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Case report Free Access

Giant benign phyllodes tumor equal to size of patient's abdomen: a case report

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Abstract

Introduction: Phyllodes tumor is a rare form of breast malignancy. Although the Phyllodes tumor rarely metastasizes, they can grow faster than any other breast tumor. Diagnosis and treatment are crucial, and surgery is the first line of action. Large tumors represent a surgical challenge because the excision with free margins is essential to prevent local recurrence and metastatic spread. In this presentation, we report a rare case of a giant Phyllodes tumor measuring 34x36x24 cm in a 58-year-old woman and a review of the literature highlighting some issues surrounding the management of phyllodes tumors.

Case Report A 58-year-old woman, without known relevant precedents, was admitted due to a large, ulcerated and infected mass in the left breast of dimensions 34x36x24 cm. An incisional biopsy report suggested haemorrhage and coagulative type of necrosis in overlying ulcer with FNAC showing inflammatory pathology. No distant metastasis was identified. After infection control, a left mastectomy was performed, with primary closure of the defect by mobilizing the skin flaps. The postoperative period was uneventful. Pathological examination revealed a 34x36x24 cm Phyllodes tumor with free margins. Patient was discharged in stable condition and followed up for six months with no added complaints.

Discussion: Clinically PT is traditionally a well delineated and circumscribed tumor such as fibroadenoma, albeit usually larger. The cut surface shows sliced spaces with interspersed of stromal overgrowth and the dilated ducts. Large tumors may rarely show hemorrhagic and necrotic areas, and malignant PT may have sarcoma-like cut surface. The proliferative activity of the PTs by Ki-67 index is now one of the WHO criteria for PT grading. Surgical therapy is the gold standard for the treatment of PTs but the kind of surgery has been a source of study and debate over the years. Benign PT may also transform into a higher grade and recur as borderline or malignant PT.

Conclusion: Phyllodes tumor is a rare breast tumor, with the malignant phenotype being the rarest of them all. Surgical therapy is the gold standard for the treatment of phyllodes tumors. Phyllodes tumors should be removed with, at least, 1 cm free margins, especially if they're malignant tumors. The role of adjuvant therapy is still controversial.

Keywords: Breast cancer, Fibroepithelial Neoplasm, phyllodes tumor, Fibroadenoma

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Introduction

Fibroepithelial breast tumors, including fibroadenoma and phyllodes tumor (PT), are biphasic neoplasms characterized by proliferation of both epithelial and stromal components. PT is a rare fibroepithelial neoplasm making up 0.3 to 0.5% of all breast tumors and approximately 2.5% of fibroepithelial tumors of the breast (1).

The clinical behaviour and prognosis of PTs are quite different from those of fibroadenoma. Patients with PT are usually 10 to 20 years older than patients with fibroadenoma, with an average age of 44 years. With a median size of 4cm, the PTs are often larger in size than fibroadenomas and occur isolated and unilaterally (2).

Approximately 20% of PTs grow larger than 10cm and there are few articles reporting PTs with a diameter larger than 30 cm. This giant PT may present focus of haemorrhagic and necrotic areas (3, 4).

The World Health Organization (WHO) classified the PTs histologically, as benign, borderline, or malignant according to its features such as tumor margins, stromal overgrowth, tumor necrosis, cellular atypia, nuclear pleomorphism and mitotic rate (5). Cellular atypia, mitosis, stromal overgrowth and surgical margins (‘‘AMOS criteria’’) are independent predictive factors of clinical behaviour and recurrence of PTs (6).

The majority of PTs are considered benign (35% to 64%), while malignant comprise about 25% of cases. Accurate preoperative pathological diagnosis allows correct surgical planning and avoids reoperation. At one extreme, malignant PTs, if inadequately treated, have a propensity for rapid growth and metastatic spread. In contrast, benign PTs on clinical, radiological, and cytological examination are often indistinguishable from fibroadenomas and can be cured by local surgery (7).

With the nonoperative management of fibroadenomas widely adopted, the importance of PTs today lies in the need to differentiate them from other benign breast lesions. In this article, we report a rare case of a giant PT in a 58-year-old lady and highlight some issues surrounding the diagnosis and management throughout this unusual case.

Case presentation

A 58-year-old woman, without known relevant precedents, presented to our surgery department with a giant breast mass. The patient stated she had noticed a small lump in her left breast three years earlier but ignored it and it progressively grows to this size within 18 months. At the time she admitted, the lump had become so large that the patient couldn’t walk properly, and have to lift her breast like a small baby. The patient decided to seek medical attention only after the tumor became necrotic and infected. Upon medical examination, the patient presented a giant mass with 36 cm maximum dimension almost replacing her left breast, with infected ulcerated area of 10*10 cm. The skin over the remaining mass was stretched and revealed dilated veins (Figure 1).

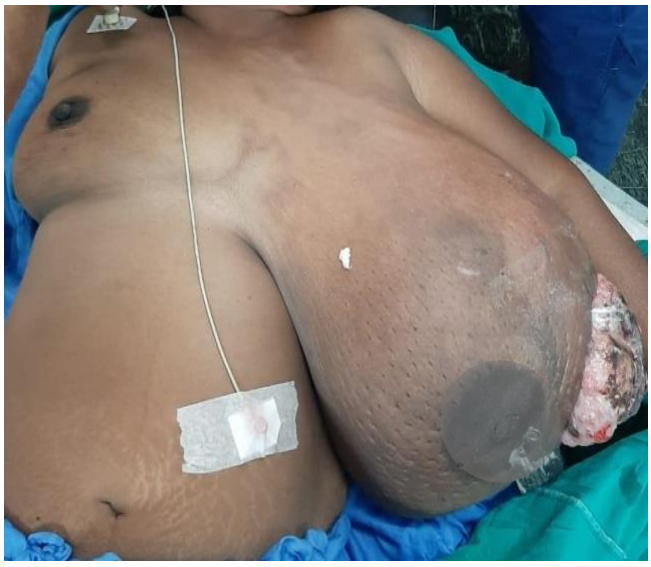

Figure 1. Preoperative on table picture of giant tumor.

After infection control, an incisional biopsy was performed and proceeded with staging studies such as blood tests, computed tomography (CT). The biopsy revealed only haemmorrhage and coagulative type of necrosis in overlying ulcer. FNAC was done and shows inflammatory lesion due to active infection. Distant metastasis was not identified. A left mastectomy was performed. The breast was removed with 1cm margin from the palpable mass, with the need to remove the

fascia and a superficial layer of the pectoral muscle (Figure 2).

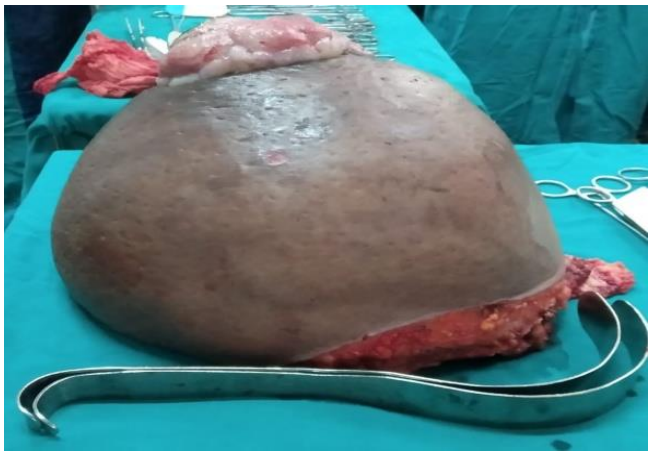

Figure 2. Mastectomy specimen.

Grossly the biopsy was 36*36*32 cm and weighed around 14.6kg. Lymphadenectomy was not performed. Primary closure of the defect was done and a suction drain placed after mobilizing the skin flaps (Figure 3).

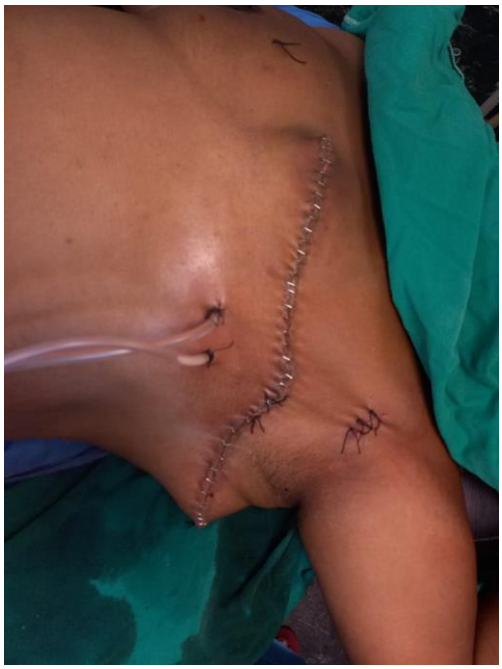

Figure 3. On table picture of primary closure of wound post mastectomy.

HPE showed features of phyllodes tumor (Figure4).

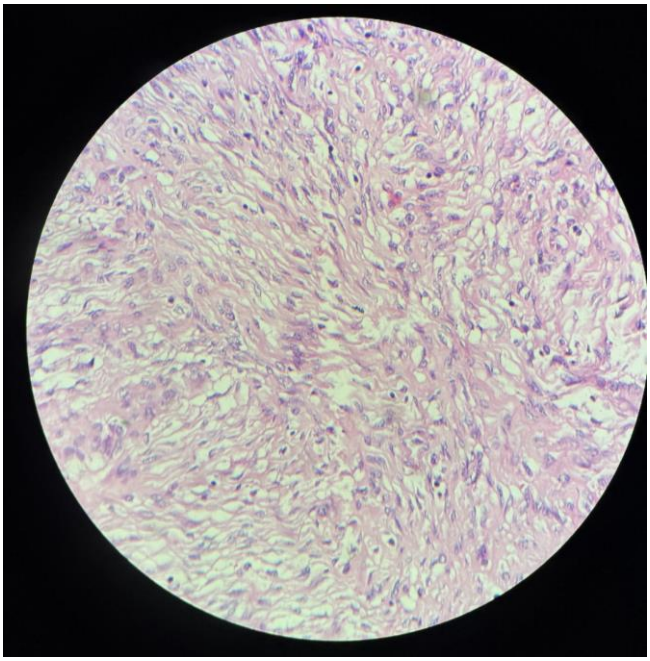

Figure 4. HPE slide.

The postoperative period was uneventful. The patient received no further treatment. The final histology reveals Benign Phyllodes tumor with free margins. No further investigations were performed. Patient was advised regular annual follow up with mammography.

Discussion

This case highlights the behavior and the potential of these tumors to grow aggressively and places an emphasis on the importance of an appropriate diagnosis and resection. Clinically PT is traditionally a well delineated and circumscribed tumor such as fibroadenoma, albeit usually larger. The cut surface shows sliced spaces with interspersed of stromal overgrowth and the dilated ducts. Large tumors may rarely show haemorrhagic and necrotic areas, and malignant PT may have sarcoma-like cut surface. Microscopically, PT present hypercellular stroma with the stromal elements being more numerous than the epithelial ones and with leaf like protrusions into the cystic spaces (1).

Due to the overlapping clinical and histological features between fibroadenomas and small PTs, many studies have shown the need for biomarkers for more accurate preoperative evaluation such as Ki-67, a nuclear protein expressed only in cycling cells, and

p53, a tumor suppressor, essential for cell cycle control, DNA damage repair, and apoptosis. Ki-67 has been significantly correlated with a diseasefree status and overall survival rates and is usually increased in both borderline and malignant PTs (8, 9).

The proliferative activity of the PTs by Ki-67 index is now one of the WHO criteria for PT grading. A p53 increase in PT is positively associated with an increased Ki-67 index. No p53 nuclear staining is observed in benign tumors or fibroadenomas. Immunohistochemistry for p53 may be helpful for grading PTs but not for the differentiation of fibroadenomas from benign tumors.Other biomarkers had been studied such as B-catenin, a protein expressed in nuclear of stromal cells that is increased from normal breast tissue to benign PTs to borderline PTs, and then decreased in malignant PTs. E-Cadherin is an adhesion molecule forming complexes with catenin's at epithelial cell to cell adherens junctions. It is only positive in the epithelial cells, not in stromal cells, and so is significantly correlated with an increased average time of recurrence. IMP3 is a novel biomarker for triple-negative invasive mammary carcinoma. Its expression is associated with a more aggressive phenotype and decreased overall survival and is also implied in malignant PTs (1).

Surgical therapy is the gold standard for the treatment of PTs but the kind of surgery has been a source of study and debate over the years. Studies have shown no differences between breast conserving surgery versus mastectomy as far as metastasis-free survival, despite the higher incidence of local recurrence that comes with breast conserving surgery. According to National Comprehensive Cancer Network (NCCN) Guidelines for the Management of PT, PTs should be removed with, at least, 1cm free margins, especially if they're malignant tumors. For benign PTs, a "watch and wait" policy may be safe. With such an approach, local recurrence in five years is 4% and survival rate 96%. If the decision is to perform a local excision, one should check the margins. Large tumors (usually larger than 10cm) imply a challenge for the surgeon. Since a local excision requires free margins, it's often impossible to perform a safety procedure on these patients and a mastectomy should be considered. If chest wall invasion occurs, an extended incision of the pectoral muscle should be performed, followed by reconstruction of the chest. There is no contraindication to immediate reconstruction after mastectomy in cases of giant PT (5).

The role of adjuvant therapy is controversial. The benefits of radiotherapy (RT) and chemotherapy (QT) in soft tissues sarcomas suggest that there may be room to use this therapies in PTs. Chaney et al. found adjuvant RT to be beneficial in patients with adverse features such as positive surgical margins, hypercellular stroma, high nuclear pleomorphism, high mitotic rate, presence of necrosis, and increased vascularity (10).

Richard J. et al demonstrated that margin-negative resection combined with adjuvant RT is an effective therapy for local control of borderline and malignant PTs (11). MD Anderson Cancer Center recommended RT only for tumors with positive surgical margins. QT, including anthracyclines, ifosfamide, cisplatin and etoposide or hormonal therapy such as tamoxifen has shown no benefits (5).

Local recurrence rate of PTs is 10% to 18% with negative and positive resection margins, respectively, and is also associated with inadequate excisions, mitotic activity and stromal cellular atypia and necrosis rather than with tumor size. In multivariable analysis, the surgical margins are found to be the only independent predictive factor for local recurrence. Tumor grade is a controversial subject. For many years it wasn't considered important for higher local recurrence, but recent studies showed that recurrence occurred in 8% to 10% of benign, 14% to 20% of borderline, and 29% to 50% of malignant PTs (6, 12).

Additionally, malignant PTs have the potential of systemic spread and 9% to 27% of this malignant PTs can also metastasize to distant organs through the lymphovascular way. The most common sites are the lungs (66%), bone tissue (28%) and central nervous system (9%). Benign PT may also transform into a higher grade and recur as borderline or malignant PT (12, 13).

Postoperative radiotherapy, however, proved to be effective in decreasing chances of recurrence,

regarding highly malignant phyllodes tumours and tumours of greater diameter (>2 cm) (14,15).

Since PTs are locally recurrent tumors, it is recommended to follow up with the patient regularly at a 6-month interval for the first two years because chances of recurrence are maximum in the first two years. Patients should be examined and if any abnormality is detected they should be subject to any one of these procedures: an ultrasonography, a mammogram, a magnetic resonance imaging (MRI), or a tissue biopsy. In our case, the patient presented a very large benign tumor (34x36x24 cm) with ulcerated area of 10x10 cm.

Conclusion

Phyllodes tumor is a rare breast tumor, with the malignant phenotype being the rarest of them all. Only 20% achieve a size bigger than 10cm and usually don't present with ulcerated areas, which turns this report noteworthy. This case gives insight into the natural history of PT and shows the potential consequences when it's left untreated. Urgent surgical management with clear margins is crucial since malignant transformation can occur and sarcomas being the another possible enitity.

Author contribution

AS and **PSSP** wrote the main manuscript text and **RK** collected and prepared figures and **SS**, **HK** and **RK** proof read the manuscirpt. All authors reviewed the manuscript.

Conflicts of interest
There are no conflicts of interest.

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