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Case Report

Tumoral pseudoangiomatous stromal hyperplasia: Radiological and pathological correlation with review of literature

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ABSTRACT

Tumoral pseudoangiomatous stromal hyperplasia (PASH) is rare and presents more often as a clinically apparent, well-circumscribed, solid mass. It may clinically and radiologically mimic fibroadenoma or Phyllodes tumor. In this article, our objective was to describe the clinical presentations, ultrasound and histopathological appearances of tumoral PASH in three patients. Among the three PASH tumors, all except one were palpable breast masses; and the non-palpable mass was detected on ultrasound. All patients underwent core biopsy followed by wide local excision of the mass which were histopathologically proven to be PASH.

1. Introduction

Pseudoangiomatous stromal hyperplasia (PASH) is a benign mesenchymal breast tumor. It is characterized histopathologically by proliferating stromal myofibroblasts lining slit-like empty spaces [1]. Tumoral or nodular form of PASH is rare and presents as a clinically apparent, well-circumscribed, solid mass. It clinically mimics fibroadenoma or benign Phyllodes tumor, and histologically it is similar to low grade angiosarcoma. It is commonly seen incidentally as a focal microscopic finding or associated with gynecomastia, fibrocystic changes, fibroadenoma, and Phyllodes tumor [2]. In this article, our objective was to describe the clinical presentations, imaging and histopathological appearances of tumoral PASH in three female patients. On ultrasonography (USG), tumoral PASH usually appears as an oval or round, well-circumscribed, homogeneously hypoechoic mass, parallel to the chest wall; less commonly it may have complex echogenicity, irregular shape or ill-defined margins. Histopathology is essential for confirming the diagnosis. The treatment is wide local excision. Recurrences have been reported, hence follow-up evaluation is indicated. Although rare, concomitant breast carcinoma has been reported with PASH either in the same breast or contralateral breast [3–5].

2. Clinical presentation, imaging findings & histopathology

2.1. Case 1

A 35 year-old female patient came with lumps in both breasts of 3 months duration. On palpation, the right breast had a firm, mobile lump measuring 3 × 3 cm in the upper inner quadrant. The left breast had a soft, mobile mass measuring approximately 5 × 3 cm deep to the nipple-areolar complex. There was no axillary lymphadenopathy. USG of the right breast showed an irregular, well-defined, predominantly hypoechoic mass measuring 3 × 2.5 cm in circle 1, 11 O'clock position, with tiny, linear, anechoic clefts within (Fig. 1a). Posterior enhancement and minimal internal vascularity were seen. The mass was soft on elastography with strain ratio of 0.67. A diagnosis of cellular fibroadenoma or Phyllodes tumor (U-BI-RADS 3) was suggested. Left breast had an oval, well-defined, mixed echogenic lesion measuring 6.3 × 3.2 cm in circle 1, subareolar region, with no obvious internal vascularity or posterior enhancement (Fig. 1b). Elastography strain

Abbreviations: PASH, pseudoangiomatous stromal hyperplasia; USG, ultrasonography; U-BI-RADS, ultrasound-breast imaging-reporting and data system (American College of Radiology); FNAC, fine needle aspiration cytology; IDC, invasive ductal carcinoma; H&E, hematoxylin & eosin.

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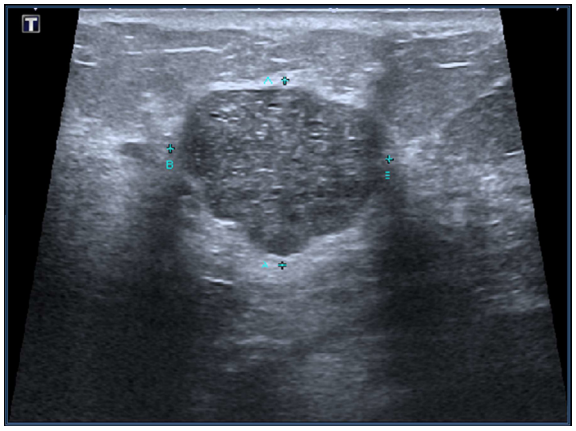

Fig. 1a. Case 1. Right breast USG showing well-defined, hypoechoic mass.

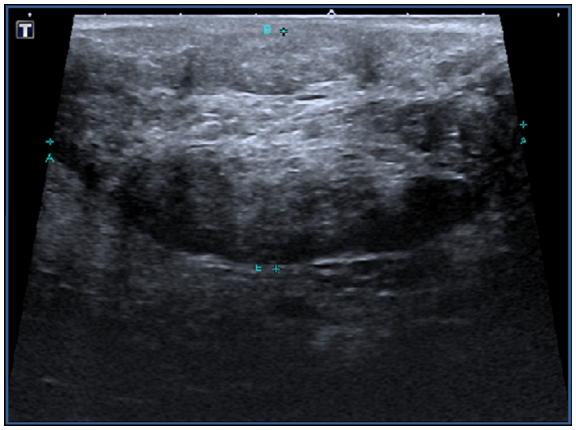

Fig. 1b. Left breast USG showing oval, well-defined, mixed echogenic lesion.

ratio was 0.8. Possibility of fibroadenolipoma was suggested (U-BI-RADS 3).

Ultrasound-guided core biopsy of the right breast mass was done and histologically showed features of fibroadenoma. Ultrasound–guided FNAC of the left breast mass showed clusters of spindle shaped cells in a background of bare nuclei and few atypical cells. Surgical excision of bilateral breast masses was performed for further detailed examination. On gross evaluation, the right breast mass measured 7 × 4 × 2.5 cm, 45 g, with soft, gray-yellow external surface and firm, gray-white cut-surface. On microscopy, uniformly cellular stromal proliferation compressing the ducts was seen, diagnosed as fibroadenoma (Fig. 1c). The left breast mass appeared globular, gray-white external surface, measured 6 × 5 × 5 cm, 120 g, with gray-white, soft to firm cut surface and few slit-like spaces seen within. Microscopy showed proliferation of stromal elements (fibroblasts and myofibroblasts) admixed with clusters of ductal cells and anastomosing network of slit-like empty spaces; with no necrosis or atypia (Fig. 1d). These features confirmed the diagnosis as PASH.

Three years ago, she had similar complaints of lumps in both breasts with non-cyclical mastalgia. She had regular menstrual cycles and a normal delivery. At that time, a mobile mass measuring 2.5 × 2 cm was present in 12 O' clock position of right breast; and a mass measuring 4 × 4 cm was found in the subareolar region of left breast. Ultrasound had revealed well-circumscribed, homogeneously hypoechoic lesions in bilateral breasts, favoring fibroadenoma. Bilateral breast masses were excised and histopathologically both were confirmed as fibroadenoma.

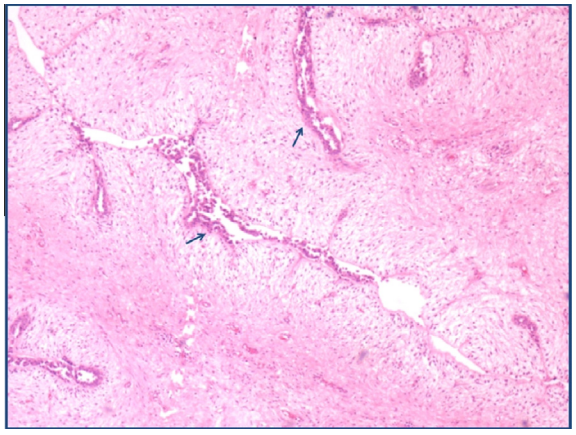

Fig. 1c. H&E stained image of right breast mass showing fibroadenoma; stromal proliferation compressing the ducts (arrows) (original magnification ×40).

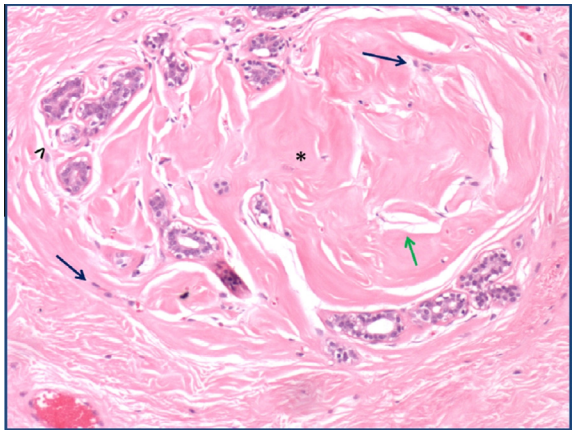

Fig. 1d. H&E of left breast mass showing PASH with empty spaces (green arrow) lined by spindle cells (blue arrow), dense stroma (∗); ducts (arrowhead) (×100).

2.2. Case 2

A 54 year-old nulliparous lady came with a left breast lump since 2 months associated with pain and difficulty in lifting the left arm. On examination, the mass was firm to hard measuring 8 × 5 cm occupying the upper quadrants of the left breast; with no nipple retraction, dilated veins, scars or palpable axillary lymph nodes. Ultrasound revealed an irregular, well-defined, fairly large mass measuring 9 × 5 × 3.5 cm in the upper half (11–2 O'clock position) of left breast. The mass was heterogeneous and showed a relatively round, hypoechoic component in its medial aspect and varied echogenicity in the remaining area (Figs. 2a and 2b). Central and peripheral vascularity was present. Mixed posterior features with predominant enhancement were seen. The mass was assigned into U-BI-RADS 4C category. Right breast was normal.

Multiple core biopsies were taken under ultrasound guidance from the entire mass as it was large in size. Histopathology revealed predominantly fibrocollagenous stroma with spindle shaped cells and few ductal elements- these features raised the possibility of PASH. Interestingly, on surgical excision, two distinct masses were found closely adjacent to each other. On gross examination, the larger mass measured 9 × 5 × 2.5 cm, weighing 92.5 g; had a gray cut-surface and slit-like, cystic spaces within. The smaller mass measured 3.5 × 3 × 3 cm, with gray-white cut-surface and a small hemorrhagic area within. Microscopy of the smaller mass (3.5 cm) showed numerous spindle-shaped stromal myofi-

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