

Giant Malignant Phyllodes Tumor Involving the Whole Breast

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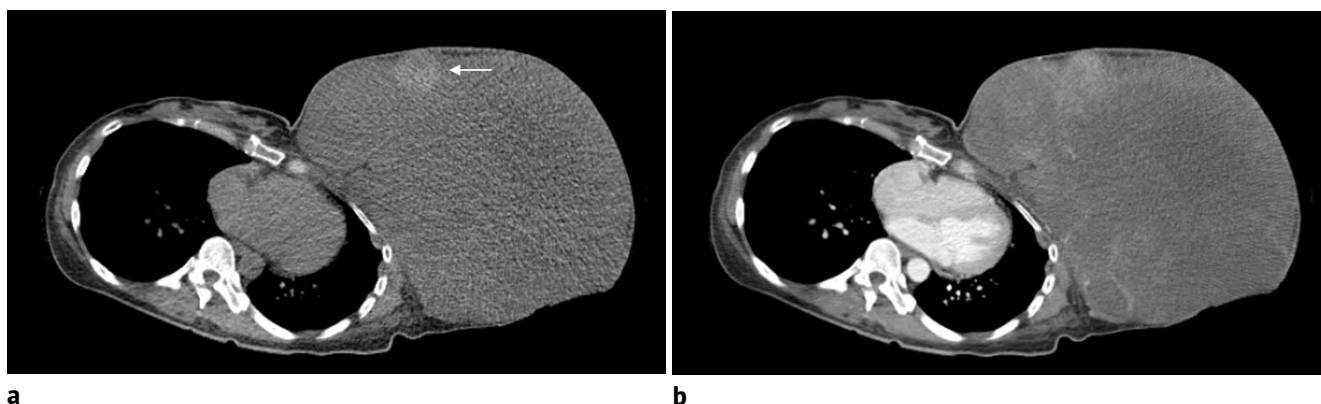


Fig. 1. **a.** Axial non-contrast chest computed tomography (CT) shows 27.1x20.3x30.5 cm-sized lobulated mass involving the left whole breast with internal hyperdense area (arrow), which demonstrates the hemorrhagic component. **b.** Axial contrast enhanced chest CT shows the mass with heterogeneous enhancement.

Phyllodes tumors (PT) are rare fibroepithelial neoplasms of the breast that typically present as rapidly enlarging palpable masses. They account for 0.3% to 1% of all primary breast tumors, and the median age at presentation is 45 years (1). The average tumor size ranges from 4 to 5 cm, although malignant PTs can grow much larger. PTs larger than 10 cm in diameter are classified as "giant" PTs, which account for approximately 20% of all PTs (1).

A 47-year-old woman presented with a rapidly growing palpable mass involving the left breast; the mass had first been noted several months before seeking medical help. Chest computed tomography (CT) showed a 27.1 × 20.3 × 30.5 cm-sized lobulated mass with an internal hyperdense hemorrhagic component and heterogeneous enhancement involving the entire left breast

(Fig. 1). Ultrasonography revealed an irregular lobulated heterogeneous mass with internal cystic changes involving the entire left breast (Fig. 2a, 2b). A color Doppler scan revealed increased vascularity inside the mass (Fig. 2c). The patient underwent left modified radical mastectomy (Fig. 3a). A histopathological examination revealed a giant malignant PT. It showed a pericanalicular growth pattern and leaf-like formations, which are characteristic of PT. It also showed high cellularity, severe pleomorphism, 11 mitoses per 10 high-power fields, stromal overgrowth, and infiltrative margins, suggesting malignant PT (Fig. 3b, 3c). Immunohistochemical analysis demonstrated cells positive for EGFR, which suggested diagnosis of PT rather than sarcoma (Fig. 3d). There was no evidence of metastasis on chest or abdominopelvic

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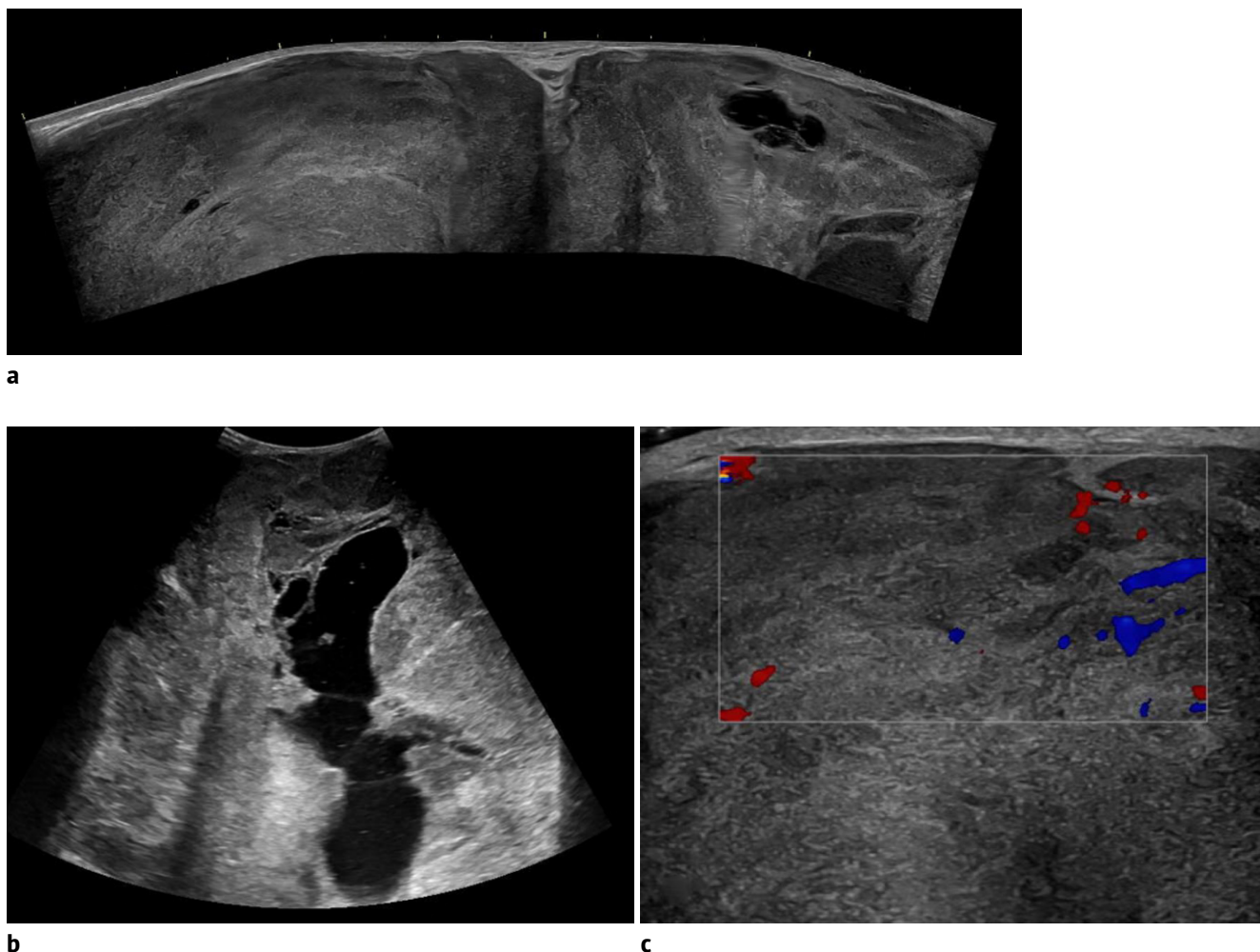


Fig. 2. a, b. Ultrasound shows a large irregular lobulated heterogeneous mass with internal cystic spaces involving the left whole breast. c. Color Doppler scan reveals increased vascularity inside the mass.

CT and whole-body bone scan.

According to the World Health Organization (WHO), PTs are classified as benign, borderline, and malignant based on their histological features, including stromal cellularity, nuclear atypia, mitotic activity, stromal overgrowth, and tumor margins. Approximately 10%–15% of PTs are malignant (1). Several studies have suggested that malignant PTs are more likely to have irregular shape, large size of 7 cm or above, large cystic spaces, and non-circumscribed margins, when compared with benign PTs (2). Nonetheless, malignant PTs can be misdiagnosed as primary breast sarcomas. PTs are biphasic, composed of both epithelial and

stromal components, and have a characteristic leaf-like architecture with an abundant cellular stroma, differentiating them from primary sarcomas (2).

Malignant PTs have a significant potential (23%–30%) for local recurrence (2). Metastases are uncommon and spread hematogenously, typically to the lungs (3). Wide surgical excision, defined as negative surgical margins greater than or equal to 1 cm, without axillary lymph node dissection, is considered the standard treatment to reduce the risk of local recurrence (3). Radiotherapy may be beneficial for reducing local recurrence and is sometimes considered for malignant PTs. Chemotherapy is used to treat recurrent and

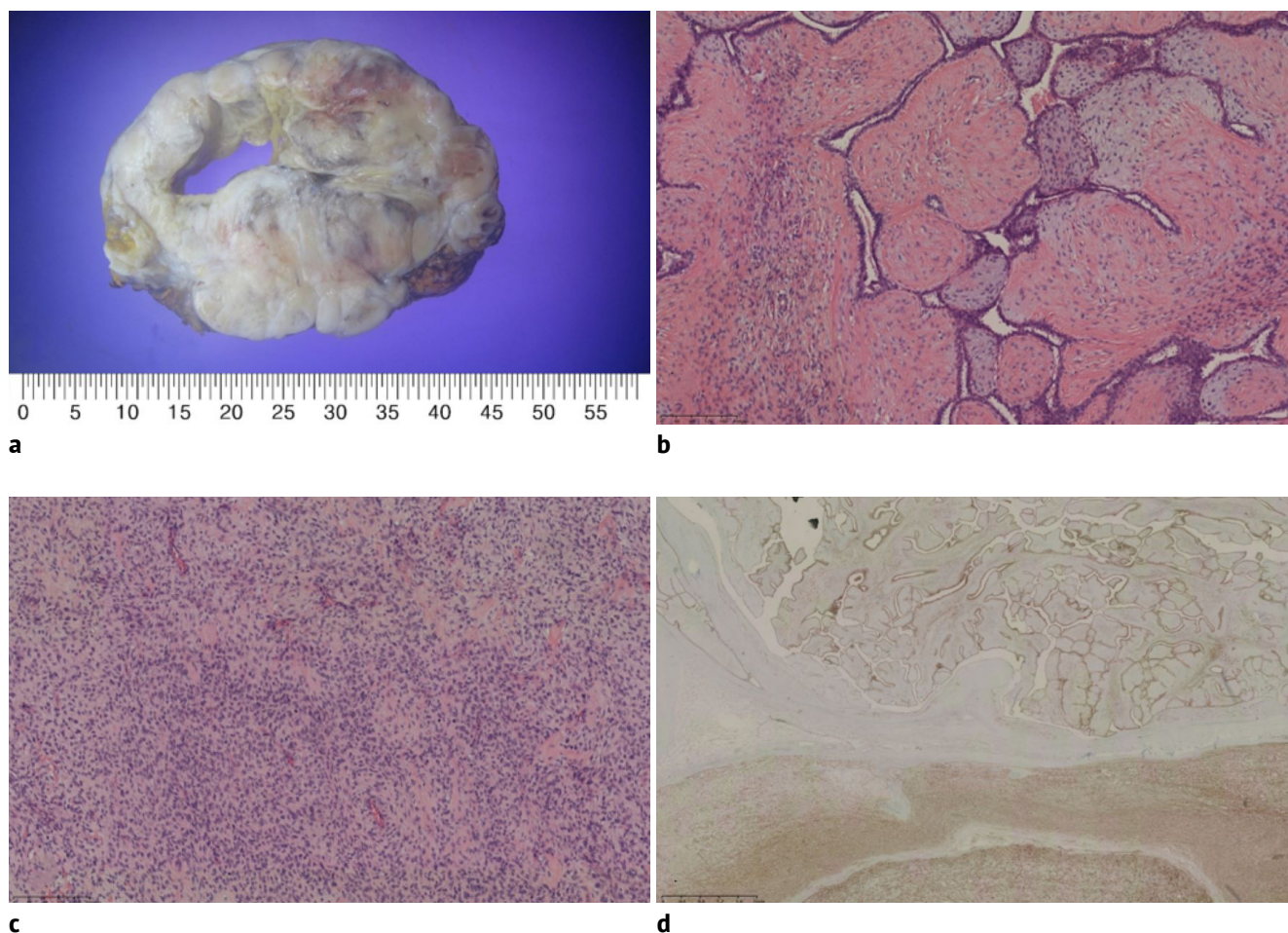


Fig. 3. **a.** Gross image shows 36x26 cm-sized tumor containing cystic and hemorrhagic components. **b.** Microscopically pericanalicular growth pattern and leaf-like formations are observed, which are characteristic of phyllodes tumor (PT; x100, HE stain). **c.** High cellularity, severe pleomorphism, 11 mitoses per 10 high-power fields, and stromal overgrowth are observed, which suggest malignant PT (x100, HE stain). **d.** Immunohistochemical analysis result shows cells positive for EGFR, suggesting a diagnosis of PT rather than sarcoma.

metastatic diseases; however, it does not provide a clear survival benefit (1).

When radiologists encounter rapidly growing giant breast masses, they should consider PT as a differential diagnosis. Although the diagnosis of malignant PT may be challenging, understanding the clinical, ultrasonographic, and pathologic features may offer useful diagnostic clues.

References

1. Lissidini G, Mulè A, Santoro A, Papa G, Nicosia L, Cassano E, et al. Malignant phyllodes tumor of the breast: a systematic review. *Pathologica* 2022;114:111–120.
2. Jane S Lee, Jodie Chang, Ian S Hagemann, Debbie L Bennett. Malignant phyllodes tumor: Imaging features with histopathologic correlation. *J Breast Imaging* 2021;3:703–711.
3. Kalambo M, Adrada BE, Adeyefa MM, Krishnamurthy S, Hess K, Carkaci S, et al. Phyllodes Tumor of the Breast: Ultrasound–Pathology Correlation. *AJR Am J Roentgenol* 2018;210:W173–W179.