

Malignant phyllodes tumor of the breast with lymph node metastasis: a case report

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ABSTRACT

In the present case report we aim to describe a rare case of malignant phyllodes tumor in a young patient who presented with a fast-growing mass in the right breast, with an enlargement in the axillary lymph node ipsilateral to the lesion. Perioperative histopathological analysis confirmed malignancy in two out of five excised lymph nodes. Modified radical mastectomy was performed in the right breast, with axillary dissection levels I and II. One month after the first consultation, surgical margins were increased. The patient underwent adjuvant chemotherapy as a complement to surgical treatment. She had tumor recurrence 56 days after surgical treatment. The patient passed away six months after diagnosis.

KEYWORDS: malignant phyllodes tumor; lymphatic metastasis; modified radical mastectomy.

INTRODUCTION

Phyllodes tumors (PTs) are rare tumors, accounting for less than 1% of all primary breast neoplasms. They usually present as fast-growing breast nodules, affecting women in the fourth or fifth decades of life.

PTs are classified as benign, borderline (low grade), and malignant (high grade)¹. Differentiating PT and fibroadenoma by mammography can be difficult, in such a way that fine-needle aspiration (FNA) and core biopsy are the basis for preoperative diagnosis².

Clinically, PT presents as an extensive and painless unilateral breast mass, distending the overlying skin and superficial veins. Bloody nipple discharge may occur due to tumor infarction. Axillary lymph node enlargement is common, but the presence of lymph node metastasis is rare³.

Treatment is based on complete excision of the lesion, with 1-cm margins. Surgical success, reduction of local recurrence rates, and the emergence or not of metastases depend on surgical tumor resection with free margins^{2,3}.

In this study we describe a case of a young patient with a fast-growing lesion in the right breast, with a palpable ipsilateral axillary lymph node. The perioperative anatomopathological examination of sentinel lymph nodes showed involvement in two of five lymph nodes, positive for malignancy. Modified radical

mastectomy surgery on the right side was performed with axillary dissection levels I and II and deep margin enlargement one month after the first consultation. The immunohistochemical profile demonstrated characteristics compatible with malignant phyllodes tumor with a proliferation index of 50%. The patient underwent complementary chemotherapy.

CASE REPORT

P.T., 29 years old, woman, smoker (34 pack-years), with no family history of cancer, was referred to the consultation by the Health Center with a diagnosis of breast cancer on the right side. She presented with an ulcerated lesion on the central region of the right breast, reporting acute local pain. She reported having a breast lesion since the age of nine and receiving hospital follow-up and nodulectomy, losing the follow-up after ten years. She reported an increase in the breast injury in the last two months associated with intense mastalgia. She had the result of an anatomopathological examination, showing a poorly differentiated, pleomorphic, infiltrating neoplasm in the breast parenchyma, with the observation that the poor differentiation of the lesion did not allow physicians to determine whether it corresponded to a poorly differentiated carcinoma, lymphoma, or neoplasm of another histogenesis.

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On physical examination, she presented asymmetrical pendulous breasts due to the large increase in volume of the right breast, absence of palpable nodules in the left breast or axillary lymph node enlargement, right breast with a lesion measuring 9.0 x 9.0 cm, affecting the central region of the breast, with distortion of the nipple-areola complex and presence of palpable lymph node in the right axillary region, measuring about 1 cm, mobile, and painless (Figure 1).

At first, bone scintigraphy, computed tomography of the chest, pelvis, and abdomen were requested for staging. The chest tomography showed two solid, contiguous nodules, measuring 17 x 15 mm and 8 x 8 mm, with a suspicious aspect for metastatic disease, located in the periphery of the lateral basal segment of the right lower lobe. The other tests were within normal parameters.

Modified radical mastectomy surgery on the right side was performed with axillary dissection levels I and II and deep margin widening one month after the first consultation. The perioperative anatomopathological examination of sentinel lymph nodes showed involvement in two of five lymph nodes, positive for malignancy.

The anatomopathological examination of the lymph nodes showed the presence of six nodules, the largest measuring 3.5 x 1.5 x 1.0 cm and the smallest, 0.5 x 0.3 x 0.2 cm. When cut, they were firm, elastic, and brownish. Two of them came

positive for poorly differentiated metastatic malignant neoplasm. The specimen resulting from the right mastectomy measured 14 x 13 x 9 cm, with 731 g and skin without signs of retraction or macroscopic lesion. In the parenchyma, a whitish, hardened, poorly-delimited, and nodular lesion measuring 10 x 8 x 8 cm was observed, in addition to a deep margin of 2 x 2 x 2 cm.

The immunohistochemical profile demonstrated characteristics compatible with malignant phyllodes tumor with a proliferation index of 50%. Moreover, in a note from the immunohistochemical study in a right axillary lymph node specimen, it is suggested that the positivity only for the P53, P63, and β -catenin markers and the high proliferation index (Ki-67) may correspond to high-grade metastatic phyllodes tumor. We listed the markers of the surgical specimens in Tables 1 and 2.

After surgical treatment, the patient was referred to clinical oncology to undergo adjuvant chemotherapy. Tumor recurrence was observed 56 days postoperatively (Figure 2). The patient underwent two chemotherapy cycles, the first with anthracycline and cyclophosphamide, without satisfactory clinical response, and the second with doxorubicin and ifosfamide, but she developed significant toxicity and febrile neutropenia. The patient passed away about six months after the initial diagnosis.



Figure 1. Preoperative diagnosis: ulcerated lesion on the right breast.

Table 1. Immunohistochemical markers of the right breast and axillary lymph node.

Marker	Right mastectomy specimen	Right axillary lymph node
GCDFP-15	Not applicable	Negative
CKAE1/AE3	Negative	Negative
ER	Negative	Negative
PR	Negative	Negative
CK5/6	Not applicable	Negative
BCL2	Not applicable	Negative
Vimentin	Positive	Not applicable
CK7	Negative	Not applicable
CK20	Negative	Not applicable
GATA-3	Negative	Not applicable
E-cadherin	Negative	Not applicable
HER-2	Negative	Not applicable
Ki-67	Positive 50%	Not applicable
AMS	Multifocal positive	Not applicable
CD68	Negative	Not applicable
CD34	Negative	Not applicable

Table 2. Right axillary lymph node markers — frozen section.

Marker	Right axillary lymph node — frozen section
P53	Diffuse positive
P63	Diffuse positive
β -catenin	Diffuse positive
CD34	Negative
CD117/c-KIT	Negative
Ki67	Positive 90%

**Figure 2.** Local recurrence of the lesion on the right breast.

DISCUSSION

Phyllodes tumors are rare, accounting for less than 1% of all primary breast neoplasms. Composed of stromal and epithelial elements, they usually present as fast-growing and clinically-benign breast nodules in women in the fourth or fifth decades of life. When malignant, the lung is the organ most affected by distant metastases, which can be represented by solid nodules or thin-walled cavities⁴.

They are classified as benign, borderline, or malignant, according to several histological parameters (degree of cell stroma and atypia, number of mitoses, growth and nature of tumor borders), local recurrence capacity, and risk of metastasis. In addition, benign phyllodes tumors are very similar to fibroadenomas, making their differentiation difficult^{1,5}.

Recognizing the subtypes of phyllodes tumors is important because it allows predicting the clinical behavior of the disease: benign tumors can recur locally; borderline tumors can recur locally and have a very low risk of metastasis, while malignant tumors have a higher risk of metastatic behavior¹.

Sometimes, there may be doubts about the differentiation of borderline and malignant types. The most practical way to differentiate malignant tumors from borderline tumors is: when the lesion presents all histological changes, it should be considered malignant; and when it presents only some of the characteristics, borderline. The presence of heterogeneous malignant elements, such as liposarcoma, chondrosarcoma, or osteosarcoma, categorizes the tumor as malignant, regardless of other histological parameters. The most important microscopic pattern to determine the clinical behavior of these tumors is the impairment of surgical margins.

Borderline and malignant PTs have a metastasis rate between 25 and 31%, whereas the metastasis rate of benign forms is approximately 4%^{1,2}.

Histologically, the purely-benign forms have very little nuclear atypia and a mitotic capacity of less than 5/10 high-power fields, while malignant tumors have fibroepithelial architecture with a leaf-like intracanalicular pattern, projecting into dilated cystic spaces, accompanied by atypical stromal hypercellularity, with irregular margins and mitotic activity of at least 10/10 high-power fields^{1,5}.

Clinically, the phyllodes tumor presents as an extensive and painless unilateral breast mass, distending the overlying skin and superficial veins. Its size can occupy the entire breast. In addition, bloody nipple discharge caused by tumor infarction may occur.

Axillary lymph node enlargement is common; however, the presence of lymph node metastasis is rare as well as ulceration and retraction of the nipple. About 20% of patients have palpable axillary lymph nodes on physical examination, but only 5% are demonstrably metastatic. In mammography, it is possible to identify a round, lobulated, and dense mass, with circumscribed margins, and it may rarely present calcifications.

Nonetheless, these findings are also compatible with fibroadenoma, and it is not possible to differentiate them at mammography, in such a way that FNA and core biopsy are the basis for preoperative diagnosis.

At ultrasound, a hypoechoic mass with circumscribed or partially defined edges is identified; in the malignant phyllodes tumor, usually there is an associated cystic component, making ultrasound the method of choice for initial investigation^{2,3}.

Treatment is based on complete excision of the lesion, with 1-cm margins, which is often curative and reduces the risk of recurrence. According to the literature, routine lymph node excision is not recommended, as PTs most commonly present hematogenic and rarely lymph node dissemination (<1%)^{3,6}. Surgical success, reduction of local recurrence rates, and the emergence or not of metastases depend on surgical tumor resection with free margins, a less aggressive technique and equally effective when compared to mastectomy. The treatment decision — wide local excision vs. mastectomy — should be guided by lesion size and surgical feasibility^{2,3}. In cases of local recurrence, the treatment is wide-margin resection. To date, there are no direct guidelines as for the use of radiotherapy or chemotherapy⁶.

There are five cases of phyllodes tumor with lymph node metastasis described in the literature, confirming the rarity of the finding. The patients were young and initially presented with a fast-growing painless breast mass, as in the present report⁷⁻¹¹.

CONCLUSIONS

Malignant phyllodes tumors rarely spread to the lymphatic system, although axillary lymph node enlargement is a common finding. At the beginning of the investigation, mammography and breast ultrasound are of great value, but FNA and core biopsy are the tests that support the preoperative diagnosis.

Treatment is based on complete excision of the lesion with free surgical margins, considering the high risk of recurrence of these tumors. Routine lymph node excision is not recommended, as lymphatic dissemination in this type of tumor is rare (<1%). When there is recurrence, the treatment is still wide-margin resection. To date, there is no consensus on the use of adjuvant chemotherapy or radiotherapy.

Thus, in view of the rarity of the case and its poor prognosis, its notification in the medical literature is paramount.

AUTHORS' CONTRIBUTION

GV: conceptualization, data curation, investigation, methodology, resources, project administration, supervision, visualization, writing – review & editing. JCL: conceptualization, resources, project administration, visualization, writing – review & editing. HZL: conceptualization, data curation, formal analysis, investigation, methodology, project administration, supervision, visualization, writing – original draft, writing – review & editing. GB: conceptualization, data curation, investigation, methodology, writing – original draft, visualization, writing – review & editing.

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