Phyllodes Tumor Showing Intracystic Growth: A Case Report

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A phyllodes tumor often grows rapidly and occasionally contains microcysts; however, the tumor rarely shows a morphologically intracystic pattern. We experienced a rare case of a phyllodes tumor with a solid mass growing into the cyst. A 62-year-old female noticed a tumor in her right breast in January 1995. The tumor grew rapidly and she visited our out-patient clinic in February 1995. On physical examination, a 10 x 8 cm, well defined and movable mass with a smooth surface was palpated in the upper outer quadrant of the right breast. Mammography showed a large tumor shadow in the upper outer quadrant of the right breast without any microcalcification. Ultrasonography revealed a large cystic shadow with a low echoic lesion and solid component with heterogeneous internal echo in the cyst. Under general anesthesia, the tumor was widely excised. The resected specimen was 11.5 x 11 x 11 cm in size and the tumor was not invasive to surrounding tissues. Old bloody fluid was contained within the cyst. The gross appearance showed papillary process protrusions into a central cystic cavity. Histological examination revealed a borderline case of phyllodes tumor. Two years after the operation, she is doing well without any recurrence.

Key words: phyllodes tumor – intracystic tumor – wide excision

INTRODUCTION

Intracystic tumor of the breast is rare and usually intracystic breast cancer or intracystic papilloma. A phyllodes tumor often grows rapidly and occasionally contains microcysts, however, the tumor rarely shows a morphologically intracystic pattern. We experienced a rare case of the phyllodes tumor with a solid mass growing into the cyst.

CASE REPORT

A 62-year-old female noticed a tumor in her right breast in January, 1995. She had no abnormality in the family history. She had a past history of diabetes mellitus. The tumor grew rapidly and she visited our out-patient clinic in February 1995. On physical examination, a 10 x 8 cm, well defined and movable mass with a smooth surface was palpated in the upper outer quadrant of the right breast. Slight dimple was not detected. Mammography showed a large tumor shadow in the upper outer quadrant of the right breast without any microcalcification. Ultrasonography revealed a large cystic shadow with a low echoic lesion and solid component with heterogeneous internal echo in the cyst (Fig. 1). Old bloody fluid was aspirated by fine needle aspiration cytology, resulting in no malignant cells. CEA, TPA and CA 15-3 in the cystic fluid were 25.3 ng/ml, 251 344 U/ml and 59 U/ml, respectively. c-erbB-2 overexpression was not detected (using DNA extracted from the aspiration fluid). Serum CEA, TPA and CA 15-3 were 1.0 ng/ml, 55.5 U/ml and 11 U/ml, respectively. Under general anesthesia, the tumor was widely excised with about a 2 cm margin. The resected specimen was 11.5 x 11 x 11 cm in size and the tumor was not invasive to surrounding tissues. Old bloody fluid was contained within the cyst. The gross appearance showed papillary process protrusions into a central cystic cavity. Histological examination revealed a borderline case of phyllodes tumor. Two years after the operation, she is doing well without any recurrence.
Phyllodes tumor showing intracystic growing

Figure 1. Ultrasonography showing a large cystic shadow with a solid component.

Figure 2. The gross appearance showing papillary process protrusions into a central cystic cavity.

Figure 3. Microscopic findings (low-power field): leaf-like papillary protrusions of stromal connective tissue extending to the cystic cavity.

Figure 4. Microscopic findings (high-power field): stromal cell atypia was locally approved.

Figure 5. Immunohistochemical staining with progesterone receptor (PgR): Epithelial cells were positive for PgR but stromal cells were negative for PgR.

DISCUSSION

A phyllodes tumor is a rare distinctive fibroepithelial tumor of the breast. Most phyllodes tumors, benign or malignant, commonly form a round or oval mass sharply circumscribed and encapsulated. The size of the tumor is variable, ranging from 1 cm to >40 cm (1). Larger tumors frequently contain clefts or cystic cavities (2), however, the tumor rarely shows morphologically intracystic growth. In this case, the tumor was morphologically intracystic with a large cystic lesion. The tumor had enlarged so rapidly that hemorrhage, necrosis and other degenerative changes might have occurred with bloody fluid in the intracanalicular lumen. When a cystic lesion enlarges with fluid and leaf-like papillary protrusions of stromal connective tissues extend to cystic areas, the tumor shows possible intracystic growth. Norris and Taylor (3) studied clinical and pathological findings in 94 patients with cystosarcoma phyllodes and demonstrated a case of cystosarcoma...
Figure 6. Immunohistochemical staining with proliferating cell nuclear antigen (PCNA): the PCNA labeling index was high in the stromal cells and low in the epithelial cells.

Phyllodes with papillary process protruding into a central cystic cavity. In 118 phyllodes tumors, Yamada et al. (4) reported that there was no case with an intracystic growth pattern. Phyllodes tumors showing intracystic growth are so rare that the frequency of phyllodes tumors similar to that described here is unclear and there are few reports about the difference between intracystic and general phyllodes tumors. Liberman et al. (5) reported mammographic and sonographic findings between benign and malignant phyllodes tumors. Cystic areas at sonography were more common in malignant than benign tumors. These data suggested that a malignant phyllodes tumor was likely to undergo cystic formation. There is possible malignancy in phyllodes tumors showing intracystic growth.

Histologically, a phyllodes tumor is composed of epithelial elements and a connective tissue stroma. The characteristics of the stroma alone determine whether a phyllodes tumor should be classified as benign or malignant. In general, stroma from a malignant phyllodes tumor contains cellular atypia, mitotic activity and tumor margin (1,3). Malignant areas are often focal and are overlooked if multiple samples are not observed. In this case, cell atypia was locally identified, thus indicating the diagnosis of a borderline phyllodes tumor.

Immunohistochemical study was applied to this tumor. ER, c-erbB-2 protein and p53 protein were negative, however, PgR was positive in the epithelial cells. ER and PgR analyses have been performed on tumor tissue from patients with phyllodes tumors (4,6). Rao et al. (6) reported ER and PgR by binding assay and most phyllodes tumors have PgR in the stromal cells but lack ER in the epithelial cells. We demonstrated that PgR was immunohistochemically located only in the epithelial cells and not in the stromal cells. The epithelial cells contain the hormone receptors and the receptors do not show the characteristics of phyllodes tumors. Examination of the stromal cells is important to show the characteristics of phyllodes tumors, because only the stromal components metastasize. Kim et al. (7) investigated p53 expression of stromal cells in phyllodes tumors and reported that none of the eight benign phyllodes tumors expressed p53 whereas six of the seven malignant phyllodes tumors expressed this protein. The expression of p53 may be a possible indicator of malignant phyllodes tumor. We examined PCNA immunostaining to evaluate the proliferation rate of this tumor. The PCNA labeling index was high in the stromal cells and low in the epithelial cells, which indicated that the proliferation rate was high in the stromal cells compared with the epithelial cells. The PCNA labeling index in the stromal cells, 72%, was comparable to that of malignant phyllodes tumor reported by Sasa et al. (8). They demonstrated that the PCNA labeling index was 67% in the malignant lesion of the phyllodes tumor and negative in the benign lesion. In our case, p53 was negative but the PCNA labeling index was high in the stromal cells. The immunohistochemical findings have demonstrated a high proliferation possibility of this tumor.

The preferred initial therapy for a phyllodes tumor is a wide local excision with adequate margin of normal breast tissues irrespective of histological features (9,10). Low axillary dissection is advisable if node involvement is suspected. The present tumor was widely excised with about a 2 cm free margin. Axillary lymph node dissection was not added because there were no enlarged lymph nodes. As the histopathological findings revealed no malignancy, additional resection was not performed. Phyllodes tumors, even if they are not malignant, often recur in case of inadequate resection of the tumor. Hence careful follow-up of patients is recommended.

Table 1. Immunohistochemical results

<table>
<thead>
<tr>
<th>Marker</th>
<th>Antibody</th>
<th>Clone</th>
<th>Source</th>
<th>Dilution</th>
<th>Results</th>
</tr>
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<tbody>
<tr>
<td>ER</td>
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<td>DAKO</td>
<td>X80</td>
<td>(-)</td>
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<tr>
<td>PgR</td>
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<td></td>
<td>DAKO</td>
<td>X80</td>
<td>Epithelial (+) Stromal (-)</td>
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<td>Zymed</td>
<td>X200</td>
<td>(-)</td>
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<tr>
<td>PCNA</td>
<td>Monoclonal mouse anti-proliferating cell nuclear antigen</td>
<td>PC10</td>
<td>DAKO</td>
<td>X80</td>
<td>Epithelial: low Stromal: high</td>
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References