



Definition

Breast phyllodes tumor (BPT) is a biphasic fibroepithelial tumor with biological behavior ranging from benign to borderline to malignant. It is also known as cystosarcoma phyllodes and phyllodes tumor. Although classified by the World Health Organization among fibroepithelial tumors (and not among mesenchymal neoplasms), BPT is here considered because the malignant version is due to the mesenchymal component (hence the name cystosarcoma phyllodes).

Epidemiology and Presentation

BPT accounts for about 1% of breast neoplasms. The mean age at presentation is 45 years. The lesion can present either as a discrete palpable mass that rapidly enlarges or as a non-palpable nodule identified on screening mammogram. Axillary nodal enlargement is present in 15% of cases, but it is often reactive and not due to metastatic disease. Rarely, BPT secretes IGF2¹ causing paraneoplastic hypoglycemia.

Three subtypes of BPT are recognized: benign (60–80% of all cases), borderline (10%), and malignant (10–30%), on the basis of histological characteristics of the stromal elements. Clinically it can be difficult to distinguish BPT from fibroadenoma.

Pathology

Phyllodes tumors are composed of both epithelial elements and connective tissue stroma with spindled cells (resembling fibroblasts and myofibroblasts).

¹IGF2: insulin-like growth factor 2

Histopathologically, these lesions consist of epithelium-lined cysts with a hypercellular stroma. The diagnosis of BPT is dependent upon this histopathological appearance, and, therefore, preoperative diagnosis with fine needle aspiration (FNA) is difficult. The majority of phyllodes tumors can be diagnosed preoperatively using a combination of imaging and preoperative core biopsy, while diagnostic excision biopsy is used for uncertain cases.

Distinction between benign vs borderline vs malignant BPT is based on the presence of cellular pleomorphism, nuclear atypia, mitotic activity, overgrowth of the stroma, and infiltrative borders.

Differential diagnosis may be needed with fibroadenoma, which shows neither tissue fragmentation, increased stromal cellularity around glands, atypia, or stromal overgrowth and presents with fewer mitoses.

Biomarkers

The stromal component of BPT stains positive for vimentin, desmin, and actin and negative for cytokeratins, EMA,² and S100.

Prognosis

While benign BPT behaves similarly to fibroadenoma, malignant BPT carries a significant risk of recurrence and metastasis. Approximately 10% of patients with BPT develop distant metastases, a rate that can increase up to 20% in patients with histologically malignant BPT. The commonest sites for distant metastases are the lung, bone, and abdominal viscera.

In contrast to epithelial breast cancer, it is uncommon to have axillary nodal metastases, and when there are enlarged nodes, they may be reactive.

Positive surgical margin is significantly associated with disease recurrence.

Therapy

The treatment of choice is **surgical excision** with a clear margin. Breast conservation surgery has been practiced, particularly if the lesion-to-breast size ratio allows excision with reasonable cosmesis. In malignant tumors, and when the lesion is large and/or the surgical margins close, **radiotherapy** has been added as an adjuvant treatment. However, breast conservation without radiotherapy has also been reported to provide adequate local control, particularly for smaller tumors (<2 cm). More recently, local recurrence rates in the range of 10% to 20% have been reported, with no difference in the survival between patients managed with breast conservation or mastectomy. For metastatic disease, doxorubicin-based regimens typical for most soft tissue sarcomas are utilized.

²EMA: epithelial membrane antigen

Suggested Readings

- Chao (2019) Adjuvant radiotherapy and chemotherapy for patients with breast phyllodes tumors: a systematic review and meta-analysis. *BMC Cancer* 19(1):372
- Lu (2019) Local Recurrence of Benign, Borderline, and Malignant Phyllodes Tumors of the Breast: A Systematic Review and Meta-analysis. *Ann Surg Oncol* 26(5):1263–1275
- Mitus (2019) Phyllodes tumors of the breast. The treatment results for 340 patients from a single cancer centre. *Breast* 43:85–90
- Papas (2019) Malignant phyllodes tumors of the breast: A comprehensive literature review. *Breast J* Epub ahead of print]
- Yamamoto (2019) Effective Treatment of a Malignant Breast Phyllodes Tumor with Doxorubicin-Ifosfamide Therapy. *Case Rep Oncol Med* 2019:2759650
- Spitaleri (2013) Breast phyllodes tumor: a review of literature and a single center retrospective series analysis. *Crit Rev Oncol Hematol* 88(2):427–436