Case Report

Nodular sclerosing adenosis detected as focal uptake on molecular breast imaging

Jessica A Axmacher*, Asha A Bhatt, Gina K Hesley

Mayo Clinic, Department of Radiology, Division of Breast Imaging, 100 1st St SW, Rochester MN 55902, USA

ARTICLE INFO

Article history:
Received 24 March 2020
Revised 7 April 2020
Accepted 7 April 2020

Keywords:
Molecular breast imaging
Nodular sclerosing adenosis
Supplemental screening

ABSTRACT

We report a case of nodular sclerosing adenosis presenting as false-positive uptake on molecular breast imaging (MBI). A 51-year-old woman with elevated lifetime risk of breast cancer underwent supplemental MBI which showed focal uptake in the right breast. A corresponding mass was found on ultrasound with subsequent biopsy yielding nodular sclerosing adenosis. After the biopsy results were reviewed, a problem solving breast MR was recommended. Breast MR showed a solitary enhancing right breast mass containing a marker clip, and the sonographic biopsy was then deemed concordant with pathology. While adenosis lesions are known mimickers of malignancy on other breast imaging modalities, their appearance on MBI has not been previously published.

© 2020 The Authors. Published by Elsevier Inc. on behalf of University of Washington. This is an open access article under the CC BY-NC-ND license. (http://creativecommons.org/licenses/by-nc-nd/4.0/)

Case report

A 51-year-old woman underwent supplemental screening with molecular breast imaging (MBI) due to family history as well as heterogeneously dense breast tissue. A recent screening mammogram/tomosynthesis was benign with circumscribed fluctuating masses within both breasts. The patient had a documented history of benign breast cysts. Following injection of 7.9 millicuries of Tc-99m Sestamibi, standard 4 view MBI was performed. The MBI showed focal uptake in the upper outer right breast at posterior depth (Fig. 1), and was assessed as “BIRADS 4- Suspicious.”

Subsequently, the patient underwent targeted ultrasound which showed a solid, well-circumscribed hypoechoic mass measuring 1.2 × 0.9 × 1.2 cm with internal vascularity. The sonographic mass corresponded to the region of MBI uptake (Fig. 2a and b). Additional benign cysts were noted.

Ultrasound guided biopsy was recommended and performed, with a ribbon clip appropriately positioned within the targeted mass and corresponding to the MBI uptake by postprocedural mammogram (Fig. 3). Pathology returned as “nodular sclerosing adenosis” and was deemed discordant with the initial MBI uptake. Problem solving MRI was recommended.
Fig. 1 – MBI: Focal uptake in the right upper outer quadrant (arrow).

Fig. 2 – (a-b) Diagnostic ultrasound-circumscribed hypoechoic mass with increased through transmission (a) and vascularity (b) corresponds to the uptake on MBI (arrows).
metallic artifact from the marker clip and washout kinetics (Fig. 4a-c). Multiple benign cysts were noted in both breasts. No additional findings in either breast. With the MR clearly showing the clip within the lone enhancing mass, the pathology was then deemed concordant with MBI uptake and no further workup was recommended apart from routine, risk-appropriate breast cancer screening. As of 1 year later, the patient's screening mammogram/tomosynthesis remains negative/benign.

**Discussion**

Sclerosing adenosis (SA) is a common, benign, proliferative disorder of the breast most common in the perimenopausal period, and can mimic malignancy both grossly and microscopically [1,5,6]. SA is frequently seen in isolation or in conjunction with other pathology at time of a breast biopsy and may confer a slight increase risk of breast cancer [1,2,6,7]. In a 2014 publication by Visscher et al. [1], SA was found in 3733 out of 13,434 benign breast biopsies (28%). After a median follow up of 15.7 years, patients with SA had a slightly increased risk of breast cancer with a standardized incidence ratio of 2.1, versus 1.5 for patients with benign biopsies that did not contain SA. Other studies have found an increased risk ranging from 1.7 to 3.7 in most series [2,9,10].

SA has a varied imaging appearance. In a study by Taskin et al. [4], 76 patients with SA were identified of which 41 lesions showed SA as the primary diagnosis. Of these, 18 (44%) presented on imaging as mass lesions, 16 (39%) microcalcifications, 2 (5%) asymmetries, 3 (7%) architectural distortion and 2 (5%) were seen on ultrasound only with shadowing. When SA forms a clinically palpable or imaging-apparent mass, it is termed “nodular sclerosing adenosis” or “adenosis tumor” [3]. While MR enhancement has previously been reported within nodular sclerosing adenosis [6,8], MBI uptake has not been previously reported. This case is the first of our knowledge to show pure nodular sclerosing adenosis presenting as focal uptake on MBI.

**Fig. 3 – Postprocedure mammogram shows clip in appropriate position (arrow).**

Bilateral breast MRI with contrast was performed and showed marked background uptake. Within the right breast upper outer quadrant, superimposed over the background uptake, was a solitary circumscribed enhancing mass containing...
Fig. 4  – (a-c) MR shows a solitary enhancing mass with clip artifact (a-b) and washout kinetics.
REFERENCES

[1] Visscher DW, Nassar A, Degnim AC, Frost MH, Vierkant RA, Frank RD, et al. Sclerosing adenosis and risk of breast cancer. Breast Cancer Res Treat 2014;144:205–12.

[2] Gill HK, Ioffe OB, Berg WA. When is a diagnosis of sclerosing adenosis acceptable at core biopsy? Radiology 2003;228:50–7.

[3] Gunhan-Bilgen I, Memis A, Ustun EE, Ozdemir N, Erhan Y. Sclerosing adenosis: mammographic and ultrasonographic findings with clinical and histopathological correlation. Eur J Radiol 2002;44:232–8.

[4] Taskin F, Koseoglu K, Unsal A, Erkus M, Ozbas S, Karaman C. Sclerosing adenosis of the breast: radiologic appearance and efficiency of core needle biopsy. Diagn Interv Radiol 2011;17:311–16.

[5] Cho SH, Park SH. Mimickers of breast malignancy on breast sonography. J Ultrasound Med 2013;32:2029–36.

[6] Oztekin PS, Tuncbilek I, Kosar P, Gultekin S, Ozturk FK. Nodular sclerosing adenosis mimicking malignancy in the breast: magnetic resonance imaging findings. Breast J 2011;17:95–7.

[7] Shaheen R, Schimmelpenninck CA, Stoddart L, Raymond H, Slanetz PJ. Spectrum of diseases presenting as architectural distortion on mammography: multimodality radiologic imaging with pathologic correlation. Semin Ultrasound CT MR 2011;32:351–62.

[8] Gity M, Arabkheradmand A, Taheri E, Shakiba M, Khademi Y, Bijan B, Sadaghiani MS, et al. Magnetic Resonance Imaging Features of Adenosis in the Breast. J Breast Cancer Jun 2015;18(2):187–94.

[9] Jensen RA, Page DL, Dupont WD, Rogers LW. Invasive breast cancer risk in women with sclerosing adenosis. Cancer 1989;64:1977–83.

[10] Bodian CA, Perzin KH, Lattes R, Hoffmann P, Abernathy TG. Prognostic significance of benign proliferative breast disease. Cancer 1993;71:3896–907.