Pseudoangiomatous Stromal Hyperplasia

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History: A 48-year-old premenopausal female presented for screening mammography. She had no personal or family history of breast or ovarian cancer. She was not on hormone therapy. She had had no prior breast or ovarian surgeries. Her past medical history was significant only for hypertension, for which she was taking lisinopril.

(Figure 1)

Figs. 1 and 2: Bilateral MLO and CC views of the breasts. There is an ovoid mass in the right lower, outer quadrant.

Mammogram: Her only prior mammogram was from 2002. Her mammogram at the time of presentation here demonstrated a new, lobulated, oval mass in the right lower outer quadrant measuring 5 cm x 4 cm.

Physical examination: No masses or adenopathy palpated on either side. Normal appearing skin and nipple-areolar complexes.
Figs. 1 and 2: Bilateral MLO and CC views of the breasts. There is an ovoid mass in the right lower, outer quadrant.

Ultrasound: A heterogeneous, lobulated 4.6 cm mass was seen at the 8:00 position of the right breast.
Figs. 3 and 4: Ultrasound of the right breast. There is a heterogeneous, lobulated mass at the 8:00 position of the right breast, corresponding to the mammographic abnormality.
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Published on Diagnostic Imaging (http://www.diagnosticimaging.com)

(Figure 5)

Fig. 5. Post-biopsy right mammogram. The biopsy clip is in appropriate position.

Diagnosis: Pseudoangiomatous stromal hyperplasia
Differential Diagnosis: The differential diagnosis included hamartoma, phyllodes tumor, and carcinoma (the latter considered less likely).
Biopsy: Stereotactic vacuum-assisted core biopsy was performed. The post-biopsy mammogram demonstrated the biopsy clip to be in appropriate position.
Pathology: Stromal sclerosis, mild usual ductal hyperplasia, and PASH.

Pseudoangiomatous stromal hyperplasia (PASH) is a benign breast entity first described in 1986 by Vuitch et al.¹
PASH is characterized histologically by anastomosing slit-like spaces lined by spindle cells and surrounded by dense collagenous stroma. The slit-like spaces lack a true vascular lining and do not contain red blood cells² (hence the term pseudoangiomatous). However, they may be mistaken for vascular spaces and potentially lead to a misdiagnosis of angiosarcoma¹.
Grossly, PASH often forms a circumscribed, nonencapsulated mass with a tan or yellow cut surface. PASH lesions may span a wide size range, typically between 0.6 and 12 cm³.
The etiology of PASH is unknown. However, hormones are thought to promote its development, and this is supported by multiple studies. For example, PASH lesions express hormone receptors,
particularly PR. In addition, PASH most commonly manifests in premenopausal or perimenopausal women. It has been reported in the setting of postmenopausal women on hormone replacement therapy and in men with gynecomastia. Finally, there are reports of at least partial response of large or symptomatic PASH to hormonal manipulation or tamoxifen therapy. PASH commonly presents as a painless breast mass or masses (so-called tumor-forming PASH). PASH may also present as continuous breast enlargement. PASH may be an incidental microscopic finding in up to 23 percent of breast biopsies.

There are no pathognomonic imaging features that characterize PASH. Mammography and ultrasound typically demonstrate a well-circumscribed round or oval mass. Increased size and density of the breast over time may alternatively be seen on mammogram. PASH may be either hyper- or hypointense on both T1WI and T2WI, and may demonstrate high signal slit-like spaces on T2WI/STIR, representing the slit-like spaces found on pathologic examination. PASH typically demonstrates a type I (benign-appearing) enhancement curve.

To date, there is one reported case suggesting malignant transformation of a PASH lesion. In one retrospective review of 24 patients who had a diagnosis of PASH from surgical excision and/or core biopsy, one case of PASH was associated with atypical ductal hyperplasia (ADH) and two cases of PASH were associated with atypical lobular hyperplasia (ALH). In one patient, PASH was associated with multiple foci of ductal carcinoma in situ (DCIS). Three of these four patients (75 percent) had a family history of breast cancer.

References
