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Case Report

Focal angiomatosis of the breast with MRI and histologic features

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ABSTRACT

Angiomatosis of the breast is an extremely rare, benign vascular lesion. This is a diagnostic challenge, given the limited number of cases reported in the literature. Additionally, due to similar features of the more common malignant vascular tumor, angiosarcoma familiarity with angiomatosis in the differential diagnosis is important. We present a case of angiomatosis of the breast in a 28-year-old female. The lesion presented as an incidental enhancing mass on computed tomography scan initially and subsequent mammogram and ultrasound studies did not show a correlate. Next, magnetic resonance imaging demonstrated an enhancing correlate for which magnetic resonance imaging biopsy and subsequent excisional biopsy demonstrated angiomatosis of the breast.

Case report

A 28-year-old female with a history of metastatic thyroid cancer underwent restaging computed tomography (CT) of the chest demonstrating an incidental finding of subtle enhancement in the right breast at the 9 o'clock position (Fig. 1). At presentation, the patient denied palpable masses, skin changes, nipple retraction, or discharge. Mammogram (Fig. 2) and ultrasound (not shown) revealed no correlate for the CT finding.

Breast magnetic resonance imaging (MRI) was then obtained for further characterization and demonstrated an oval mass measuring 2.3 cm at the 9 o'clock position, 6 cm from the nipple, correlating with the previously described CT findings. The mass demonstrated heterogeneous contrast uptake with irregular margins. Rapid uptake with persistent enhancement kinetics was observed. A discrete lesion was only identified on postcontrast images. A corresponding region of T2 hyperintensity and T1 isointensity was seen (Fig. 3). MRI-guided core needle biopsy was performed for further evaluation, followed by excisional biopsy.

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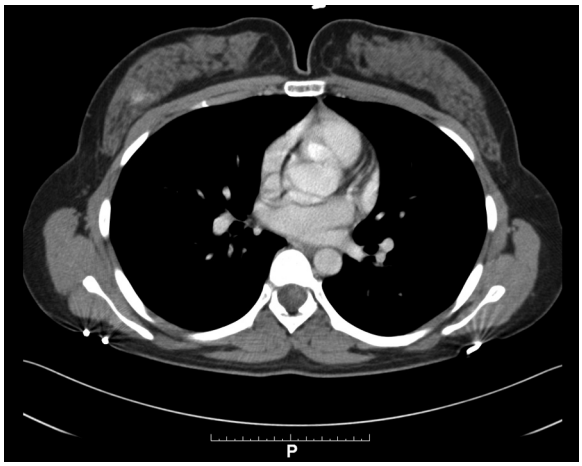

Fig. 1 – Axial postcontrast CT of the chest (in two contrast windows) demonstrates a poorly defined area of enhancement in the upper outer quadrant of the right breast. CT, computed tomography.

Histology revealed an infiltrative proliferation of thin walled capillary-like vessels with poorly formed smooth muscle fascicles infiltrating breast parenchyma without invasion of the lobular stroma. Scant lymphoid cells were present surrounding the capillary-like vessels. The endothelial cells were cytologically bland without mitosis (Fig. 4). Proliferative index measured by Ki-67 immunohistochemistry demonstrated an index less than 2%.

Postoperatively, the patient was instructed to return in 6 months for a follow-up physical examination, but no further imaging was clinically indicated. She was to continue her routine care with the endocrinology clinic at our institution.

Discussion

Primary vascular tumors of the breast are rare with malignant angiosarcoma the most common [1,2]. Benign vascular tumors of the breast can be challenging to diagnose, as these are rare and frequently asymptomatic [1]. These include hemangiomas, angiomatosis, and atypical vascular lesions. The following is a review of the clinical, histologic, and imaging findings of angiomatosis.

Angiomatosis was defined by Enzinger and Weiss as a proliferation of small- to medium-sized vessels of irregular shape that diffusely infiltrate the skin, subcutis, muscle, or bone. To our knowledge, only 11 cases of breast angiomatosis have been reported since 1985. Of the few reported cases, the majority are limited to breast tissue without skin involvement [3]. Clinically, these lesions present as palpable masses, tenderness, or progressive enlargement of the breast [4–8].

Case reports by Ciurea and colleagues [4] and Morrow and colleagues [3] describe cases of diffuse cystic angiomatosis of the breast with septated cystic spaces on ultrasound and MRI. Septa showed progressive signal enhancement. More recently, Natsiopoulos and colleagues described a similar case of diffuse breast angiomatosis with cystic spaces and septa. On MRI, they describe multiple communicating cystic dilated structures with T2-weighted imaging showing hyperintense tubular structures [3].

Histologic features of angiomatosis in the breast include the presence of thin to medium sized vascular channels that diffusely involve the breast parenchyma without destroying it. The histologic appearance of angiomatosis can mimic that of low-grade angiosarcoma [2,7]. Both demonstrate anastomosing channels and infiltrative pattern. Vascular channels are evenly distributed in angiomatosis without the branching lobular pattern of small vascular channels seen in angiosarcoma. The endothelial nuclei of angiomatosis appear bland in contrast to the variable degree of cytologic atypia present in the endothelial nuclei of angiosarcoma [7].

Although several cases of local recurrence of angiomatosis have been described, no cases of metastatic disease or malignant transformation have been reported [7]. However, angiomatosis and low-grade angiosarcoma can appear histologically similar. Color Doppler and MRI have been used in further characterization of vascular lesions, but the diagnosis is made histologically. Therefore, complete excision is required for diagnosis. Treatment includes excision with clear margins or mastectomy for lesions that cannot be completely resected [7].

In conclusion, this case of angiomatosis in a 28-year-old female is unique in its presentation as an incidental finding on chest CT and not as a palpable abnormality. The lack of symptoms in this patient may be explained by early detection of the angiomatosis. Few case reports describe imaging findings, which are typically not pathognomonic

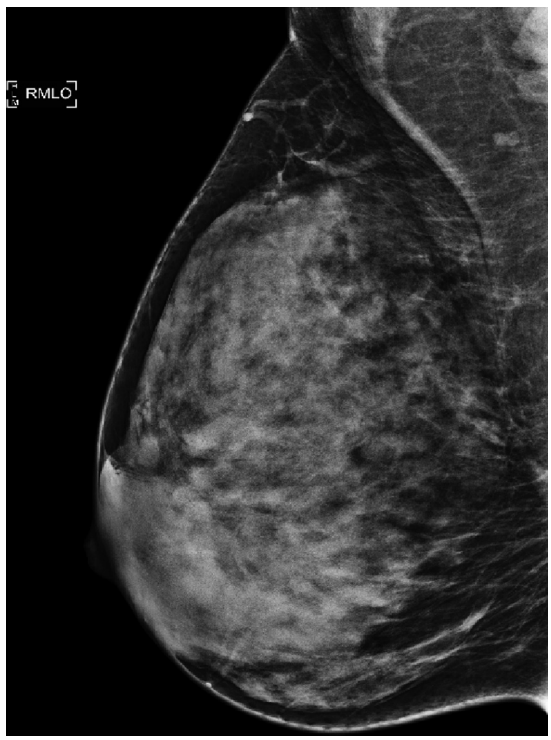

Fig. 2 – Digital mammography of the right breast in the mediolateral oblique (MLO) view demonstrates extremely dense breast tissue with no underlying mass, calcifications, or architectural distortion.

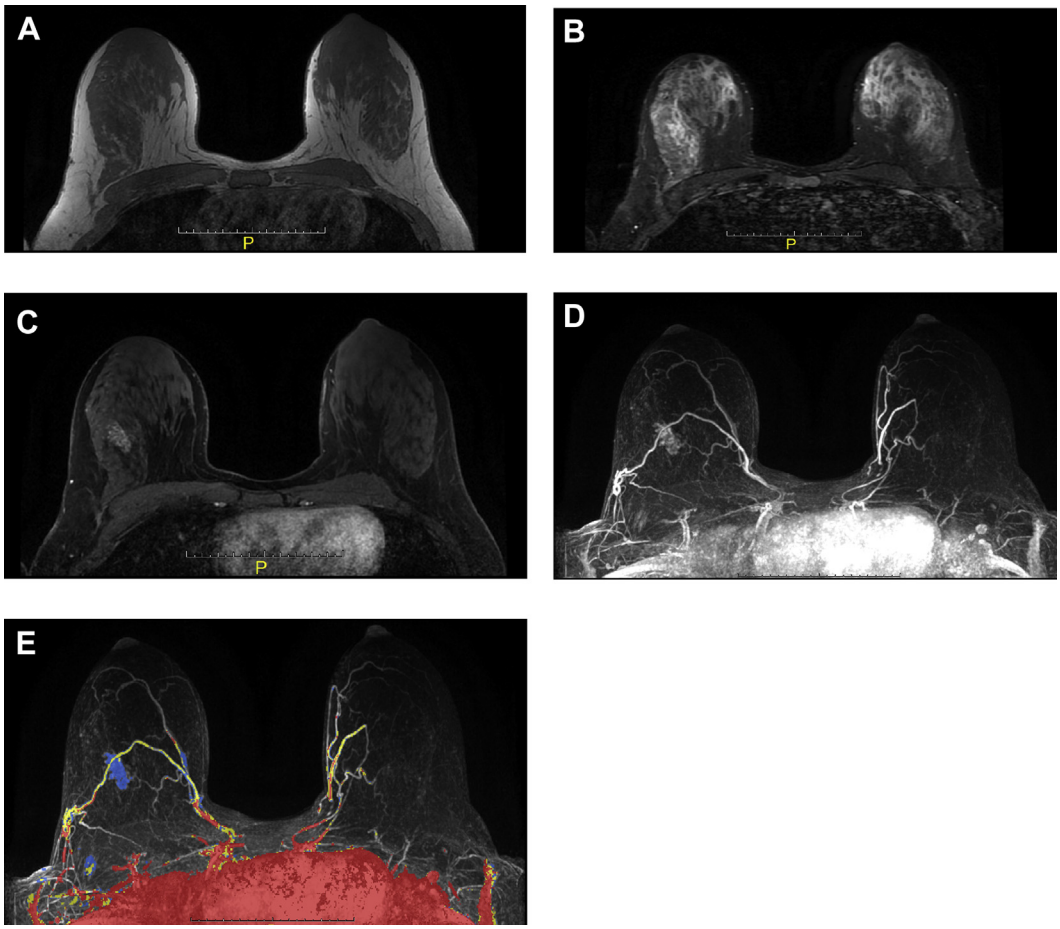

Fig. 3 – Noncontrast T1 axial breast MRI (A) demonstrates isointense signal in upper outer quadrant of the right breast. Axial T2 STIR (B) demonstrates increased signal in the upper outer quadrant of the right breast. Postcontrast axial T1 fat-suppressed single slice (C), pre/post–contrast subtracted maximum intensity projection (MIP) (D), and kinetic enhancement color overlay MIP (E) demonstrate nonmass enhancement in the upper outer quadrant of the right breast with rapid initial enhancement and persistent delayed enhancement corresponding to the region seen in (A) and (B). MRI, magnetic resonance imaging.

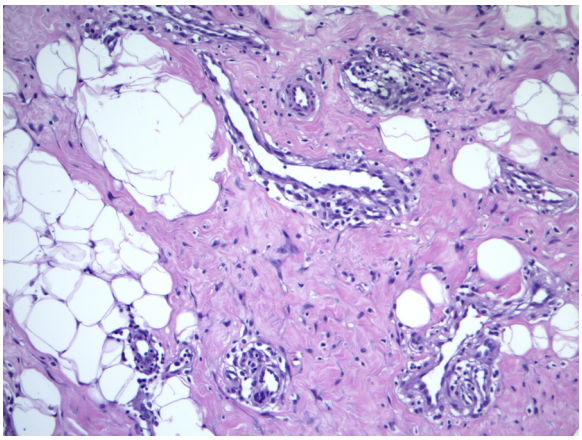

Fig. 4 – Hematoxylin and eosin stained histology slide at 10× shows small- and medium-sized capillary-like vessels infiltrating the fat and breast extralobular parenchyma. Endothelial atypia and complex anastomosing vessels are not seen. Scant lymphocytes surrounding the blood vessels are present.

for the disease. In contrast to previously reported cases of angiomatosis, our patient's tumor was occult on both mammography and ultrasound. Like the prior reported cases, our case demonstrated T2 hyperintensity on MRI. The findings in our case will add further imaging characteristics to aid in the diagnosis of angiomatosis in the future.

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