Her 2 receptors.

DISCUSSION

Metaplastic breast carcinoma occurs in less than 1% of breast tumors and is characterized by presenting a differentiation of the glandular epithelium. Tissue replacement can be total or partial. The mesenchymal differentiation of the metaplastic tumor can be cartilaginous, osseous, rhabdomyoid, or neuroglial.⁴ The vast majority of these types of tumors present as triple negative, however, there is a small percentage that can manifest with positive hormone receptors. In this case, the patient presents a high-grade metaplastic carcinoma with triple negative mesenchymal differentiation of cartilaginous type.

The tumor can have several components, this makes the initial diagnosis difficult. According to the literature, in some case series of metaplastic tumors, these tumors have up to 73% of a mixed component with a non-special type carcinoma component.⁸ This probably explains the difference in the initial biopsy and the final histology analysis of the surgical specimen.

Immunohistochemistry is a very important tool in the diagnostic process. In this case, the initial immunohistochemistry suggested an invasive carcinoma of a non-special type, however, when studying the complete mass, the mesenchymal metaplastic component of the cartilaginous type was identified. The tumor was hormone receptor negative, HER 2 negative with immunohistochemistry with p40 negative, cat 3 focal positive, p63 focal positive, CK34BE12 negative and SOX 10 negative with PDL 1 less than 10. With these characteristics, metaplastic breast cancer of mammary origin was confirmed.

Metaplastic breast cancer has an aggressive behavior with rapid growth.⁸ This case is consistent with the described behavior. In this case the mass also had an infection that deteriorated the initial condition of the patient. These patients usually require a modified radical mastectomy.⁸ This case complies with this behavior and the patient required management with this procedure.

These tumors tend to be aggressive and usually have hematogenous dissemination, so they do not present with lymph node metastasis, but with distant metastasis.^{8,9} In this clinical case the mass is large and presents with axillary lymph node metastasis without initial evidence of distant metastatic involvement. This is not the usual behavior of this tumor.

Regarding treatment, it is considered that these tumors tend to be chemo resistant. In this case, the patient did not accept chemotherapy treatment, so it was not possible to evaluate the response, however, we consider the initial surgical management represented adequate treatment.

There is no standardized guide for treatment, however in the literature, radiotherapy as adjuvant treatment in patients with both conservative surgery and patients with modified radical mastectomy can improve overall survival.⁷ In this case, the patient was taken to radiotherapy and at the 3-month postoperative follow-up, she had a favorable evolution.

CONCLUSION

Metaplastic breast cancer is considered to be a rare pathology but should be suspected when we have triple negative breast cancer with rapid progression. Some metaplastic breast cancer can have an associated ductal component, so an initial pathology report with ductal type cancer does not rule out this variety of tumor. The treatment of this pathology is not defined, however surgical management is considered to be the most important pillar. In our case the surgical procedure favored the adequate clinical evolution of the patient. Radiotherapy is an adjuvant procedure that can benefit overall survival. Chemotherapy can have a variable response, so it can be considered as adjuvant therapy according to each individual case.

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