

# Complete remission of giant malignant phyllodes tumor with lung metastasis

## A case report

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### Abstract

**Rationale:** Malignant phyllodes tumors are rare breast neoplasms that are associated with a 6.2% to 25% incidence rate of distant metastasis; the lung is the most common metastatic site. To date, there is no consensus regarding the treatment of metastatic malignant phyllodes breast tumors.

**Patient concern:** A 48-year-old woman was admitted into the breast clinic for a rapidly growing right breast tumor that was first noticed 1 month prior.

**Diagnosis:** Core needle biopsy revealed a malignant phyllodes tumor. A chest computed tomography and positron emission tomography/CT showed metastatic lymph nodes that appeared to have spread to the right axilla, as well as multiple solitary pulmonary nodules in the right lung. Fine needle aspiration on the axillary lymph node confirmed metastasis.

**Interventions:** A right mastectomy with axillary lymph node dissection was conducted and a thoracoabdominal flap and a split thickness skin graft were performed for the skin defect. Palliative chemotherapy with doxorubicin plus ifosfamide was performed.

**Outcomes:** An examination conducted 3 years postsurgery showed no signs of recurrence, and the patient's overall health status was satisfactory.

**Lessons:** As standard treatment guidelines for metastatic malignant phyllodes tumors are lacking, we opted for the aforementioned aggressive treatments that resulted in complete remission of the lung metastasis. Therefore, aggressive treatment, whenever possible, is warranted.

**Abbreviations:** CT = computed tomography, FNA = fine needle aspiration, PET = positron emission tomography.

**Keywords:** complete remission, malignant, metastasis, phyllodes tumors

## 1. Introduction

Phyllodes tumors are uncommon fibroepithelial breast tumors that account for <1% of all breast tumors.<sup>[1]</sup> They are predominantly found in women of median ages of 42 to 45 years.<sup>[2]</sup> Approximately 16% to 30% of phyllodes tumors are malignant<sup>[3]</sup>; while difficult to identify, they are generally characterized by rapidly growing huge masses that may present

with delayed metastases, mainly to the lung.<sup>[4]</sup> Surgery with sufficient resection margins is the standard treatment for phyllodes tumors, and adjuvant radiotherapy is recommended to reduce local recurrence. Adjuvant chemotherapy is suggested for selected patients with large, high risk, or recurrent tumors only after thorough evaluation. But, no standardized therapy for treating these tumors exists to date.

Herein, we report a patient with lung metastases from a malignant phyllodes tumor of the breast who had complete remission after treatment with surgery and chemotherapy.

## 2. Case report

A 48-year-old woman was admitted into the breast clinic of this hospital for a rapidly growing right breast tumor that was first noticed 1 month prior.

On physical examination, a massive tumor occupying the entire right breast was observed. The skin had been stretched thin, with areas of necrosis as well as engorgement with a stretched superficial vein (Fig. 1). There were no abnormal findings in the patient or family records.

Breast ultrasound showed a massive tumor with cystic components occupying the entirety of the right breast. Core needle biopsy revealed a malignant phyllodes tumor. A chest computed tomography (CT) and positron emission tomography (PET)/CT showed metastatic lymph nodes that appeared to have

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**Figure 1.** A giant phyllodes tumor of right breast in a 48-year-old woman.

spread to the right axilla, as well as multiple solitary pulmonary nodules in the right lung (Fig. 2). Fine needle aspiration (FNA) on the axillary lymph node confirmed metastasis.

A right mastectomy with axillary lymph node dissection was conducted (Fig. 3A) and a thoracoabdominal flap and a split thickness skin graft were performed for the skin defect (Fig. 3B). On the seventh day postsurgery, necrosis was detected on the upper pole site of the thoracoabdominal flap; hence, debridement and a second split thickness skin graft were performed.

Gross examination revealed a tumor  $15.5 \times 13.5 \times 13$  cm in size, weighing 4.3 kg. A minimum 1 cm surgical resection margin was secured on all sides except for the posterior margin ( $>0.1$  cm).

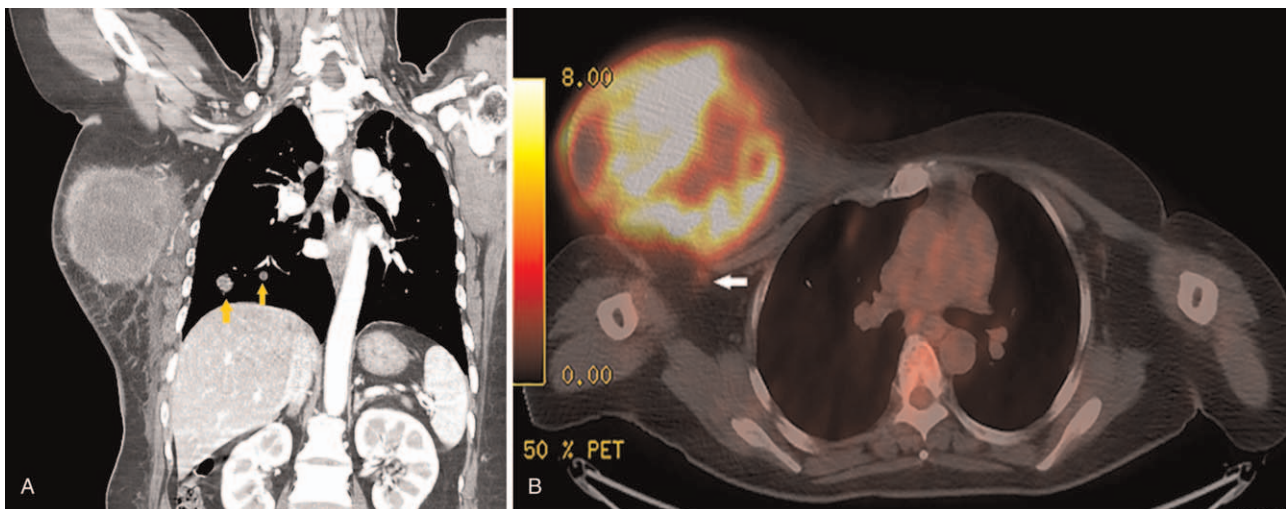
Microscopic examination revealed stromal overgrowth, high stromal cellularity, high stromal atypia, a high mitotic rate (38/10 HPF), and an infiltrative tumor margin. Among the 32 lymph nodes removed from the axilla, 1 exhibited invading tumor cells.

Palliative chemotherapy with doxorubicin ( $30 \text{ mg/m}^2$  administered intravenously push on days 1–2) plus ifosfamide ( $7.5 \text{ g/m}^2$  administered intravenously over 48 hours) was planned for 1 cycle every 3 weeks, and abdominal and chest CTs were performed to evaluate the response to chemotherapy every 4 cycles. However, the healing of the skin graft was delayed, and chemotherapy was postponed; on chest CT before chemotherapy initiation, the tumor size and number of lung metastases had increased before surgery. The first chemotherapy treatment was administered 2 months after surgery; however, neutropenia occurred after the fifth course. The dose was reduced to 80%, but neutropenia persisted. CT showed a partial response through a reduction in the size and number of pulmonary nodules; therefore, ifosfamide alone was administered, but the neutropenia persisted. Evaluation 1 year after surgery showed no pulmonary nodules remaining. Subsequently, cancer treatment was halted and regular follow-up ensued. An examination conducted 3 years postsurgery showed no signs of recurrence, and the patient's overall health status was satisfactory. The patient provided written informed consent for publication of the case details.

### 3. Discussion

Phyllodes tumors occur in 2 types of breast tissues: stromal (connective) and glandular (lobule and duct). The stroma contains the neoplastic component and has the potential to metastasize.<sup>[5]</sup> Phyllodes tumors are classified as benign, borderline, and malignant based on their histological characteristics, including stromal cellular atypia, mitosis, degree of stromal overgrowth, and tumor necrosis and margins.<sup>[6]</sup>

The standard treatment for phyllodes tumors is wide excision with sufficient surgical margins.<sup>[7]</sup> Surgical margins of  $>1$  cm have been associated with lower local recurrence rates in borderline and malignant phyllodes tumors.<sup>[8]</sup> However, securing a sufficient margin is difficult in most cases because of huge tumor sizes that can occupy the entire breast, and complete mastectomy is often required.<sup>[9]</sup> However, skin that is stretched thin, exhibits ulcers, and/or has necrosis may also require



**Figure 2.** Preoperative radiologic evaluation. (A) Chest computed tomography (CT) showed a huge mass with multiple pulmonary nodules. (B) Positron emission tomography/CT showed a right axillary lymph node, as well as multiple solitary pulmonary nodules with hypermetabolism.



**Figure 3.** Operative findings. (A) Right mastectomy with axillary lymph node dissection; (B) thoracoabdominal flap and a split thickness skin graft.

extensive removal during surgery; this can lead to difficulties in primary suturing owing to extensive skin loss, necessitating a compensatory flap. In our case, a thoracoabdominal flap and split thickness skin graft were used after the mastectomy, and a surgical margin of  $\geq 1$  cm was secured in all directions except the posterior margin.

Hematogenous spread is the most common metastatic route, and the lungs is the most common sites.<sup>[4]</sup> Axillary lymph node involvement is rare, and routine axillary surgery is not recommended.<sup>[10]</sup> However, in our patient, suspicious lymph node involvement accompanied by hypermetabolism in the right armpit was observed on preoperative PET/CT, which was diagnosed as a metastasis via FNA; axillary dissection found 1 of 32 lymph nodes to be metastatic. Hence, we recommend sentinel lymph node biopsy in patients with palpable lymphadenopathy, large phyllodes tumor, or suspicious lymph node involvement on preoperative imaging.

The efficacy of palliative chemotherapy for metastatic malignant phyllodes tumor is unknown. Ifosfamide is considered the most active agent for metastatic malignant phyllodes tumors<sup>[11]</sup>; doxorubicin and dacarbazine have been reported to be effective when administered with cisplatin or ifosfamide.<sup>[12]</sup> In our patient, multiple lung metastases were found on

initial diagnosis, and advanced further during the postoperative recovery period. As standard treatment guidelines for metastatic malignant phyllodes tumors are lacking, we opted for the aforementioned aggressive treatments that resulted in complete remission of the lung metastasis. Therefore, aggressive treatment, whenever possible, is warranted.

Despite the lack of prospective data, chemotherapy has been proposed as a neoadjuvant therapy for locally advanced breast sarcomas.<sup>[13]</sup> In our case, chemotherapy was delayed owing to an injury sustained during the postoperative recovery period, resulting in lung metastasis progression by the time the patient was ready for chemotherapy. Accumulation of additional data may support performing preoperative systemic treatment in patients with advanced malignant phyllodes tumors.

### Author contributions

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