Original Research Paper Radiology

# MULTIMODALITY IMAGING IN PHYLLODES TUMOR OF THE BREAST

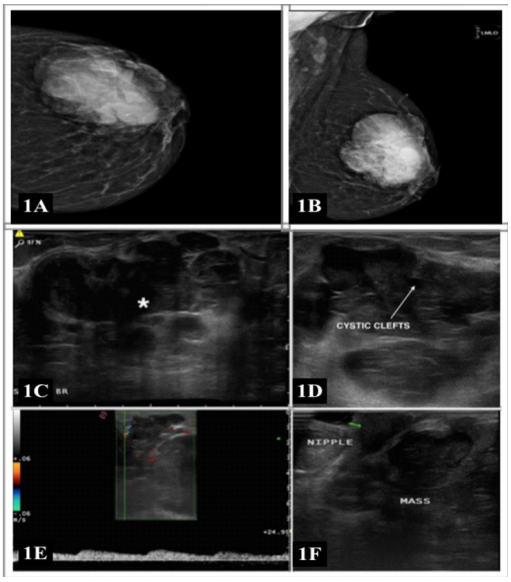
**Dr. Neha Sharma** Resident, Department of Radiology, INMAS, Timarpur, Delhi-110054

**Dr. Manju B. Popli** Head of Department, Department of Radiology, INMAS, Timarpur, Delhi-110054

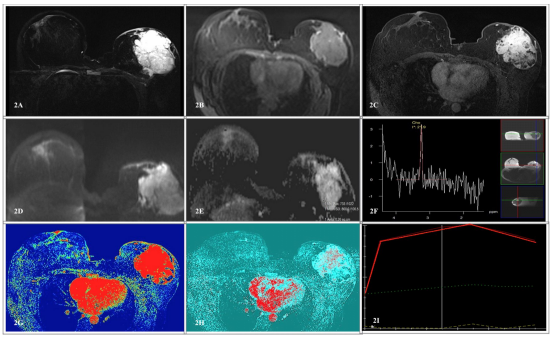
**ABSTRACT** We report a case of 40 year old woman with a painless lump in left breast. Mammography revealed a suspicious lesion which was further evaluated by ultrasound, MRI and PET-CT. Excision biopsy revealed borderline phyllodes tumour. Our case highlights the significance of multidisciplinary approach in managing benign breast masses like phyllodes tumours which have malignant potential and a high rate of recurrence.

**KEYWORDS** : Phyllodes tumor, Giant fibroadenoma, breast, Mammography, Ultrasound, MRI

A 40-year-old woman presented with a 2-month history of an enlarging painless mass in the left breast. Initial evaluation with mammography showed a well circumscribed high density mass in the superolateral quadrant of the left breast with a radiolucent halo and speck of coarse calcification (Fig.1A,B). Ultrasound examination showed an irregularly solid-cystic mass at 2-5 o'clock position with lobulated margins, in a parallel orientation and with multiple internal cystic clefts and surrounding architectural distortion. On color doppler, internal vascularity with low resistance pattern is seen. No overlying skin thickening is seen. The nipple is pushed anteriorly but is seen separate from the mass lesion (Fig. 1 C-F).

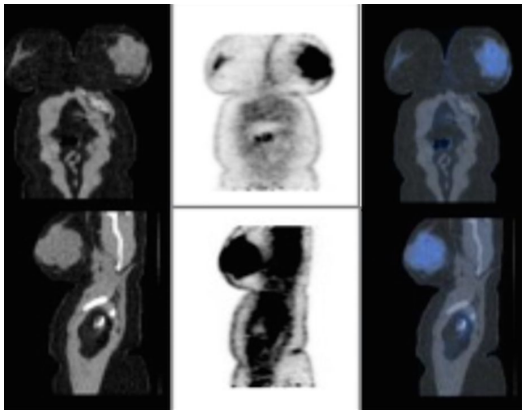



Further correlation with MRI revealed a hyperintense mass on inversion recovery images (Fig2A). On dynamic contrast enhanced (Fig.2B-C) and MR perfusion scans (Fig.G,H), the mass showed quick rise and wash out (Fig.I Type III kinetic curve). The mass showed restriction of diffusion on DWI and choline peak on MR Spectroscopy (Fig.2D-F).



Because of these malignant characteristics the mass was categorised as BI-RADS 4c.

Pre-operative $^{18}$F-fluorodeoxyglucose positron emission tomography (PET)-CT revealed avid uptake of tracer by the tumor indicative of high metabolic activity. The tumour was surgically removed and the histological examination proved evidence of borderline malignant phyllodes tumor



## DISCUSSION:

Phyllodes tumors are rare lesions with an incidence of less than 1% of all breast tumors[1]. Its incidence is greater in white women 35-55 years of age[2]. Clinically, phyllodes tumors are more commonly presented as a rounded nodule, mobile, usually painless and with rapid growth.

Histologically, these tumors are biphasic lesions with stromal and epithelial components along with many slit-like spaces surrounded by an increased growth of mesenchymal cells [3]. The stromal part protrudes into the ductal lumen.

The 2003 WHO tumor classification proposed the classification of phyllodes tumors into three categories-benign, borderline and malignant [4] according to the degree of cellular atypia, mitotic activity, characteristics of the tumor margins and the presence of stromal growth[5].

There are no pathognomonic mammographic or ultrasound signs in phyllodes tumour. In mammography, these lesions commonly present as a large well circumscribed mass (usually more than 5 cm) of similar density to breast parenchyma, which may be associated with calcification. Ultrasound features that are characteristic of these tumours include a well-circumscribed mass, lobulated mass, heterogeneous internal echo pattern and lack of microcalcifications [6].

The differential diagnosis of a phyllodes tumor is a giant

fibroadenoma. Phyllodes usually present with a peak incidence at the age of 45 years compared with fibroadenoma before 30 years. Rapid growth is also suspicious for phyllodes tumour. The presence of fluid-filled, elongated spaces or clefts within a solid mass are characteristic, but not pathognomonic for phyllodes tumour. However, Mammography and ultrasound are insufficient to differentiate phyllodes tumour from fibroadenoma [7]. MRI for differentiation has been suggested in literature with conflicting results [8, 9]. MRI can be useful for evaluation for lesion characterisation, enhancement pattern and kinetic curve assessment when differentiating with other well-circumscribed malignant tumours as intracystic or invasive papillary carcinoma[10]. Preoperative MRI studies [7, 11] describe various phyllodes tumour characteristics to correlate with histological grade: tumour size, internal non-enhanced septations, silt-like changes in enhanced images, signal changes from T2-weighted to enhanced images, irregular wall, tumour SI lower than or equal to normal tissue on T2-WI and low ADC (equals stromal hypercellularity).

The main criterion for differentiation with fibroadenoma is the higher stromal cellularity presented in core biopsy sample of phyllodes tumors. There are also problems to characterize malignant forms due to its large cellularity and atypia variation, making broader samples necessary for conclusive diagnosis, even in surgical specimens.

The treatment for phyllodes tumors remains surgical removal of this tumor. It is essential to keep a sufficient margin of healthy tissues, which reduces the risk of local recurrence. For borderline or malignant phyllodes tumors or in cases of local tumor recurrence, mastectomy may become the preferred option. Local recurrence rates for phyllodes tumours are 15 to 20% and are correlated with positive excision margins, rather than with tumour grade or size. [12]

## CONCLUSION:

The prediction of malignant potential of Phyllodes breast tumors and their differentiation with other fibroadenomas cannot be done precisely on imaging alone and requires a histopathological confirmation.

## REFERENCES:


1. Reinfuss, M., Mituś, J., Duda, K., Stelmach, A., Ryś, J., & Smolak, K. (1996). The treatment and prognosis of patients with phyllodes tumor of the breast: an analysis of 170 cases. Cancer, 77(5), 910-916.
2. Liang, M. I., Ramaswamy, B., Patterson, C. C., McKelvey, M. T., Gordillo, G., Nuovo, G. J., & Carson, W. E. (2008). Giant breast tumors: surgical management of phyllodes tumors, potential for reconstructive surgery and a review of literature. World Journal of Surgical Oncology, 6(1), 117.
3. Kim, J. H., Choi, Y. D., Lee, J. S., Lee, J. H., Nam, J. H., Choi, C., ... & Yoon, J. H. (2009). Borderline and malignant phyllodes tumors display similar promoter methylation profiles. Virchows Archiv, 455(6), 469.
4. Bellocq, J. P. (2003). Fibroepithelial tumours. Pathology and genetics tumours of the breast and female genital organs, 99-103.
5. Grabowski, J., Salzstein, S. L., Sadler, G. R., & Blair, S. L. (2007). Malignant phyllodes tumors: a review of 752 cases. The American Surgeon, 73(10), 967-969.
6. Chao, T. C., Lo, Y. F., Chen, S. C., & Chen, M. F. (2002). Sonographic features of phyllodes tumors of the breast. Ultrasound in obstetrics & gynecology, 20(1), 64-71.
7. Tan, H., Zhang, S., Liu, H., Peng, W., Li, R., Gu, Y., ... & Shen, X. (2012). Imaging findings in phyllodes tumors of the breast. European journal of radiology, 81(1), e62-e69.
8. Wurdinger, S., Herzog, A. B., Fischer, D. R., Marx, C., Raabe, G., Schneider, A., & Kaiser, W. A. (2005). Differentiation of phyllodes breast tumors from fibroadenomas on MRI. American Journal of Roentgenology, 185(5), 1317-1321.
9. Kinoshita, T., Fukutomi, T., & Kubochi, K. (2004). Magnetic resonance imaging of benign phyllodes tumors of the breast. The breast journal, 10(3), 232-236.
10. Yoo, J. L., Woo, O. H., Kim, Y. K., Cho, K. R., Yong, H. S., Seo, B. K., ... & Kang, E. Y. (2010). Can MR imaging contribute in characterizing well-circumscribed breast carcinomas?. Radiographics, 30(6), 1689-1704.
11. Yabuuchi, H., Soeda, H., Matsuo, Y., Okafuji, T., Eguchi, T., Sakai, S., ... & Hatakenaka, M. (2006). Phyllodes tumor of the breast: correlation between MR findings and histologic grade. Radiology, 241(3), 702-709.
12. Baker, R. R. (1990). Unusual lesions and their management. Surgical Clinics of North America, 70(4), 963-975.