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## Case Report

# Cavernous hemangioma in a male breast: A rare entity and overview of current literature <sup>☆</sup>

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### ABSTRACT

We describe a case of a benign breast cavernous hemangioma in a 77-year-old male patient, which is a rare entity with less than 20 cases published in the literature since 1936. The mammographic and sonographic features of breast hemangiomas are nonspecific and tissue sampling is necessary as the diagnosis of exclusion is male breast carcinoma. Core biopsy is a reliable diagnostic tool for breast hemangiomas. Differentiating between benign breast hemangiomas and angiosarcomas is of outmost importance to appropriate care management as the former can be treated conservatively with follow-up or surgical excision and the latter usually managed aggressively with mastectomy.

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## Introduction

Breast vascular tumors are infrequently encountered in practice and rare in men. The first male breast hemangioma case was described in 1936 by Dr. Johnston from the University of Maryland and less than 20 additional male cases have since been published in the literature [1]. Mammographic and sonographic characteristics are not specific for the diagnosis and can overlap with the imaging features of male breast carcinoma. Thus, tissue sampling with core biopsy is necessary. Differentiating benign breast hemangioma from breast angiosarcoma with histopathology is essential for appropriate

treatment as angiosarcomas are usually aggressively managed with mastectomy. Herein we describe a case of a 77-year-old male referred for a palpable mass with a histopathologic diagnosis of cavernous hemangioma.

## Case report

A 77-year-old Caucasian male was referred to our breast center for diagnostic mammographic and sonographic evaluation, as well as possible ultrasound guided core biopsy of a palpable mass in the right breast.

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**Fig. 1 – Mammogram of the right breast. (A) Craniocaudal view. (B) Mediolateral oblique view. There is an oval circumscribed, dense mass in the area of palpable abnormality denoted by the BB marker. No associated microcalcifications were seen. No abnormal axillary nodes were seen.**

On clinical examination, there was a mobile palpable, non-tender mass in the upper outer right breast without associated skin discoloration or retraction.

Right breast mammogram (Fig. 1) showed a 2.5-cm oval-shaped (“lobulated”), circumscribed, dense mass at the area of the palpable abnormality without microcalcifications. Tar-

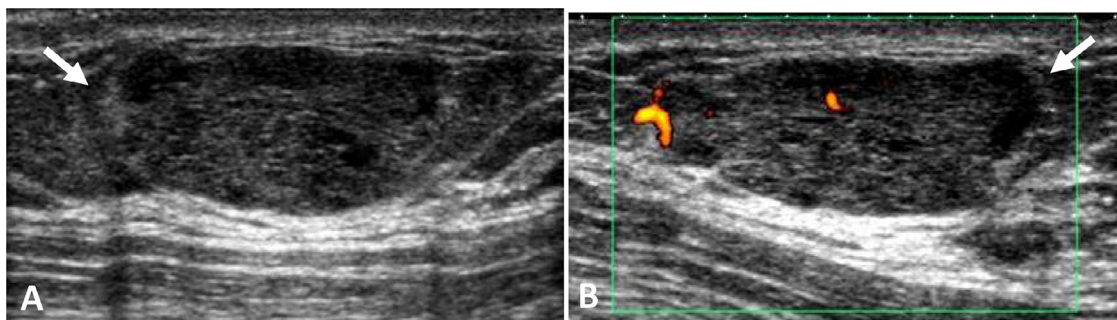
geted right breast ultrasound (Fig. 2) showed a heterogeneous mass, parallel in orientation, with indistinct margins and an apparent echogenic halo. Some vascularity was noted on Doppler flow. No abnormal axillary lymph nodes were identified.

Based on the mammographic and sonographic findings, the mass was categorized as suspicious requiring tissue sampling (BIRADS 4) and an ultrasound guided core biopsy was performed. Final pathology revealed a cavernous hemangioma with no evidence of atypia or malignancy. The patient was seen by a breast surgeon and a decision was made to follow the breast hemangioma instead of surgical excision.

## Discussion

Vascular breast tumors are infrequently encountered in practice and are rare in men. Patients typically present with a palpable mass and a diagnostic bilateral mammogram as well as breast and axillary ultrasound are performed. Mammographic and sonographic characteristics are not substantially different among men and women. Mammographic characteristics include oval or lobular shape, with circumscribed or microlobulated margins, and equal or high density (the latter more frequent in men) [1,2–5]. Calcifications are uncommon and when present correspond to phlebolith formation [4]. Sonographic characteristics commonly include oval shape, smooth/circumscribed margins, and a parallel orientation. Echogenicity is variable with almost one-third hypoechoic and one-third hyperechoic [2]. While some of these features are typically seen in benign breast lesions, some are suspicious (eg, high density on mammography) and the primary differential diagnostic concern for men is excluding breast carcinoma. Ultrasound-guided core biopsy is a reliable diagnostic tool for tissue sampling.

Hemangiomas are primarily divided into 2 main types based on the size of the vessels involved: capillary or cavernous. Histologically, these benign vascular tumors consist of dilated, endothelium lined vascular channels which are



**Fig. 2 – Longitudinal ultrasound images of the mass in the right breast without (A) and with Doppler interrogation (B). An apparent echogenic halo (arrows) and peripheral vascularity were suspicious and tissue sampling was performed to exclude breast carcinoma.**

filled with red blood cells. Rosen et al. published a histologic classification of breast hemangiomas upon review of 100 cases in females. Briefly, these are defined based on distribution (diffuse vs localized), anatomical location (perilobular, parenchymal, nonparenchymal), and vessel size [6–8].

Surgical excision may be recommended once a diagnosis is made, given the possibility of progression to angiosarcoma [9]. This is controversial and provided that angiosarcomas account for only 0.04% of all breast tumors, the possibility of progression remains extremely low. Liberman et al. described the mammographic and sonographic characteristics of biopsy-proven breast angiosarcomas [10]. Mammographic findings include ill-defined masses without calcifications, and sonographic findings include masses which are predominately hypoechoic. However, breast angiosarcomas can also be mammographically and sonographically occult. Histologic characteristics of angiosarcoma include anastomosing vascular channels, hyperchromatic endothelial nuclei, solid sarcomatous foci, necrosis and hemorrhagic areas, and endothelial papillary hyperplasia [4]. Compared to benign hemangiomas, breast angiosarcomas are treated aggressively with complete local excision with negative margins or with total mastectomy, with preference to the latter.

In our case, the imaging findings were concordant with the spectrum of mammographic and sonographic characteristics described in the literature on breast cavernous hemangiomas. The patient preferred conservative management with follow-up instead of surgical excision which is reasonable given the low likelihood of sarcomatous transformation.

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## REFERENCES

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- [1] Yoga A, Lyapichev KA, Baek D, Gomez-Fernandez CR. Hemangioma of a male breast: case report and review of the literature. *Am J Case Rep* 2018;19:1425–9.
- [2] Mesurolle B, Sygal V, Lalonde L, Lisbona A, Dufresne MP, Gagnon JH, et al. Sonographic and mammographic appearances of breast hemangioma. *Am J Roentgenol* 2008;191(1) W17–22.
- [3] Leddy R, Cluver A. Mammographic and sonographic characteristics of a cavernous hemangioma in a male patient. *J Ultrasound Med* 2010;29:645–9.
- [4] Carreira C, Romero C, Rodriguez R, de Francisco JM, Urbasos M, Pinto J. A cavernous haemangioma of breast in male: radiological-pathological correlation. *Eur Radiol* 2001;11:292–4.
- [5] Mojtahedi FF, Bulut T, Oosterhof-Berktaş R, Bezooijen R. Hemangioma in the male breast. *J Med Cases* 2016;7:323–5.
- [6] Jozefczyk MA, Rosen PP. Vascular tumors of the breast. II. Perilobular hemangiomas and hemangiomas. *Am J Surg Pathol* 1985;9:491–503.
- [7] Rosen PP, Jozefczyk MA, Boram LH. Vascular tumors of the breast. IV. The venous hemangioma. *Am J Surg Pathol* 1985;9:659–65.
- [8] Rosen PP. Vascular tumors of the breast. V. Nonparenchymal hemangiomas of mammary subcutaneous tissues. *Am J Surg Pathol* 1985;9:723–9.
- [9] Frey JD, Levine PG, Darvishian F, Shapiro RL. Angiosarcoma of the breast masquerading as hemangioma: exploring clinical and pathological diagnostic challenges. *Arch Plast Surg* 2015;42:259–61.
- [10] Liberman L, Dershaw DD, Kaufman RJ, Rosen PP. Angiosarcoma of the breast. *Radiology* 1992;183:649–54.