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A Recurrent Giant Phyllodes Tumor with Review of Literatures

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Abstract

Phyllodes tumors are rare breast tumors accounting for less than 1% Unlike breast cancers where they started from ducts and glands, phyllodes tumors start in the connective tissue of the breast. They are fast growing tumors with a large spectrum of behavior and most of them are benign with resemble of fibroadenoma with small number of borderline and malignant tumors. The correct diagnosis is mostly through core needle biopsy and it is also important to decide whether surgical management has to be done. Here we had a case of 38 year-old woman having recurrent fast growing lump to her right breast with distorted nipple with irregular border. MRI showed mass lesion measuring 9.5cm×14cm×20cm at right breast with few cystic areas with subtle chest wall infiltration especially underling muscles. After diagnosed to have phyllodes tumor total mastectomy involving partially the pectorals' major with latissimus Dorsi myocutaneous flap reconstruction was done.

Keywords: Giant phyllodes tumor, Phyllodes tumor, complete surgical excision, Fibroepithelial neoplasm.

Introduction

Phyllodes tumor of the breast are rare biphasic fibro-epithelial lesions that contain two types of breast tissue which are stromal (connective) tissue and glandular (lobule and duct) tissue. They are originally described by Johannes Muller in 1838 and named as cystosarcoma phyllodes because of the tumors' fleshy appearance and tendency to contain macroscopic cysts. However the term is a misnomer as the these tumors are mostly benign and the name phyllodes tumor is currently the accepted nomenclature according to the World Health Organization (WHO) [1-3]. *Phyllodes tumor are generally classified as benign, borderline and malignant tumors accounting about 0.5% of female breast tumors and borderline tumors have great potential for local recurrence. Mean age of diagnosis is 35-40 years and 80% of patients are in the premenopausal period of their lives*. The median size of phyllodes tumors is about 4cm and 20% of tumors grow larger than 10 cm and this is the arbitrary cut off point for the designation as giant tumor [2, 4-6]. *They grow rapidly and their symptoms mimic other breast malignant conditions particularly when they present with ulceration and bleeding*. They also usually compresses the surrounding tissue from which it is usually well demarcated and the bulk of this tumor is connective tissue with mixed gelatinous cystic and solid areas [7, 8]. Phyllodes tumors often present a diagnostic and treatment dilemma and depend on malignant potential, bulky tumor, recurrence and status of resection margins the treatment may vary between wide local excision with 1 cm breast tissue and/or radiotherapy. Revision surgery may be required for high percentage of tumors with inadequate margin removal and radiotherapy after breast surgery reduce local recurrence rate for borderline and malignant tumors. In our case the interesting scenario was aggressiveness of tumor growth after the patient had previous surgery for the same diagnosis in other hospital. Giant phyllodes tumors are often not amenable to breast-conserving approaches and require a mastectomy, which results in significant soft tissue defects that may require reconstruction [2, 7, 9-11].

Case Summary

This is 38 year-old female patient presented with right breast lump of seven months duration increasing in size progressively and two months prior to presentation there was rapidly increment in size. She had also intermittent pain from the swelling otherwise there was no wound and discharge from the swelling. She had no any axillary swelling. She had no complaint from left breast. She had similar complaint from the same breast about 16 months before her current presentation and underwent surgery for the diagnosis of phyllodes tumor otherwise she had no other remarkable history. No family history breast cancer or the same compliant.

On physical examination the lump measured 22 by 18 cm and it was firm non-tender mass over the right breast with distorted nipple and networked tortuous vessels and shiny skin having irregular margins. It extended from level of 7th intercostals

space below to the clavicle above measured at mid-clavicular line and from posterior axillary line to the mid sterna line measured horizontally which was partially fixed to the chest wall. No palpable axillary lymph nodes bilaterally and the left breast was grossly normal.

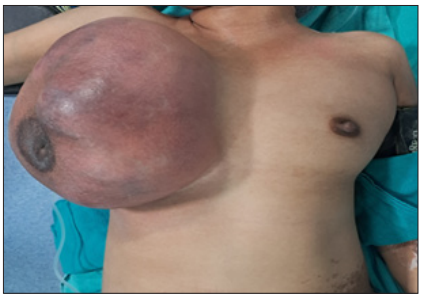

Image 1: physical examination finding

Laboratory investigation done and showed only moderate anemia (Hgb-10.1mg/dl) otherwise no other remarkable findings. CT scan and MRI imaging done and CECT showed a large lobulated solid hypo dense mass lesion showing enhancement and internal vascularity in color Doppler noted involving all quadrant of right breast of size 13×15×16 (AP×TR×CC). The lesion is reaching up to the skin and causing bulging and posteriorly it also about the right chest wall muscle (Image 2 and 3). MRI also showed evidence of huge lobulated mass outline heterogeneous T2 & STIR hyperintense, T1 hypo intense mass (Image-5) lesion at right breast with few cystic areas inside with overall size of 9.5cm×14cm×20cm (AP×TR×CC) with extension of lesion with subtle chest wall infiltration especially underling muscles, seen as T2 and STIR hyper intense signals and it also compressed right axilla with few small sub centimeter size right axillary lymph nodes. Histopathology report showed borderline phyllodes tumor.

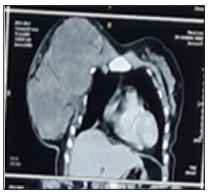

Image 2: CECT- sagittal view

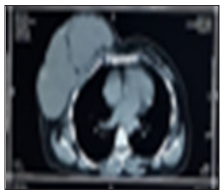

Image 3: CECT-axial view

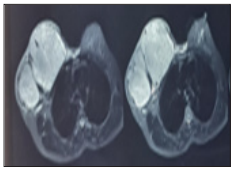

Image 4: T-2 MRI

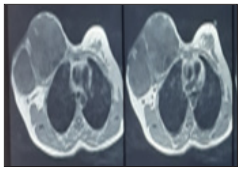

Image 5: T-1 hypodense

Management

The patient underwent right mastectomy and intra operatively the pectorals' major and serratus anterior were partially infiltrated by the tumor. Hence local wide excision and latissimus Dorsi myocutaneous flap reconstruction was done. The tumor specimen measured 25cm×21cm×20cm and weight of 4.5 kg with closest margin of resection of 1 cm away from the tumor. The postoperative period was uneventful; the patient recovered well and she discharged from ward after 7 days of hospitalization with OPD appointment for follow-up. The pathology report showed a borderline phyllodes tumor with tumor-free surgical margins. During follow up there has been no evidence any complication.

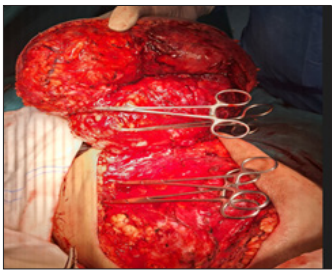

Image 6: intra-operative finding

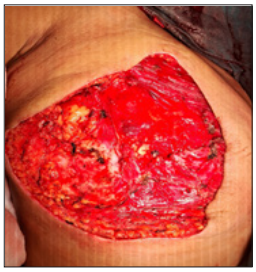

Image 7: Defect after tumor removal

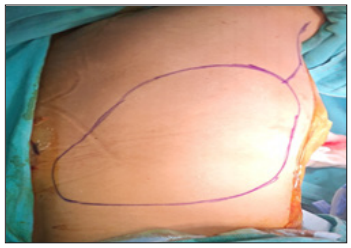

Image 8: Donor-site(latissimus dorsi)

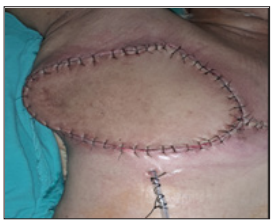

Image 9: after LD rotational flap

Discussion

Phyllodes tumor is a rare entity of breast pathology and the name ordinate from the Greek word "phyllon" meaning a leaf, which is historically classified for phyllodes tumor. It has a distinct biphasic characteristic of fibroepithelial diseases namely epithelial and stromal components, and stromal overgrowth predominant rather than epithelial elements. Presence of an epithelial component differentiates phyllodes tumor from other stromal sarcomas [12-14]. Although phyllods tumor are common from 35 to 55 year-old women, Asian populations tend to develop it an earlier age of 25 to 30 years old. There was also incidence of phyllodes tumors younger than 25 years old, even as early as 10 years old. Although majority phyllodes tumors are exclusively among female gender there are reported cases happened to men and few developed within gynaecomastia [15-18].

The exact pathogenesis of phyllodes tumor is not well known whether they originate from existing fibroadenomas or arise de novo but they most likely develop de novo with few reports of progression from fibroadenoma. Most fibro adenomas have polyclonal elements and are regarded as hyperplasic rather than neoplastic lesions but despite having similar polyclonal element a somatic mutation is postulated to develop resulting in a monoclonal proliferation with a propensity to progress to phyllodes tumor. It has also been postulated that stromal proliferation can occur a result of growth factors induction in the breast epithelium. Trauma, pregnancy, increased estrogen activity, and lactation occasionally have been implicated as factors stimulating tumor growth. Genetic predilection namely

Li-Fraumeni syndrome is the most commonly quoted genetic alteration in phyllodes tumors [16, 19-21].

Phyllodes tumors usually present with a painless breast lump, representing more than 70% of the cases and up to 96% are unilateral with few cases of bilaterality but approximately 20% of phyllodes tumors present as nonpalpable mass identified on screening mammography. Most patients have a smooth, multinodular, well-defined, firm mass that is mobile and painless. Shiny, stretched, and attenuated skin may be seen overlying large tumor. Nipple retraction, ulceration, chest wall fixation and bilateral diseases are rare but have been described. They are more commonly found in the upper outer quadrant but huge lesions involve more than one quadrant. Although palpable axillary lymphadenopathy can be identified in up to 20% of patients these cases are usually reactive otherwise, metastatic involvement of lymph nodes with phyllodes tumor is rare and only less than 1% have pathologic positive nodes. So clinical lymphadenopathy in phyllodes tumors occurs due to reactive hyperplasia from tumor necrosis or secondary to ulcerated lesions. Phyllodes tumors are spread hematogenously rather than using lymphatic route. Any metastatic features namely pleural effusion, hepatomegaly, or pathological fractures, malignant phyllodes tumors should be suspected as the top priority [14, 21-23].

Any patient with breast compliant should follow triple assessment a guide to management and this includes phyllodes tumors and both benign and malignant condition of breast. Apart from history and clinical examination imaging and core biopsy are confirmatory for diagnosis of phyllodes tumors. Imaging modalities which include ultrasound and mammography are the mainstay of radiological investigation. The typical appearance of phyllodes tumor on mammography is smooth, lobulated mass resembling a fibroadenoma, calcification within the mass may be present but a typical popcorn calcification in fibroadenoma is not visualized in phyllodes tumours. In view of the compression to the surrounding breast stroma a radiolucent “halo” may be seen. On ultrasound phyllodes tumors present as a hypo-echoic, solid partially indistinct or partially circumscribed mass with frequent posterior enhancement. A cystic component is more typical in malignant phyllodes tumors. Frequently, phyllodes tumors will show increased vascularity on color or power Doppler. Breast MRI also help to determine the extent of disease and respectability in selected cases. The characteristics on MRI are seen as well-circumscribed tumors with irregular walls, high signal intensity on T1-weghted images, and low signal intensity on T2-weighted images. A rapid enhancement pattern is seen more commonly with benign rather than with malignant phyllodes tumors which is the opposite of the pattern seen with adenocarcinoma of the brest. FDG PET/CT is useful in imaging recurrent phyllodes tumors, since it can display rare unsuspected sites of metastasis. FDG PET/CT therefore is useful in imaging recurrent phyllodes tumors, since it can display rare unsuspected sites of metastasis [14, 21, 24, 25].

File needle aspiration cytology (FNAC) is diagnostic for fibroadenoma. The pathognomonic features consisting of bare nucleus and bipolar cells (epithelial and stromal elements) will be visualized. However, those features are conspicuous in phyllodes tumors as well making the diagnosis challenging so both entities have an overlapping feature. Breast lesions suspicious for phyllodes tumors should undergo core biopsy, which is typically diagnostic. Core biopsy represents the best modality for preoperative diagnosis with a sensitivity of 99%, negative predictive value and positive predictive value of 93% and 83% respectively. Core biopsy using 14-gauge needle enables to provide an extra-architectural information provided by histology compared with core FNAC but in case of ulcerated lesion wedge biopsy is needed. Microscopically phyllodes tumors have the characteristic of leaf-like architecture consists of elongated cleft-like spaces that contain papillary projections of epithelial-lined stroma with varying degrees of hyperplasia and atypia. The stromal elements are a key component in differentiating phyllodes tumors from fibroadenomas and in differentiating a benign tumor from a malignant one and based on histological finding phyllodes tumor is classified as benign borderline or malignant. On macroscopically benign phyllodes tumors show a well-circumscribed lobulated and solid firm mass with a white tan whirling cut surface similar to fibroadenoma bur large tumors especially malignant type tend to develop a hemorrhagic and necrotic areas with curved protrusions into the parenchymal spaces [6, 14, 26, 27].

Although the optimal choice of surgery is still debatable, it is generally the mainstay of management in phyllodes tumors with adequate surgical resection for better disease-free survival and subsequent improvement of overall survival. Surgical management can be either breast conserving surgery or simple mastectomy. In wide excision the tumors should be respected with margin of more than 1 cm and routine ALND is not recommended as phyllodes tumors are spread hematogenously otherwise only 1% pathologic axillary lymph nodes [14, 28]. In our case as the pectoralis major muscle was grossly involved we did mastectomy resecting partially involving the pectorals’ major muscle.

Currently post mastectomy breast reconstruction is being offered for whom breast conservation is not possible due to large tumors. Autologous latissimus dorsi flap has been the standard of procedure for breast reconstruction until the introduction of TRAM (transverse rectus abdominus myocutnaneous) and DIEM (deep inferior epigastric perforator) flaps. Its advantage include minimal functional morbidity as result of harvesting the muscle, low risk of flap necrosis (1%) and as result of unsevred neurovascular supply reduced donor-site morbidity in addition to its superiority in high-risk patients who may be unsuitable for TRAM or DIEM flaps. Its commonest complication are donor site seroma, shoulder weakness, donor –site pain and development of capsular contraction in some patients with implants [29-32]. In our case we did autologous latissimus dorsi flap rotational flap and the donor-site was grafted with split thickness skin graft the patients post-operative course was uneventful.

Data from large retrospective study suggest that radiotherapy could extend the time to local recurrence and decrease the local recurrence rate with no significant influence on survival [33, 34]. For patients with borderline or malignant phyllodes tumors adjuvant radiation therapy significantly improved local recurrence free survival after margin negative wide local excision; however, patients treated with mastectomy did not attain the same benefit from adjuvant irradiation [33].

The role of chemotherapy remains uncertain but consideration can be given for their use in case of malignant phyllodes tumours. Adjuvant chemotherapy using doxorubcin and ifosfamide 6 cycles with an interval of 28 days between each cycle has been practiced with promising result. The role of chemotherapy remains uncertain but consideration can be given for their use in cases of malignant phyllodes tumors. Doxorubicin-based adjuvant chemotherapy is recommended for breast sarcomas' first-line treatment. Adjuvant chemotherapy using doxorubicin and ifosfamide 6 cycles with an interval of 28 days between each cycle has been practiced with promising result [35, 36].

Conclusion

Phyllodes tumor of the breast are rare fibroepithelial breast tumors that are capable of a diverse range of biological behaviors. Diagnosis is obtained by clinical appearance and core biopsy. Giant phyllodes tumors account for about 20% of all phyllodes tumors. The option of treatment depends on histological diagnosis and tumor size and could be wide local excision (1-2cm margins) or mastectomy with/without reconstructive surgery without axillary dissection. Mastectomy is the standard of care for giant phyllodes tumors involving more than one quadrant. Radiotherapy and chemotherapy are reserved for selected cases with specific indications. Further studies need to be organized regarding role of adjuvant treatment especially in borderline and malignant phyllodes tumors.

Consent

A verbal informed consent was obtained from the patient for publication of this case report

Competing Interest

We, the authors, declare there is no competing interest

Abbreviations

FNAC	:	File needle aspiration cytology
TRAM	:	Transverse rectus abdominus myocutaneous
DIEP	:	Deep inferior epigastric perforator
LD	:	Latissimus dorsi
CECT	:	Contrast enhanced computed tomography
ALND	:	Axillary lymph node dissection
FDG/PET	:	Fluorodeoxyglucose/positron emission tomography
MRI	:	Magnetic Resonance Imaging
AP	:	Anteroposterior
TR	:	Transverse
CC	:	Cephalocaudal

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