

Malignant Phyllodes Tumor with Heterologous Differentiation

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Abstract: *Phyllodes tumors are uncommon fibroepithelial neoplasms of breast. Heterologous sarcomatous differentiation of malignant phyllodes tumor (MPT) is a rare phenomenon as shown in the literature. Herein we report two cases of female in thirties were diagnosed with phyllodes tumor with heterologous differentiation. The first patient had malignant phyllodes tumor with smooth muscle differentiation and the second patient had Phyllodes tumor with chondrosarcomatous differentiation. Proper diagnosis and subtyping of the sarcomatous component is essential for deciding the correct treatment modality and prognostication of the disease. However there is no clear cut treatment protocol is available because of paucity of data.*

Keywords: Heterologous differentiation, malignant phyllodes tumor, sarcoma breast

1. Introduction

Primary breast neoplasms are uncommon in adult females and most are benign in nature. Phyllodes tumors of the breast, previously known as cystosarcoma phyllodes, are rare fibroepithelial tumors that constitute approximately 0.3–0.5% of all breast neoplasms [1, 2]. The World Health Organization (WHO) classifies phyllodes tumors into benign, borderline, and malignant categories based on the degree of stromal hypercellularity, cytological atypia, mitotic activity, appearance of tumor border, and stromal overgrowth [3, 4]. Recurrence rates for benign, borderline, and malignant tumors vary vastly among studies. The literature, in concordance with the work done by the WHO, suggests that recurrence among benign, borderline, and malignant phyllodes tumors is 10–17%, 14–25%, and 23–30%, respectively [3]. We present 2 cases of malignant PTs associated with heterologous differentiation: the first patient had PT with smooth muscle differentiation and the second patient had PT with chondrosarcomatous differentiation.

2. Case Series

2.1 Case 1

A 35-year-old female previously operated for both the left and right breast lump 7 months ago. Physical examination revealed mass in the right breast was small and in the left breast was large and palpable. Both the specimens were sent for histopathological examination. The diagnosis of fibroadenoma and borderline phyllodes tumor was made in the right and left breast lump respectively. All the surgical resection margins are free of tumor. After 7 months she came with the complaints of recurrence of mass in the left breast. On further interrogation a solid cystic nodule of 1.5x1.5cm at 10 o'clock position is palpable in the left breast. Repeat biopsy was done and was diagnosed as recurrence of

malignant phyllodes tumor. The patient was posted for surgery. Hence wide local excision of lumpectomy was done.

2.2 Pathological findings

Gross examination

The lumpectomy specimen measured 6 × 6 × 3.5 cm. On cutting an irregular grey white cystic tumor was identified measuring 1.5x1.5x0.7cm having tan white hemorrhagic cut surface.

Microscopy

Sections revealed an infiltrative tumor showing proliferation of spindle cells arranged in vague fascicular and storiform arrangement as shown in figure (1).

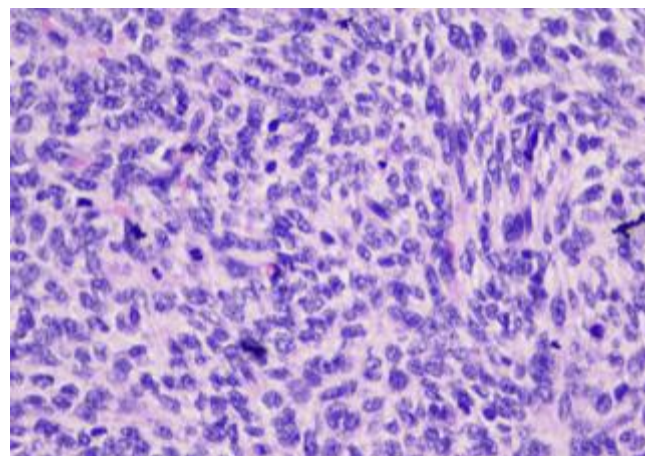


Figure 1: Malignant phyllodes tumor-Mild nuclear pleomorphism and prominent mitosis

Mild nuclear pleomorphism is seen. No ductal elements seen. Mitosis is 18/10HPF. No necrosis is seen. All the surgical margins are free of tumor. The adjacent breast parenchyma revealed changes of fibroadenosis. Also

received a repeat biopsy slide showing similar tumor morphology. On histopathological examination possibilities of malignant phyllodes tumor and malignant spindle cell neoplasm was given.

Immunohistochemistry

Immunohistochemistry was done and the malignant spindle cells are immunoreactive for BCL-2, CD34, Ki-67(35-40%) and negative for epithelial markers CK, p63 and EMA. Possibility of metaplastic carcinoma was ruled out and further markers like SMA, Vimentin and desmin was done which was positive in neoplastic spindle cells with negativity of CD117 in tumor cells as shown in figure (2,3).

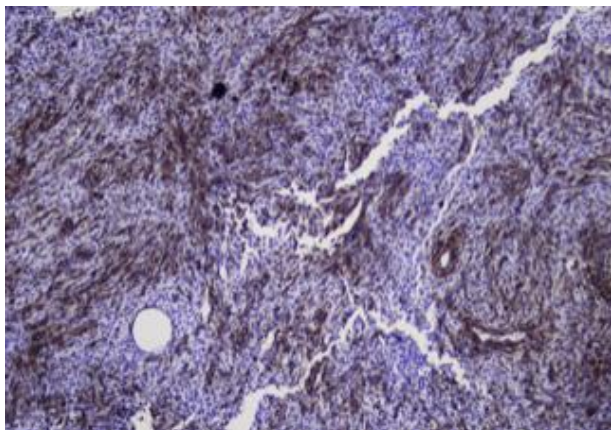


Figure 2: SMA is positive in neoplastic spindle cells

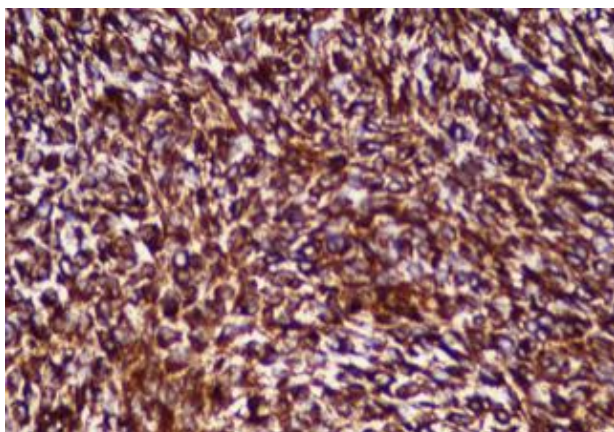


Figure 3: Vimentin is positive in neoplastic spindle cells

A diagnosis of malignant phyllodes tumor with a heterologous component of smooth muscle differentiation was rendered.

Case 2

A 35 year old female with a past history of phyllodes tumor (diagnosed outside) now presented for recurrent breast swelling in left breast. Physical examination revealed a solid-cystic mass in the left breast, not attached to overlying structures. The patient underwent a left mastectomy and wide local excision of left breast was done.

Pathological findings

Gross examination

The mastectomy specimen measured 20 × 15 × 5 cm. On cutting an irregular grey white cystic tumor was identified

measuring 15x10x9cm having tan white cut surface.

Microscopy

Sections revealed a malignant phyllodes tumor characterized by stromal overgrowth with proliferation of spindle cells arranged in vague storiform and fascicular pattern. There is marked nuclear pleomorphism with high mitotic rate upto 18mitosis/10 high power fields with areas of necrosis. Within the phyllodes tumor areas of chondrosarcomatous differentiation were also present as shown in figure (4).

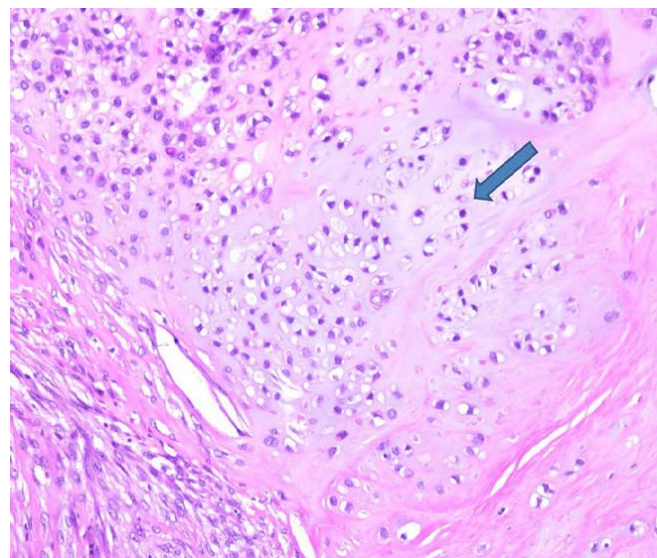


Figure 4: Phyllodes tumor with atypical cartilage component

All the surgical margins are free of tumor.

3. Discussion

Sarcomas of the breast are rare neoplastic lesions accounting for less than 1% of breast malignancy.[5-7] A malignant phyllodes account for 0.18% of all breast malignancies.[8] The tumors with heterologous differentiation of osteosarcoma and chondrosarcoma are rare, accounting for 1.3% of all phyllodes tumors.[9,6,8] Based on histological and cytological findings, PTs are classified as benign, borderline or malignant.

Malignant PTs can grow in size quickly and metastasise early [3]. Microscopically, PT are characterised by leaf-like appearance, created by projections of hypercellular stroma into epithelium lined by cystic spaces. The presence of dual population of both epithelial and stromal cells is necessary for the diagnosis of PT [10].

Our both the cases had a prior history of surgery for breast tumor. The recurrent tumor was present and a sudden painless increase in the size of the tumor indicates a malignant change in a benign tumor. The finding of malignant heterologous stromal components placed the tumor in a malignant category.[9]

The two cases discussed above demonstrate sarcomatous differentiation of the stromal cells in malignant PT. The first case demonstrates malignant phyllodes tumor with smooth muscle differentiation and other case demonstrates

chondrosarcomatous differentiation.

There is a paucity of evidence regarding surgical and adjuvant therapy and rates of local control makes it difficult to recommend a specific treatment for patients [11]

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