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Case Report

Beware it's benign: A unique case of concomitant benign breast pathologies ☆

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ARTICLE INFO

Article history:

Received 27 December 2023

Revised 1 April 2024

Accepted 8 April 2024

Keywords:

Benign breast diseases

Radial scar

Complex sclerosing lesion

Hamartoma

VABB

BIRADS

Breast

ABSTRACT

Complex sclerosing lesion (CSL)/radial scar of breast is a benign entity that can pose a diagnostic challenge due to resemblance to breast carcinoma on imaging. Hamartoma are uncommon benign tumors, composed of disorganized mixture of glandular, fibrous, and adipose tissues, which can exhibit classical imaging characteristics. Here we describe a case of concomitant CSL and hamartoma in left breast, of which CSL presented as suspicious mass on imaging but was ultimately confirmed to be benign on histopathology with 4 years of documented stability.

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Introduction

Benign breast disease in women is a very common finding. In all the women presenting with clinical symptoms, only 3%-6% are diagnosed with cancer and the rest are benign [1]. Benign breast diseases included a variety of conditions with fibrocystic disease being the most common.

One such entity is radial scar of breast. Radial scar is characterized by stellate configuration of a fibroelastic core with

radiating spokes of ducts and lobules. Lesions greater than 1 cm are known as complex sclerosing lesion (CSL). These lesions are rare accounting for ~0.6%-3.7% of biopsied breast lesions. Although being benign, these lesions are associated with risk of development of carcinoma. Radial scars/CSL pose a diagnostic dilemma to radiologists because of overlapping imaging features with invasive ductal carcinoma and ductal carcinoma in situ on ultrasonography, mammography, and MRI.

☆ Competing Interests: The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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<https://doi.org/10.1016/j.radcr.2024.04.013>

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We present a case of 35-year-old female who visited the breast clinic at our institute with complaints of slowly progressive left breast lump for 7 years in lower outer quadrant with associated new onset pain. After clinical examination, the patient was referred to the department of radiology for imaging.

Case presentation

A 35-year-old female visited the breast clinic of our institute with complaints of progressive left breast lump for 7 years in lower outer quadrant with associated new onset pain. On clinical examination, a mobile, well-defined lump with smooth margins of size approximately 4.0×3.0 cm was palpated in left lower outer quadrant towards 4-5 o'clock position. Nodularity was seen in bilateral breasts. Mammography revealed type D breast density with an area of architectural distortion with lucent core and peripherally radiating thin, long spicules in the left breast in inner central region at 9-10 o'clock position (Figs. 1A and B). No internal calcifications were seen within. Another equal density lesion with obscured margins was seen in left breast in lower outer quadrant corresponding to the area of patient's concern (Fig. 2). Following this, ultrasonography was performed which showed an irregular hypoechoic lesion with angulated margins and internal cystic areas at 11 o'clock position without any posterior features (Fig. 3). Internal vascularity was present on color Doppler. On strain elastography, the lesion was soft with shear wave value of 1.6 kPa. The lesion in lower outer quadrant showed parallel orientation, oval shape, heterogeneously hypoechoic echotexture with circumscribed margins without any echogenic focus or

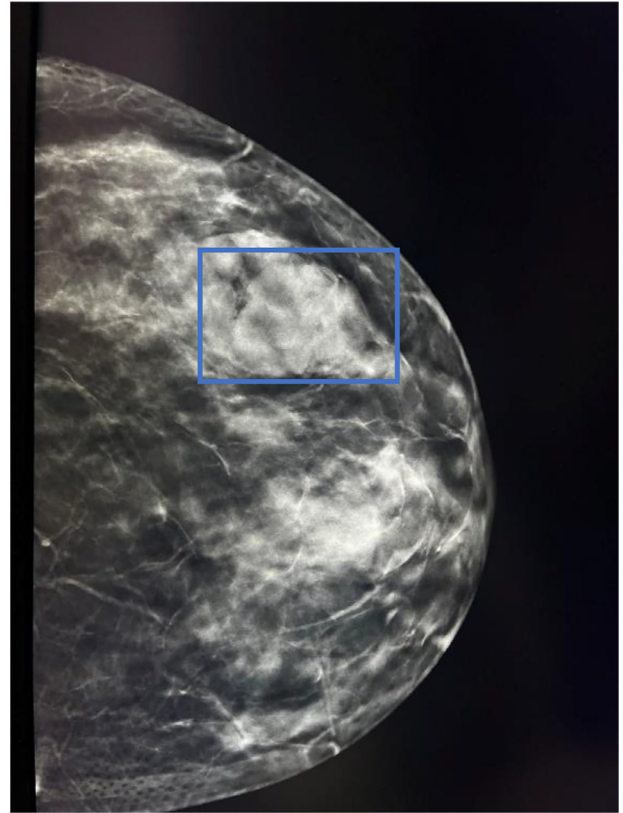
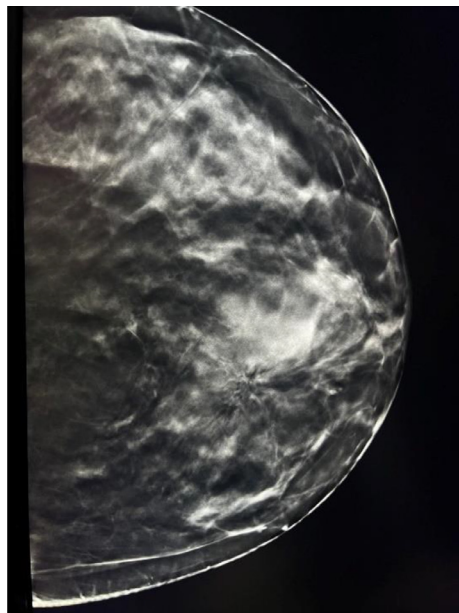
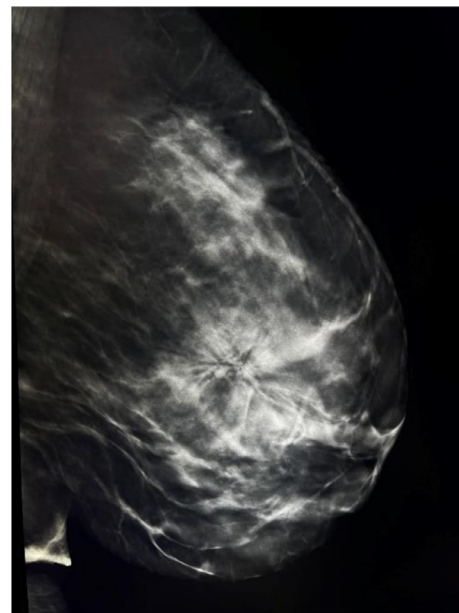


Fig. 2 – DBT image of CC view of the left breast show an equal density mass with obscured margins in outer quadrant (blue box).



A



B

Fig. 1 – (A and B) DBT images of CC and MLO views of the left breast shows area of architectural distortion with lucent centre and peripherally radiating spicules in inner central region (black star).

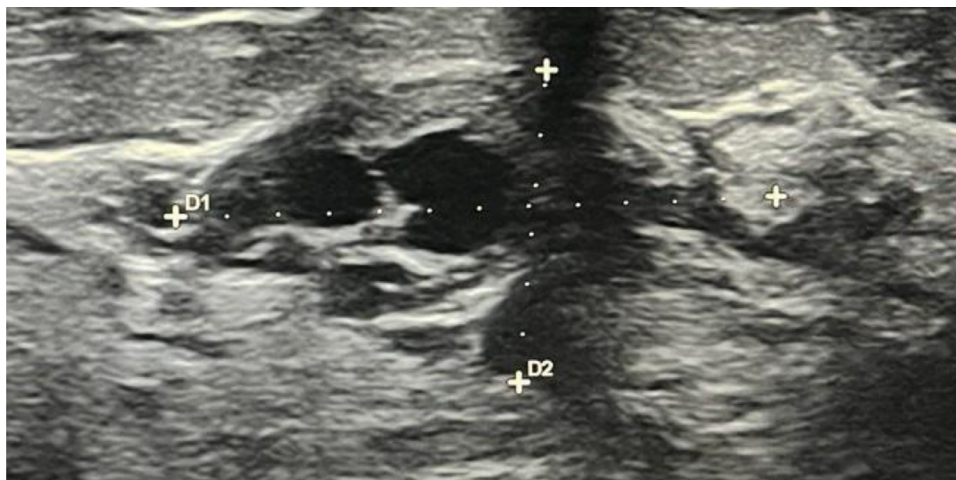


Fig. 3 – Grey scale USG image of left breast shows an irregular shaped hypoechoic lesion with angulated margins and internal cystic areas.

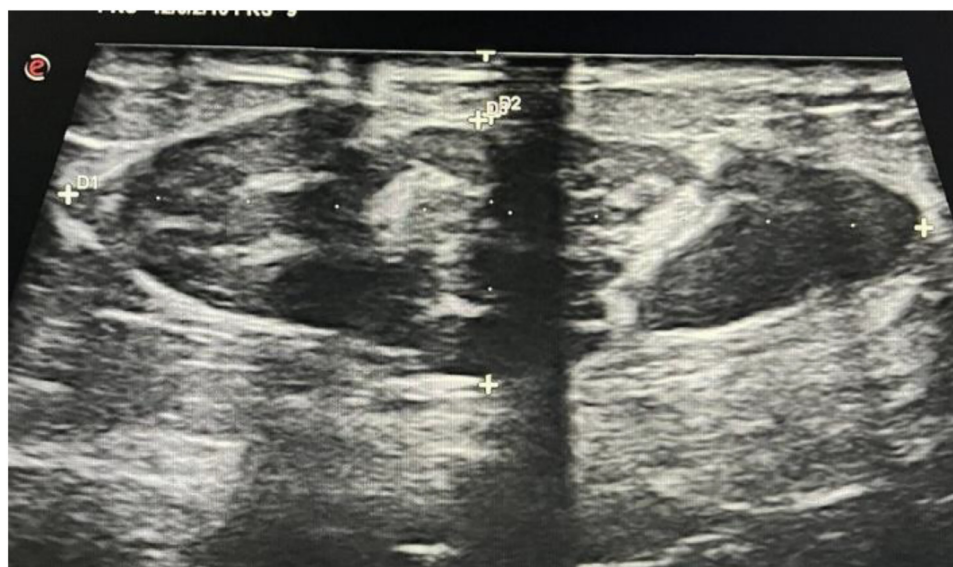


Fig. 4 – Grey scale USG image of the left breast shows classical hamartoma with a parallel oriented oval shape, heterogeneous echotexture with both hypoechoic and hyperechoic areas and circumscribed margins without any acoustic features.

acoustic features (Fig. 4). BIRADS 4 category was assigned to lesion at 11 o'clock. The lesion seen in lower outer quadrant was labelled as hamartoma and given a BIRADS 2 category.

CE-MRI bilateral breasts was done for which revealed an area of architectural distortion in upper inner quadrant with type 1 kinetic curve and internal cystic areas (Figs. 5 and 6). The second lesion in lower outer quadrant showed mixed signal on T1W/T2W images with areas of interspersed fat within (Figs. 7A and B). On post contrast T1W images, type 1 kinetic curve was seen. An imaging diagnosis of hamartoma was given.

Post imaging, overall BIRADS 4 was given to left breast USG vacuum assisted breast biopsy (VABB) was done for the area of architectural distortion in upper inner quadrant and core needle biopsy was done from the lesion in lower outer quadrant

due to patient's concern and clinician's request as the lump was palpable. Biopsy revealed benign breast diseases in both the lesions (Figs. 8A and B).

Following biopsy report, the BIRADS 4 lesion was downgraded to BIRADS 3 and kept under 6 monthly follow-up for 2 years and then yearly afterwards. A 4 years of stability was documented for both the lesions following which the BIRADS 3 lesion was downgraded to BIRADS 2 category.

Discussion

Complex sclerosing lesions of breast are of uncertain malignant potential (B3-lesion) whereas hamartoma (B2) are benign

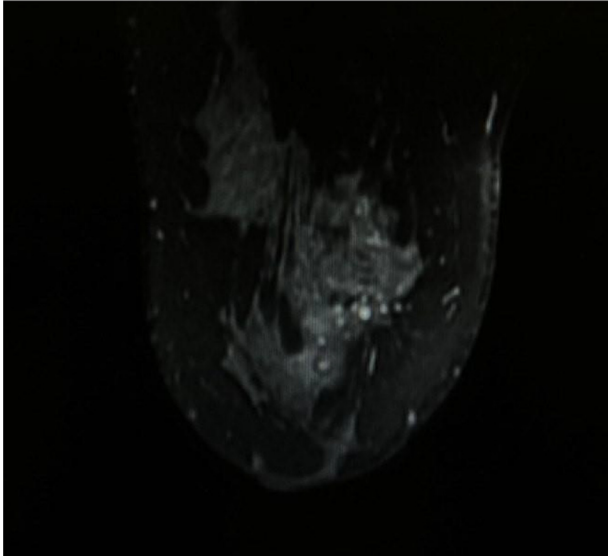


Fig. 5 – Axial T2W fatsat MRI image of the left breast shows T2 hyperintense cystic areas within the lesion in the upper inner quadrant.

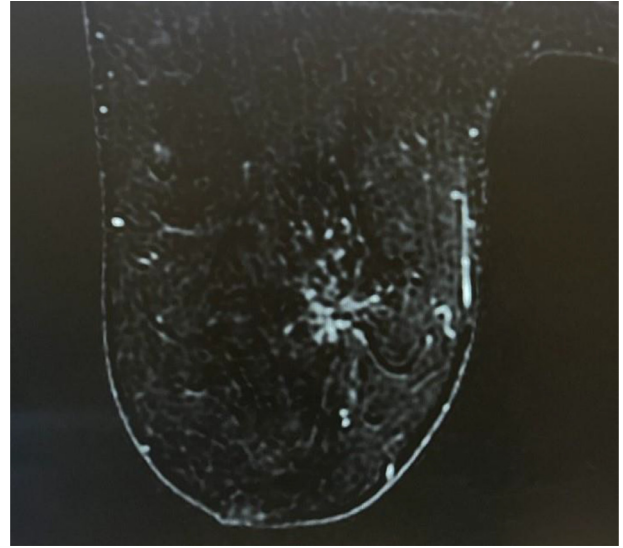


Fig. 6 – Axial T1W post contrast subtraction image shows heterogeneous enhancement within the area of architectural distortion in upper inner quadrant.

lesions. Ours is the first case to report the co-existence of both these lesions in one breast. There is no previous report mentioning the concurrent occurrence of these lesions to the best of our knowledge.

Mammography

Radial scars commonly present as an area of architectural distortion with radiolucent core and thin radiating spicules. Similarly in our case, the lesion showed a stellate shaped area of architectural distortion with long radiating spicules without any central density. According to previous studies, no imaging features are pathognomic of this entity and/or can rule out malignancy.

Tabar and Dean [3], described the following mammographic to diagnose radial scar. First, the appearance varies in different projections. Second, there is no solid dense central tumor mass of a size corresponding to the length of the spicules. Third, very long, very thin spicules are present. Fourth, radiolucent (i.e., black) linear structures parallel the radiopaque (i.e., white) spicules. These lucent lines on occasion can dominate the overall mammographic presentation, giving rise to the term “black stars” [Figs. 1A and B]. Fifth, no skin thickening or skin retraction is present over the lesion. Sixth, there is a striking disparity between mammographic findings and the absence of palpable findings no matter how large or how near the surface the lesion lies.

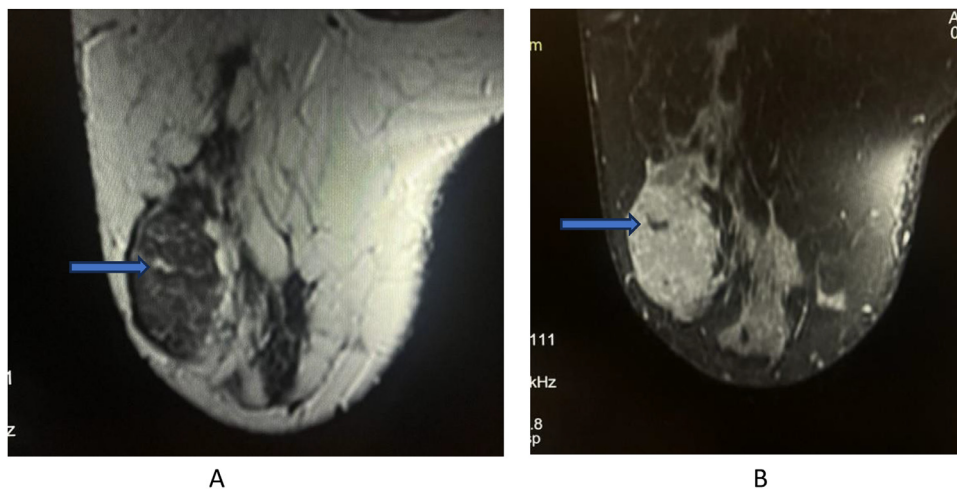
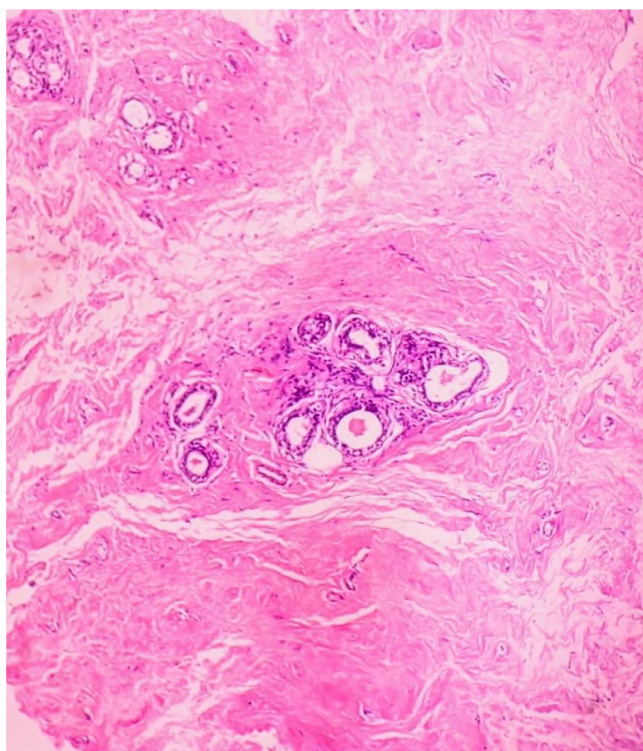
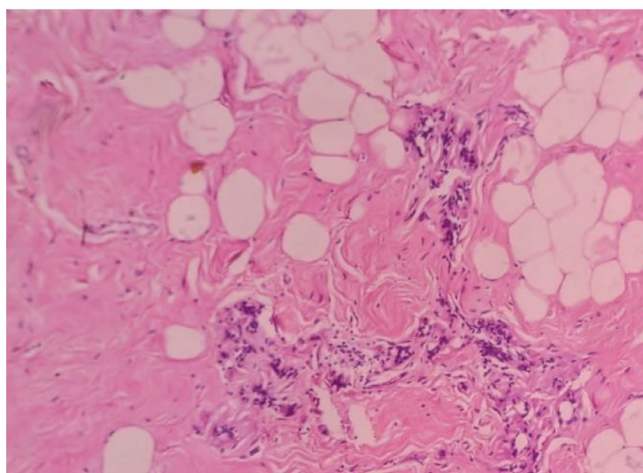


Fig. 7 – (A and B) Axial T2W (A) and T2W fatsat (B) images show small areas of interspersed fat which is hyperintense on T2W image with signal drop on fatsat image (blue arrows).



A



B

Fig. 8 – (A) H&E, 20x: Photomicrograph shows markedly sclerosed stroma with scant glandular epithelial component. (B) H&E, 20x: Photomicrograph shows focal adenosis with intervening sclerosed stroma and adipose tissue.

However, even on applications of all these criteria, Frouge et al. [4] found that 50% of the retrospectively identified cases turned out to be carcinoma on biopsy. Similarly, Linda et al. [2], Mitnick et al. [5], and Alleva et al. [6] misclassified carcinomas as radial scars on mammography.

With the advent of digital breast tomosynthesis, more radial scars/complex sclerosing lesions are being detected; how-

ever, there are no specific features to differentiate scar from malignancy. Biopsy is needed for confirmation [7,8].

USG

USG features of CSL include area of architectural distortion, irregular mass with variable margins with/without pas, or only PAS. Although few USG findings like absence of echogenic ring, presence of small cysts and absence of PAS point more towards diagnosis of CSL, no imaging feature is conclusive and histological diagnosis is mandatory as concluded by Cawson and others.

In our study, the lesion presented as an irregular hypoechoic mass with angulated margins and multiple small cysts (Fig. 3) within and in surrounding area. No posterior acoustic feature was observed. On color Doppler, internal vascularity was observed. Elastography revealed low shear wave value of 1.6 kPa favouring a benign pathology. Publications by Zhi et al [9], Leong et al. [10] and Evan et al. [11] show that elastography does not reliably differentiate radial scars from malignancies.

MRI

Radial scars have variable presentation on MRI ranging from mass lesion to architectural distortion to non-mass enhancement and focus. Enhancement patterns similarly varies from type 1 to type 3 kinetic curves as evidenced by Linda et al. [12] A study done by Pediconi et al. [13] and subsequently supported by Linda et al. showed that CSL which did not enhance on CE-MRI had nearly 100% negative predictive value of being benign. In our case, the lesion presented as irregular mass with heterogeneous enhancement showing type 1 kinetic curve and was assigned a BIRADS category 4.

The upgrade rate ranges from 0.0% to 40% [14]. A USG guided VABB was performed in our case to obtain to adequate sample and reduce false negative chances. The patient was kept under short-term follow up of 6 months for 2 years and yearly afterwards with documented stability of 3 years.

Breast hamartoma is a well-circumscribed benign lesion composed of glandular tissue, epithelial elements, fibrous tissue, and fat in varying proportions. It is a rare, benign entity with the reported incidence between 0.1% and 0.7%.

On imaging, hamartoma or fibroadenolipoma exhibit classical features, in which case no further imaging or intervention is required. The lesion in our case showed was showed classical imaging features with well defined, oval shaped with presence of fat on MRI. Biopsy was performed as per patient's request. Although benign, malignancy can arise within hamartoma [15,16]. In our case, the lesion showed documented stability of 4 years and the patient continues to be on annual screening [Figs. 8A and B].

Conclusion

Benign breast diseases constitute most of the breast diseases with few mimicking malignancies. Complex sclerosing lesion carries overlapping imaging features with breast carcinoma, hence histopathological diagnosis, preferably with a larger

gauge biopsy gun, is required to establish benignity and rule out malignancy. As the upgrade rate to invasive carcinoma is variable and no single consensus is available for management of these lesions, case-by-case management is warranted. Hamartoma are rare benign entities which when typical on imaging, do not require any intervention.

Patient consent

A written and informed consent was obtained from the patient for publication of this case report.

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