Case Report

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Giant Malignant Phyllodes Tumour of Breast with Rapid Progression: A Case Report

Pathology Section

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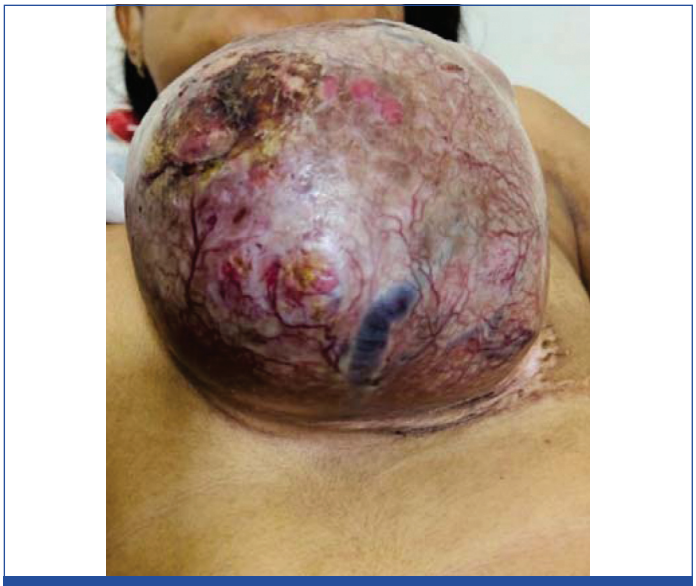
ABSTRACT

A Phyllodes Tumour (PT) is a fibroepithelial neoplasm that normally does not include lymph nodes and usually develops in the third or fourth decade of life. Recurrent phyllodes tumour has the potential to develop into a more aggressive form of the original tumour. PT is a challenging diagnosis as it is very uncommon with a prevalence rate of <1% and due to histological and radiological overlapping with other lesion. They are typically seen in women aged 40-50 years. With patient specific treatment, adequate margins are crucial for a favourable outcome, and surgical excision is still the gold standard of care. Regarding the guidelines for systemic chemotherapy, hormone therapy and radiation therapy, there is currently no agreement. This case involves a 25-year-old woman who discovered a huge palpable mass about 13×12×11 cm with axillary lymph-node. The breast skin showed dilated blood vessels and ulceration. She gave history of similar type of mass before eight months for which surgery was done outside in some hospital. She had a negative family history of breast cancer, was nulliparous with normal menstrual cycles and had no record of trauma. She was anaemic with haemoglobin level of 5 g/dL. No distant metastasis was found on clinical and radiological examination. The patient had a left breast mastectomy, along with partial muscular adhesion to the tumour being removed and axillary lymph node dissection. Pathological confirmation of the malignant phyllodes tumour diagnosis was obtained. She passed away three days after surgery because of cardiopulmonary arrest and severe anaemia with sepsis. Our case serves to emphasise the need of promptly identifying and treating this uncommon breast tumour.

Keywords: Axillary lymph-node, Fibroepithelial, Mastectomy, PET scan

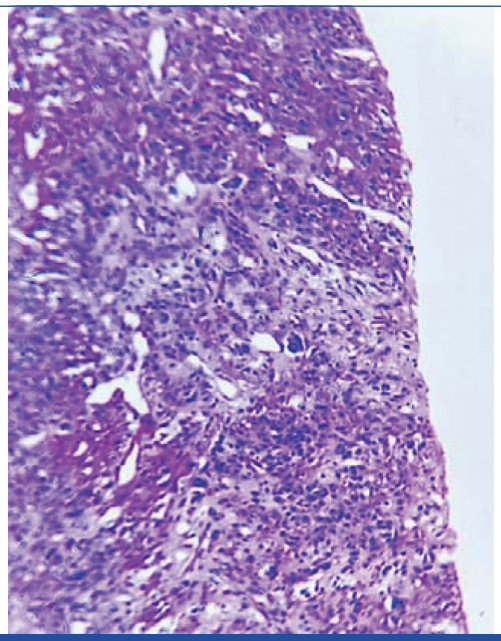
CASE REPORT

A 25-year-old female patient came with a complaint of lump in her left breast since five months with rapid growth in the last two months. The breast skin showed obvious dilated blood vessels and ulceration [Table/Fig-1]. On examination the lump size was 13×12×11 cm. She had a negative family history of breast cancer, was nulliparous with normal menstrual cycles, has no record of trauma or comorbidities. Her haemoglobin was 8.8 g/dL when she arrived at hospital which rapidly declined to 5 g/dL. Her High-Performance Liquid Chromatography (HPLC) was normal which ruled out haemoglobinopathy. One pint Packed Red Cell (PCV) was transfused for low haemoglobin level. Her CT of the chest (plain) showed a large soft tissue mass measuring 11×11.5×12.5 cm involving left breast and closely abutting pectoralis muscles posteriorly without underlying rib erosion. High-Resolution Computed Tomography (HRCT) thorax showed a large mass with a well-defined border approximately 11.5×12.2×13 cm that included her entire left breast with enlarged axillary lymph nodes, largest measuring 1.5×0.7 cm. Her X-ray showed large mass in her left breast [Table/Fig-2]. USG abdomen and pelvis showed no abnormality. She described having similar kind of lump eight months prior for which surgery was performed outside in some hospital. Phyllodes tumour was the probable diagnosis as per the information provided by the current treating clinician but no information about its benign or malignant status was given. The core biopsy revealed a large stromal component, moderate to pronounced cellularity, moderately high focally high degree of atypia, apparent mitosis, and small foci of necrosis, but no epithelial component [Table/Fig-3]. A probable diagnosis of a stromal tumour, specifically a phyllodes tumour, was made based on the microscopic findings of the core biopsy. Positron Emission Tomography (PET) scan revealed a soft tissue mass with internal necrosis involving the entire breast. The axillary lymph nodes were metabolically inactive, suggesting reactive changes. No evidence of distant metastasis was observed. The patient underwent a left breast mastectomy with excision of tumour-adherent muscle and axillary lymph node dissection [Table/Fig-4]. Intraoperatively, a total of 795 mL of blood was transfused. Postoperative histopathological findings confirmed a malignant phyllodes tumour, characterised by predominantly atypical spindle-shaped stromal cells with enlarged nuclei. The epithelial component was not identified, and there was marked stromal overgrowth with mesenchymal differentiation, including cartilaginous areas [Table/Fig-5a]. The stromal component was extensive with moderate to pronounced cellularity, high degree of atypia [Table/Fig-5b], visible mitosis [Table/Fig-5c], stromal giant cell [Table/Fig-5d] and minor foci of necrosis with negative resection margins. The presence of secondary tumour deposits (0+/ 5) was not observed in any of the five histologically verified, reactively altered lymph nodes [Table/Fig-5e]. Patient died after three days of operation because of cardiopulmonary arrest and severe anaemia with sepsis.



[Table/Fig-1]: Enlarged breast swelling observed.

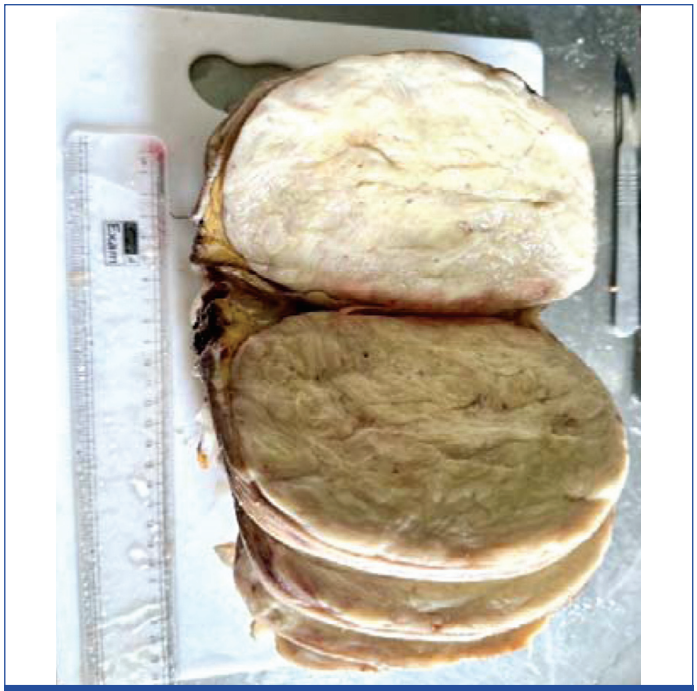
[Table/Fig-2]: X-ray demonstrating a large radio-opaque mass occupying the left breast.



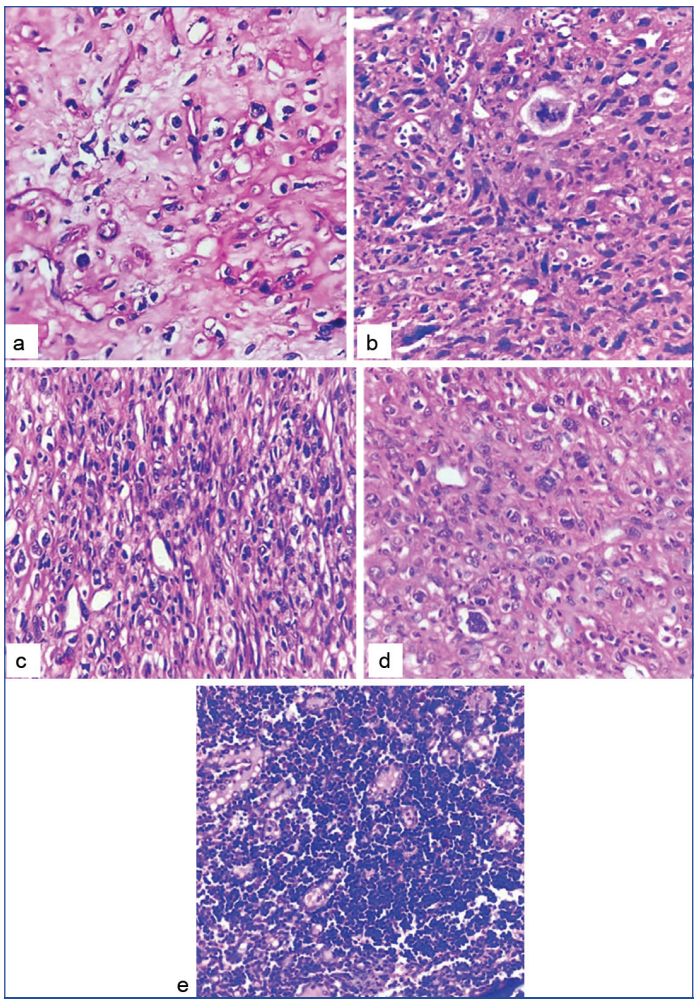
[Table/Fig-3]: Large stromal component, moderate to pronounced cellularity, high degree of atypia without epithelial component (H&E, 4x).

DISCUSSION

Breast cancer is currently the second most common cause of mortality among women. A rare form of breast cancer, phyllodes tumours of the breast account for between 0.3 and 0.5% of all breast cancers [1]. The term "phyllodes tumour" comes from the Greek word "phyllon," which means "leaf," and refers to the tumours lobed histopathological appearance [2]. Other names for it include adenomatous myxoma, pseudosarcoma adenoma, and cystosarcoma phyllodes [2]. An incidence of 1 in 100,000 has been observed for this rare kind of fibroepithelial neoplasm [3,4]. With an estimated occurrence of 2.1 per million women, these tumours have an exceptionally low incidence rate, with a higher prevalence among Latina white women [5]. They occur most commonly during the late fifth decade of life in females and they occur even more rarely in men [6]. Currently, the only known hereditary predisposition for the development of this type of tumour is Li-Fraumeni syndrome. As endothelin-1 modulates breast fibroblast proliferation, several studies suggest that factors such as pregnancy, stress, and hormonal imbalance may act as potential risk factors [7]. Phyllodes tumours are classified by the World Health Organisation (WHO) as benign (60%-75%), borderline (13%-26%), or malignant (6.5-27%) depending on the extent of stromal hypercellularity, cytological atypia, tumour boundary mitotic activity, and stromal overgrowth [4,5]. In benign phyllodes tumours, stromal atypia is mild, stromal



[Table/Fig-4]: Gross: Large round solid mass.



[Table/Fig-5]: a) Predominant stromal component showing a whorled, bossellated cut surface, with the mesenchymal component at the surface arranged in a leaf-like pattern, forming cartilaginous areas (H&E, 40×); b) High degree of atypia (H&E 40x); c) Visible mitosis (H&E 40x); d) Stromal giant cell (H&E 40x); e) Reactively altered lymph nodes (H&E 40x).

cellularity is only mildly increased, stromal overgrowth is absent, and mitotic count <5/10 High Powered Field (HPF) or <2.5/mm^2, the tumour border is well defined and there are no malignant heterogenous elements. Conversely, malignant phyllodes tumours exhibit marked stromal atypia, with diffusely increased stromal cellularity, stromal overgrowth, and a mitotic count of ≥10 per 10

HPF (or ≥5/mm²). The tumour borders are diffusely permeative, and malignant heterogeneous elements are present. Furthermore, malignant phyllodes tumours have a greater probability of disease recurrence, a lower overall survival rate, and distant metastases than their borderline or benign counterparts. They are also typically larger [5]. It was shown that stromal overgrowth, high stromal cellularity, large tumour size and mitotic rate are histological features associated with high risk of recurrence. Specifically, stromal overgrowth is a key predictor of disease relapse [7-9]. Haematogenous metastases occur in 9-27% of malignant cases, most frequently to the lungs (66%), bones (28%), and brain (9%) [8-10]. In just 2% of cases, axillary lymph node metastases were observed [11]. Song D et al., report a case of 48-year-old female having massive malignant phyllodes tumour accompanied by anaemia and ulceration in the breast like in present case [12]. Ahmadi N et al., also report a case report of rapid growth of malignant phyllodes tumour in young female same as our case [13].

There are several distinct radiographic features that may suggest a higher likelihood of a phyllodes tumour than a fibroadenoma. A phyllodes tumour may appear as a higher-density mass than the surrounding fibroglandular breast tissue on mammography. In addition, phyllodes tumour on ultrasound is more likely to appear round and lobulated with a marked posterior acoustic enhancement that is less likely to be associated with fibroadenoma. These lesions most often present as lobulated masses with well-defined contours and mixed internal architecture, including internal septations and foci of haemorrhage. They appear hypointense on T1-weighted images and show heterogeneous signal intensity on T2-weighted and STIR sequences. Ultrasound characteristics that may indicate a malignant form are: dominant hypoechoic structure, irregular contours and detectable vascularisation [5,14].

The best course of action for treating phyllodes tumours is surgery. Phyllodes tumours spread outward, compress the breast parenchyma nearby, and form a pseudo-capsule that allows the stroma's tongues to poke out and spread into the surrounding breast tissue. Because of this, a lot of authors recommend mastectomy as the best surgical treatment for phyllode tumours that are malignant or borderline. The usual treatments for breast cancer like hormone therapy and chemotherapy, do not work on malignant phyllodes tumours as the oestrogen receptors may be present in the epithelial components of a phyllodes tumour. The malignant behaviour is driven by the stromal cells, which lack sensitivity to standard hormone therapy and chemotherapy is reserveds for the case with distant metastasis. Chemotherapy regimens used should be more intense, different from common breast cancers and sarcoma-based. These patients should get strict monitoring with routine clinical and ultrasonography tests following surgical treatment [10,11].

CONCLUSION(S)

The phyllodes tumours, particularly malignant ones, are rarely considered in day-to-day regular check-ups, and that it is highly likely that these tumours will be overlooked. Given the high-risk of recurrence, it is imperative to be watchful in the timely detection and care of these rare tumours in order to promote the patient's good quality of life. Although unknown, the role of adjuvant chemotherapy and radiation therapy is encouraging. Future prospective trials including more patients are undoubtedly needed. This case emphasises how difficult it is to diagnose PTs, how crucial it is for surgeons, pathologists, and radiologists to work together effectively, and how crucial prompt treatment planning is to the best possible outcomes for patients. To lower the likelihood of tumour recurrence, a systematic therapeutic approach for malignant PTs must be established immediately.

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