Benign phyllodes tumor with tubular adenoma-like epithelial component in FNAC: A diagnostic pitfall

ABSTRACT

Benign phyllodes tumor (BPT) is a biphasic neoplasm composed of bland stromal and epithelial elements. Cytologic diagnostic criteria of BPT, though documented in the literature, diagnostic pitfalls in fine-needle aspiration cytology (FNAC) may occur due to sampling error, high cellularity, ductal hyperplasia, paucity of stromal component, and occasional dissociation of epithelial cells. Here, we describe a case of BPT diagnosed by histology in a 19-year-old female, where FNAC features were inconclusive due to paucity of stromal component, predominance of tubular adenoma-like epithelial component, and due to the presence of other overlapping features with fibroadenoma.

Key words: Benign phyllodes tumor (BPT); fine-needle aspiration cytology (FNAC); histology; tubular adenoma

Introduction

Phyllodes tumor (PT) is a rare fibroepithelial neoplasm accounting for less than 1% of all breast tumors. It is histologically classified into three types — benign, borderline, and malignant.[1,2] Benign PT (BPT) has hypercellular stromal fragments organized in leaflike patterns around benign epithelial/myoepithelial lined spaces. Cytologic features of BPT closely resemble and overlap with that of fibroadenoma. Standardized cytologic diagnostic criteria of BPT includes increased stroma over epithelium, highly cellular stromal fragments, presence of phyllodes fragments (i.e., abundant leaflike stromal fragments), myxoid stroma, and numerous single bare nuclei of spindle fibroblastic type.[3] Diagnostic pitfalls of PT in fine-needle aspiration cytology (FNAC) may be due to sampling error, high cellularity, ductal hyperplasia, paucity of stromal component, and occasional dissociation of epithelial cells.[4] Occasionally, only epithelial components of PT is represented in smears and may be misdiagnosed as epithelial neoplasm, particularly tubular adenoma and carcinoma.[5] Here, we present a case of BPT diagnosed by excisional biopsy, but its FNAC features were misleading due to predominance of the epithelial component showing a tubular adenoma-like pattern.

Case Report

A 19-year-old female presented with an ill-defined mass in the left breast about (2.5 × 2) cm above the areola in the breast tissue. On FNAC, smear was cellular comprising of the predominance of benign ductal epithelial cells showing prominent tubular adenoma-like arrangement [Figure 1] and resetting arrangement [Figure 2a]. Cellular crowding and mild focal pleomorphism was seen. Large branching sheets [Figure 2b] and papillary clusters of ductal cells without a wavy or folded shape were seen as well. A few short and oval stromal cells were present in the background. Occasional apocrine cell cluster was seen [Figure 2c] as well. Hypercellular stromal fragments (phyllodes fragments) were not seen. Because of diversity in cytological findings, various differentials were thought such as tubular adenoma.

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adenosis, papilloma, and fibroadenoma. Finally, it was cytologically reported as benign proliferative breast lesion with atypical/indeterminate features (C3 category) as per the cytologic categorization by the national coordinating committee for breast screening and the UK national breast screening program. As C3 category is a grey area in breast FNAC diagnosis, further investigation such as excision biopsy was advised.

Excision biopsy specimen grossly consisted of two grey white soft tissue masses measuring 3.5 cm × 3 cm × 1 cm and 2 cm × 2 cm × 1 cm. Cut section showed grey white areas. On histology, a well-circumscribed biphasic neoplasm containing leaf-like, epithelial-lined papillary-like projections penetrating into cystic spaces with cellular stroma was seen. Stromal atypia, mitosis and necrosis were not seen. It was reported as benign PT.

**Discussion**

PTs of the breast were first described in 1838 by Johannes Muller. Though, cytological features of PT have been well characterized, the cytologic diagnosis of PT remains difficult. This tumor is said to be underdiagnosed by the pathologists and undertreated by the surgeons. Although BPT show many features of fibroadenoma, they are more likely to recur. Thus, the preoperative diagnosis of this tumor becomes very important to allow correct surgical planning and to avoid reoperation (wide local excision with at least 1 cm margin is currently the treatment of choice for BPT). PT occurs in women aged 40-50 years, however, in Asian countries PTs may occur at a younger age (average age, 25-30 years).

Cytologic distinction of BPT from fibroadenoma is possible by noting large epithelial clusters longer than 1 mm, with a wavy or folded shape, in contrast to the small or medium-sized clusters with tubular, blunt-branching, or monolayered contours of fibroadenoma. Krishnamurthy et al. have observed that hypercellular stromal fragments with the presence of a significant proportion of long spindle nuclei (> 30%) is strongly indicative of PT, whereas the stromal cell nuclei in fibroadenoma tends to be short and oval and long spindle nuclei accounts for 10-30%. However, in our case, all the abovementioned features were absent, which made cytologic diagnosis difficult.

Standardized criteria for the diagnosis of BPT include at least two large stromal fragments, hypercellular fragments and moderate-to-large number of dissociated stromal cells. Predominance of epithelial elements over stromal elements and monotonous population of cells with tubular adenoma-like and rosetting pattern as seen in this case can mimic epithelial neoplasm. Uriev et al. have described tubular adenoma-like epithelial component in malignant PT. Large branching sheets of bland epithelial cells and focal apocrine metaplasia, seen here as well, closely mimics fibroadenoma. Presence of papillary-like clusters and acinar pattern could be the reasons to consider papilloma and adenosis as other differential diagnosis.

**Conclusion**

We conclude that if there is significant epithelial proliferation in BPT, a false diagnosis of epithelial neoplasm in FNAC is possible and it is an important diagnostic pitfall. So, very careful strict criteria should be used such as advised repeat FNAC, cell block preparation, biopsy, or correlation with clinical and radiologic findings to improve preoperative diagnosis of BPT. This will help in correct planning of surgical treatment, i.e., wide excision with 1 cm margin.
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Conflicts of interest
There are no conflicts of interest.

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