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Malignant Phyllodes Tumor of The Breast: A Rare Case Report

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Abstrak. Tumor phyllodes (PT) adalah neoplasma payudara fibroepitel langka, yang merupakan kurang dari 1% dari semua keganasan payudara. Tumor phyllodes (PT) diklasifikasikan menjadi jinak, borderline, atau ganas berdasarkan karakteristik histologis. Tumor phyllodes (PT) ganas sering muncul sebagai massa yang tumbuh cepat dan tidak menimbulkan rasa sakit yang dapat menyebabkan perubahan kulit yang terlihat. Penelitian ini mengangkat kasus pada seorang wanita berusia 46 tahun menunjukkan massa yang menyakitkan dan tumbuh cepat di payudara kanan, berukuran sekitar 20×20cm, dengan ulserasi kulit dan perdarahan. Temuan ultrasonografi dan histologis menunjukkan bahwa wanita tersebut sebagai pasien terkena tumor phyllodes ganas. Pasien tersebut harus menjalani mastektomi radikal, termasuk pengangkatan tumor, jaringan payudara, dan kelenjar getah bening yang terkena, sambil mempertahankan struktur anatomi yang kritis. Tumor phyllodes (PT) ganas adalah tumor agresif yang membutuhkan eksisi luas untuk mencapai kontrol lokal yang optimal. Kasus ini menyoroti tantangan mendiagnosis dan mengelola PT besar dan menggarisbawahi pentingnya evaluasi histologis menyeluruh. Peran terapi adjuvan seperti radioterapi dan kemoterapi masih belum pasti tetapi dapat dipertimbangkan dalam kasus tertentu.

Kata kunci: Tumor Phyllodes, Payudara, Kanker, Mastektomi, Pemeriksaan Histologi

Abstract. Phyllodes tumor (PT) is a rare fibroepithelial breast neoplasm, accounting for less than 1% of all breast malignancies. Phyllodes tumor (PT) is classified as benign, borderline, or malignant based on histologic characteristics. Malignant phyllodes tumor (PT) often presents as a fast-growing, painless mass that may cause visible skin changes. This study presents a case of a 46-year-old woman presenting with a painful, rapidly growing mass in the right breast, measuring approximately 20x20cm, with skin ulceration and bleeding. Ultrasonographic and histologic findings indicated that the woman had a malignant phyllodes tumor. The patient underwent a radical mastectomy, including removal of the tumor, breast tissue, and affected lymph nodes, while preserving critical anatomic structures. Malignant phyllodes tumor (PT) is an aggressive tumor that requires wide excision to achieve optimal local control. This case highlights the challenges of diagnosing and managing a large PT and underscores the importance of a thorough histologic evaluation. The role of adjuvant therapies such as radiotherapy and chemotherapy remains uncertain but may be considered in certain cases.

Keywords: Phyllodes Tumor, Breast, Cancer, Mastectomy, Histology Examination

INTRODCUTION

Phyllodes tumors (PTs) are fibroepithelial neoplasms differentiated from fibroadenomas by their leaf-like projections and increased stromal cellularity on histology. These rare tumors comprise less than 1% of all malignancies of the breast and only 2–3% of fibroepithelial lesions (Amersi & Calhoun, 2018). The World Health Organization (WHO) currently classifies PTs into three categories: benign (60-75%), borderline (13-26%), or malignant (10-20%) according to a combination of histological features, including stromal cellularity, nuclear atypia, mitotic activity, stromal overgrowth, and tumor margin (Abe et al., 2020). Malignant phyllodes tumors, although rare, represent a significant clinical challenge due to their unpredictable behavior and potential for aggressive growth.

These tumors are characterized by marked stromal atypia, high mitotic activity, and infiltrative margins, contributing to a higher risk of local recurrence and metastasis compared to their benign counterparts (Mustață et al., 2021; Suan et al., 2023; Tomé et al., 2023). In most cases, PTs present as painless masses, often with a history of rapid growth, which can cause visible skin changes and the development of varicose veins as the tumor pushes against the skin (Amersi & Calhoun, 2018). Standard imaging, such as mammograms and ultrasound evaluations, is recommended for breast lumps; however, these studies may not provide definitive differentiation between phyllodes

tumors and other breast lesions (Kim & Lee, 2019; Lohitvisate et al., 2024).

Pathology examination remains the gold standard for the diagnosis of PTs, with core biopsy or excisional biopsy used for diagnosis (Mustață et al., 2021). Once a diagnosis of PTs is confirmed or suspected, the mainstay of treatment is surgical excision, with the goal of achieving clear margins to minimize the risk of recurrence (Moon et al., 2019; Suan et al., 2023). However, the size and location of these tumors can pose significant challenges, often requiring mastectomy in cases where clear margins cannot be obtained (Moon et al., 2019).

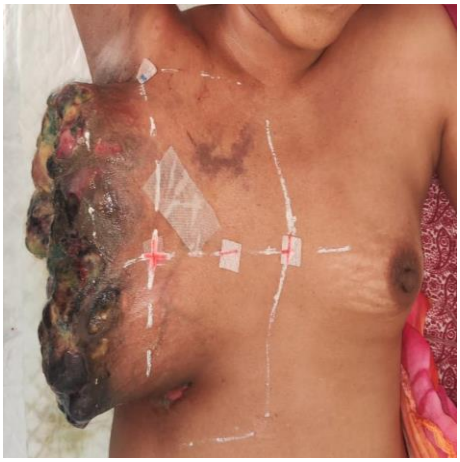
Histologically, malignant phyllodes tumors exhibit a diverse range of differentiation, including heterologous elements such as osteosarcoma or chondrosarcoma, which are exceedingly rare but documented in the literature (Asotra et al., 2023; Ko, 2023). The presence of these components can further complicate clinical management and prognostication. Moreover, malignant phyllodes tumors have been associated with various molecular markers, including vascular endothelial growth factor receptor (VEGFR) and epidermal growth factor receptor (EGFR), which may play a role in tumor behavior and response to therapy (Mizoguchi et al., 2021; Tada et al., 2022; Tong et al., 2024).

The prognosis for patients with malignant phyllodes tumors is variable and influenced by several factors, including tumor size, histological grade, and the presence of metastases at diagnosis (Mustață et al., 2021; Tomé et al., 2023). Studies indicate that larger tumors (>5 cm) and those with high mitotic activity are associated with a poorer prognosis (Moon et al., 2019; Mustață et al., 2021). Furthermore, the risk of metastasis, particularly to the lungs, is a significant concern, with reports indicating that up to 40% of malignant phyllodes tumors may develop distant metastases (Yamamoto et al., 2019). In recent years, there has been increasing interest in the role of systemic therapies for malignant phyllodes tumors, particularly in cases of advanced disease or recurrence (Parkes et al., 2021).

Chemotherapy regimens, including doxorubicin and ifosfamide, have shown some efficacy, although responses can be variable and are often not substantial (Yamamoto et al., 2019). The exploration of targeted therapies and novel agents is ongoing, with the hope of improving outcomes for patients with this challenging malignancy (Parkes et al., 2021). In conclusion, malignant phyllodes tumors of the breast present a unique set of challenges in diagnosis and management. Their rarity, combined with the potential for aggressive behavior and varied histological features, necessitates a multidisciplinary approach to treatment. Ongoing research into the molecular underpinnings of these tumors and the development of standardized treatment protocols will be crucial in improving patient outcomes and understanding the biology of this rare neoplasm.

CASE

A 46-year-old female presented to our hospital with complaints of pain from a lump in her right breast, which had been present for the past two days. Initially, the pain was intermittent for about a week but had worsened significantly over the last two days. The patient had a notable medical history, including a right breast lump that had progressively enlarged over the past year and ruptured in July 2023. She had undergone chemotherapy once at Centra Medika Hospital and once at Kandou Manado Hospital, in addition to a history of 10 sessions of chemoradiotherapy. This background raised concerns about the nature of the breast lump, given the patient's previous treatment for malignancy. Upon physical examination, the patient exhibited significant local pain. The skin over the lateral quadrant of the right breast showed signs of surface sloughing and bleeding, indicating possible necrosis or ulceration. Notably, the right breast was considerably larger than the left, with a tumor measuring approximately 20 cm × 20 cm protruding from the skin, suggesting advanced disease (Figure 1 and Figure 2). The visual examination was corroborated by ultrasound findings, which indicated a malignant tumor, likely a malignant phyllodes tumor, classified as BIRADS 4 class 4a. This classification suggested a moderate to high suspicion of malignancy, warranting further investigation and intervention. Histological examination confirmed the presence of a malignant tumor, consistent with the ultrasound findings.



Source: pocessed data

Figure 1
The Right Phyllodes Tumor

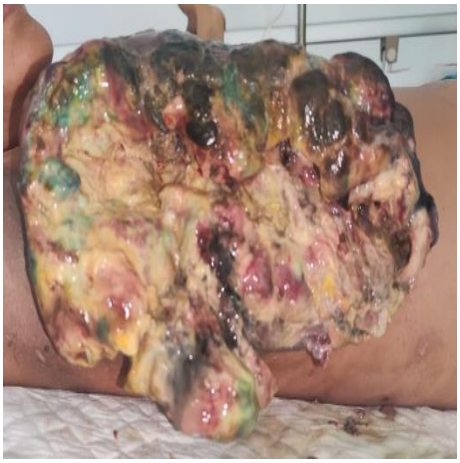


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Figure 2
The Right Phyllodes Tumor

Laboratory results revealed significant hematological abnormalities, with a hemoglobin level of 8.6 g/L, indicating anemia, and a white blood cell count of 40.09 × 10^9/L, suggestive of a possible inflammatory or infectious process, or a response to malignancy. These findings underscored the urgency of the clinical situation and the need for prompt surgical intervention. The patient subsequently underwent a right breast mastectomy. A 20 cm incision was made adjacent to the tumor tissue, and a skin flap was created in four directions: superior, inferior, lateral, and medial (Figure 3). The incision was deepened until the tumor base was reached, revealing that the tumor had infiltrated the pectoralis major and minor muscles, as well as the axillary vein. This infiltration indicated an aggressive tumor behavior, complicating the surgical approach. During the procedure, further examination of the axilla revealed nodules in the axillary lymph nodes, suggesting possible lymphatic spread of the malignancy (Figure 4).

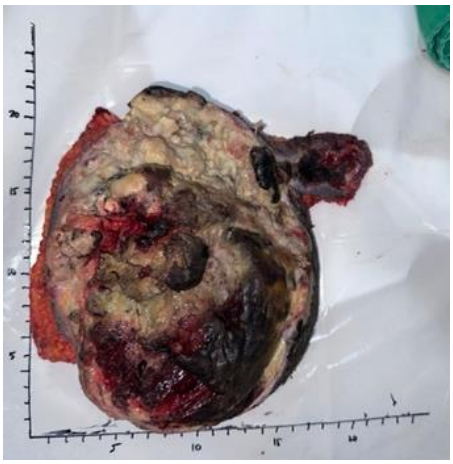

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Figure 3
Intraoperative image of excised tumor measuring 20 cm

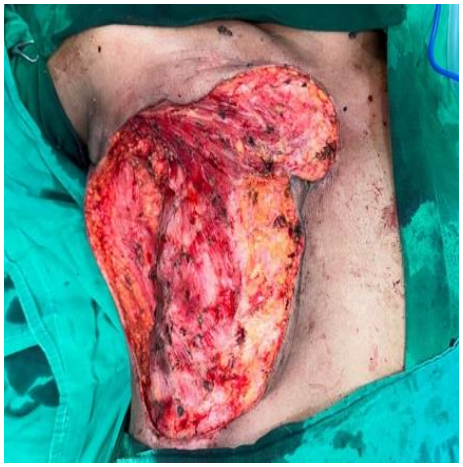

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Figure 4
The Right Mastectomy

Given the extent of the disease, a radical mastectomy was performed, which involved the removal of the tumor along with the entire breast tissue and nipple-areolar complex. Importantly, the surgical team took care to preserve critical structures, including the thoracodorsal vessels and nerve, long thoracic nerve, intercostobrachial nerve, pectoral muscles, and axillary vein. The en bloc removal of all affected tissue aimed to achieve clear margins and minimize the risk of local recurrence. Postoperatively, the patient was monitored closely for complications, including infection, bleeding, and pain management. The surgical pathology report will provide further insights into the tumor's characteristics, including grade

and margins, which will guide adjuvant treatment options. Given the patient's history and the aggressive nature of the tumor, a multidisciplinary approach involving oncology, radiology, and pathology will be essential for her ongoing management and care. The case highlights the complexities of diagnosing and treating malignant phyllodes tumors, particularly in patients with a history of breast malignancy.

RESULT

Phyllodes Tumors: A Case Report

Phyllodes tumors (PTs) are rare fibroepithelial breast lesions that account for less than 1% of all breast tumors. They often mimic benign breast masses like fibroadenomas in clinical diagnosis but can be distinguished by their characteristic rapid growth. PTs are most commonly diagnosed in middle-aged women, typically between the ages of 35 and 55, with an average age of presentation around 45 years (Abe et al., 2020). Despite their resemblance to fibroadenomas, PTs have a unique histological architecture and a wide spectrum of clinical behavior, ranging from benign to highly aggressive malignant forms. The diagnosis of PTs requires histological examination, as imaging and clinical features alone are insufficient to differentiate them from other benign or malignant breast lesions. This case underscores the importance of histologically evaluating all excised breast lumps rather than assuming that all benign-appearing breast masses are fibroadenomas. Histological confirmation prevents misdiagnosis, which can result in delayed or inappropriate treatment. In this case, histological analysis revealed a malignant phyllodes tumor, emphasizing the critical need for thorough pathological evaluation (Yahaya, 2020). Malignant PTs are characterized by their aggressive growth potential and, in some cases, can become giant tumors (greater than 10 cm in diameter) within a short period, often less than a year. The patient in this report first noticed the tumor at age 45. Over time, the tumor grew rapidly, leading to its classification as a giant malignant phyllodes tumor. The preoperative diagnosis was malignant phyllodes tumor mammae dextra, and a modified radical mastectomy was performed. The surgical procedure was successful, with approximately 200 mL of blood loss.

Surgical Treatment for Phyllodes Tumors

Surgery remains the primary treatment for PTs, but the specific surgical approach is highly debated. Malignant phyllodes tumors should be managed with wide local excision to achieve negative margins, which are crucial for optimal local control. Per National Comprehensive Cancer Network (NCCN) guidelines, resection margins should be at least 1 cm, although the evidence supporting this recommendation is limited. Some studies have not shown a significant survival benefit when comparing negative margins with margins exceeding 1 cm. Nevertheless, achieving negative margins is essential to reduce the risk of local recurrence (Amersi & Calhoun, 2018; Dong et al., 2024). Breast-conserving surgery is an option for many patients with malignant PTs; however, for tumors that are large or expected to result in unacceptable cosmetic outcomes, mastectomy may be the preferred approach. Malignant PTs often present with a pseudocapsule of dense normal breast tissue, which may contain microscopic projections of the tumor. This feature necessitates wider resection than is typically performed for other breast lesions to achieve the recommended 1 cm margins. An elliptical excision is often used to remove the tumor en bloc, including a portion of the overlying skin (Dong et al., 2024). In this case, the surgical team performed a radical mastectomy, removing the tumor along with the entire breast tissue and nipple-areolar complex while preserving vital structures, including the thoracodorsal vessels and nerve, long thoracic nerve, intercostobrachial nerve, pectoral muscles, and axillary vein. The tumor and associated tissues were removed en bloc, ensuring complete excision.

Role of Adjuvant Therapy

The role of adjuvant radiotherapy and chemotherapy in managing malignant phyllodes tumors remains uncertain. While these therapies may be considered for patients with large tumors, positive margins, or other high-risk features, current evidence does not support a clear survival benefit. Radiotherapy may be used selectively for patients with positive margins or recurrent disease to improve local control. However, long-term outcomes with radiation therapy remain inconclusive, and further studies are needed to establish its efficacy (Amersi & Calhoun, 2018; Silalahi & Mirton, 2023). Chemotherapy is generally reserved for patients

with metastatic disease or those at high risk of recurrence, but the lack of substantial data makes its routine use controversial. Each case should be evaluated individually, taking into account tumor size, histological grade, and the patient's overall condition.

Case Outcome and Implications

This case of a 45-year-old woman with a malignant phyllodes tumor highlights the aggressive nature of this rare breast malignancy and the challenges associated with its management. The successful radical mastectomy, performed with attention to preserving vital structures and achieving complete excision, demonstrates the importance of a meticulous surgical approach. Additionally, the case underscores the need for histological examination of all excised breast lumps, particularly those that exhibit rapid growth or atypical features. Despite surgical success, the lack of consensus on adjuvant therapies for malignant PTs presents a clinical challenge. While surgical resection remains the cornerstone of treatment, ongoing research is essential to clarify the roles of radiotherapy and chemotherapy in improving outcomes for patients with malignant PTs. Multidisciplinary collaboration and individualized treatment plans are critical for optimizing patient care and ensuring the best possible outcomes. In conclusion, phyllodes tumors are rare but clinically significant breast lesions that require prompt and accurate diagnosis. This case emphasizes the importance of histological evaluation, appropriate surgical management, and consideration of adjuvant therapies for malignant PTs. Future studies are needed to better understand the biology of these tumors and refine treatment strategies to improve long-term outcomes for affected patients.

CONCLUSION

Diagnosis was confirmed through histological examination following imaging studies, which indicated a malignant nature of the tumor. The patient underwent a radical mastectomy, successfully removing the tumor along with affected breast tissue and lymph nodes, while preserving critical nerves and vessels. This case underscores the importance of thorough histological evaluation of breast lumps to avoid misdiagnosis and highlights the aggressive growth potential of malignant PTs. Surgical excision remains the primary treatment, with careful consideration needed regarding margins to ensure optimal local control. The role of adjuvant therapies like radiotherapy and chemotherapy is still under investigation, particularly for larger tumors with positive margins. Overall, this case emphasizes the need for vigilance in diagnosing and treating phyllodes tumors due to their rarity and potential for aggressive behavior.

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