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Breast Imaging

Primary breast osteosarcoma mimicking calcified fibroadenoma on screening digital breast tomosynthesis mammogram

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ABSTRACT

Primary breast osteosarcoma is a rare malignancy, with mostly case reports in the literature. The appearance of breast osteosarcoma on digital breast tomosynthesis imaging has not yet been described. A 69-year-old woman presents for routine screening mammography and is found to have a calcified mass in her right breast. Pattern of calcification appeared “sunburst” on digital breast tomosynthesis images. This mass was larger than on the previous year’s mammogram, at which time it had been interpreted as a benign calcified fibroadenoma. The subsequent workup demonstrated the mass to reflect primary breast osteosarcoma. The patient’s workup and treatment are detailed in this case. Primary breast osteosarcoma, although rare, should be included as a diagnostic consideration for breast masses with a sunburst pattern of calcifications, particularly when the mammographic appearance has changed.

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Introduction

Primary breast osteosarcoma is an extremely rare malignancy, accounting for less than 0.1% of all primary breast malignancies [1]. The first English-language case was reported in 1982 [2], with approximately 100 cases described since

that time. Most of the reported cases have included images from film-screen mammography showing densely calcified masses. To date, the appearance of primary breast osteosarcoma has not been demonstrated with digital breast tomosynthesis (DBT) imaging.

We present a case of a screen-detected primary breast osteosarcoma, which was initially thought to reflect a calcified

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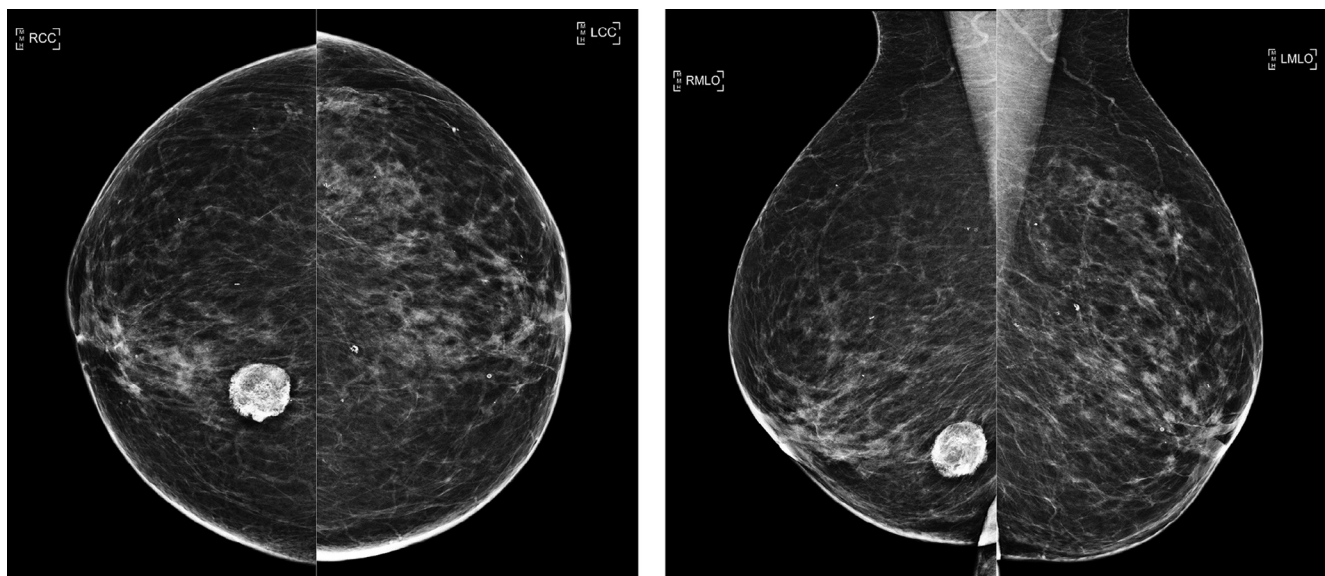


Fig. 1 – Screening mammogram. Standard craniocaudal (CC) and mediolateral oblique (MLO) views of both breasts demonstrate an oval, calcified mass in the lower inner quadrant of the right breast. The mammographic appearance of the left breast is normal. LCC, left craniocaudal; LMLO, left mediolateral oblique; RCC, right craniocaudal; RMLO, right mediolateral oblique.

fibroadenoma on previous mammograms. The patient's subsequent evaluation, treatment, and follow-up are also described.

Case report

A 69-year-old woman presented for routine screening mammography. The patient was found to have an oval, partially

calcified mass in the lower inner quadrant of her right breast (Fig. 1). Margins of the mass were circumscribed. The pattern of calcifications was “sunburst” on DBT images (Fig. 2A). When compared with the mammogram from the previous year, the mass had significantly enlarged in size (Fig. 2B and C). Calcifications were new from the mammogram performed 2 years before presentation (Fig. 2D). No suspicious mass, calcification, or distortion was seen in the contralateral left breast.

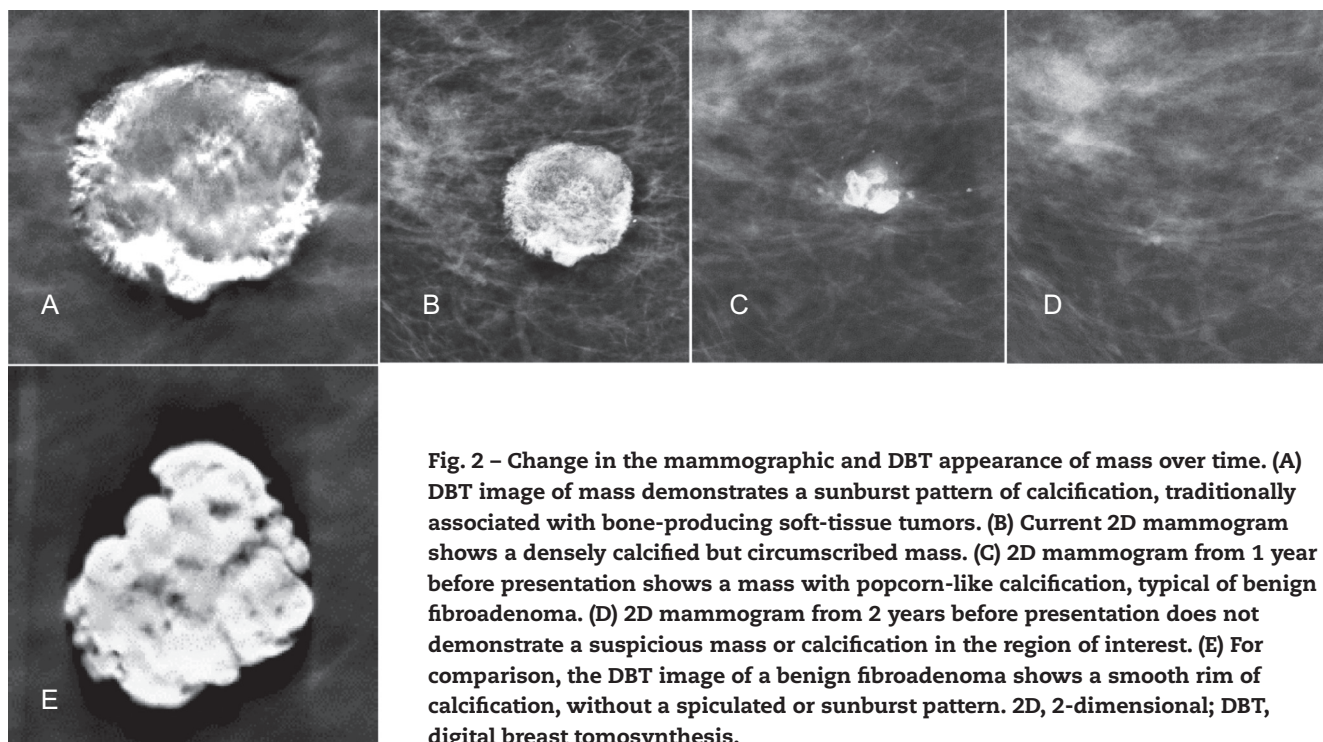


Fig. 2 – Change in the mammographic and DBT appearance of mass over time. (A) DBT image of mass demonstrates a sunburst pattern of calcification, traditionally associated with bone-producing soft-tissue tumors. (B) Current 2D mammogram shows a densely calcified but circumscribed mass. (C) 2D mammogram from 1 year before presentation shows a mass with popcorn-like calcification, typical of benign fibroadenoma. (D) 2D mammogram from 2 years before presentation does not demonstrate a suspicious mass or calcification in the region of interest. (E) For comparison, the DBT image of a benign fibroadenoma shows a smooth rim of calcification, without a spiculated or sunburst pattern. 2D, 2-dimensional; DBT, digital breast tomosynthesis.

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