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Benign osseous metaplasia of the breast: Case report

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ABSTRACT

INTRODUCTION: Benign Osseous metaplasia of the breast is rare, with only a few cases reported in the literature. Here we present a case of benign osseous metaplasia of the breast presenting as a breast lump.
CASE PRESENTATION: 38-year-old previously well woman presented with a one-year history of bilateral breast pain and a left-sided breast lump. Ultrasound and mammography suggested calcified fibroadenoma. An ultrasound-guided true cut biopsy revealed fibrous tissue containing foci of adenosis in the presence of a myoepithelial cell layer. Excision biopsy was performed, and histopathological examination showed bone matrix deposition occupying most of the nodule with peripheral hyalinized tissue but no evidence of malignancy. A diagnosis of benign osseous metaplasia of the breast was made, and the patient recovered well without recurrence after lump excision.
DISCUSSION: Only a few cases of osseous metaplasia are reported in the literature. Most reported cases are malignant, such as in fibrosarcoma, malignant mesenchymoma, osteoid sarcoma, osteogenic sarcoma, and osteochondrosarcoma.Very few cases of osseous sarcoma are reported in benign lesions such as fibroadenoma, pleomorphic adenoma, benign mesenchymoma, phyllodes tumor, and amyloid tumor of the breast. Joshi et al. first reported a case of benign osseous metaplasia of the breast presenting as breast lump in an HIV-positive patient [18]. We, therefore, consider this case to be the second case report of benign osseous metaplasia of the breast presenting as a breast lump, but the patient had no chronic illness.
CONCLUSION: A breast lump can be the first presentation of benign osseous metaplasia.

1. Introduction

Osseous metaplasia of the breast usually refers to the presence of bone tissue in benign and malignant breast neoplasm. It is rare, with only a few cases reported in the literature, especially in association with benign lesions [1,2]. Here we present a case of benign osseous metaplasia of the breast presenting as a breast lump. This is only the second reported case in the literature. This work has been reported in accordance with the SCARE criteria [3].

2. Case presentation

Patient information. A 38-year-old woman presented to clinic reporting a one-year history of bilateral breast pain and a left breast lump. Clinical Finding: revealed a 1 × 2 cm mobile, firm, non-tender lump at 3 o'clock in the left breast with no associated skin changes or lymphadenopathy.

2.1. Diagnostic assessment

Ultrasound examination revealed a well-defined lobulated hypoechoic mass with calcification, suggestive of calcified fibroadenoma. A mammogram of the left breast showed a left breast lesion with "popcorn" calcification (BIRADS II), also suggestive of fibroadenoma (Fig. 1). Given these findings, an ultrasound-guided true cut biopsy was performed, and histopathological examination revealed fibrous tissue containing foci of adenosis in the presence of a myoepithelial cell layer. Excisional biopsy was carried out, and the gross appearance of the specimen was a well-circumscribed whitish and hard nodule. Microscopic examination revealed bone matrix deposition occupying most of the nodule with peripheral hyalinized tissue and no evidence of malignancy (Fig. 2A and B). The diagnosis was osseous metaplasia of the breast.

2.2. Differential diagnosis

Osseous metaplasia of the breast has a number of important differential diagnoses: along the benign spectrum, lesions such as fibroadenoma, pleomorphic adenoma, benign mesenchymoma, phylloides tumor, amyloid tumor, breast abscess, and fat necrosis

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Table 1
(The progress of the patient case from initial presentation to diagnosis, treatment, and follow-up).

Dates	Summaries from initial and follow up visits	Diagnostic Test	plan
13–10-2016	Patient presented to primary health care with one-year history of bilateral breast pain and a left breast lump	Non	- U/s of the breast
22–11-2016	Follow up	Ultrasound examination revealed a well-defined lobulated hypoechoic mass with calcification, suggestive of calcified fibroadenoma	- Mammogram - Referred to general surgery
11–1-2017	Follow up	A mammogram of the left breast showed a left breast lesion with "popcorn" calcification (BIRADS II), also suggestive of fibroadenoma	- U/S guided true cut biopsy
26–2–2017	Follow up	Ultrasound-guided true cut biopsy was performed, and histopathological examination revealed fibrous tissue containing foci of adenosis in the presence of a myoepithelial cell layer	- Left lump Excision (done at 3–4-2017)
9–4-2017	Follow up	Pt had no complaints, and the breast had healed well without complications or recurrence	- Follow up after 6 weeks then after 1 year

Fig. 1. A mammogram of the left breast showed a left breast lesion with "popcorn" calcification (BIRADS II), also suggestive of fibroadenoma.

must be considered. In terms of malignant lesions, fibrosarcoma, malignant mesenchymoma, osteoid sarcoma, osteogenic sarcoma, and osteochondrosarcoma are in the differential diagnosis.

2.3. Therapeutic intervention

The patient underwent lump excision. Post-operatively, the patient recovered well and was discharged the next day.

2.4. Follow-up and outcome

The patient was followed up in the outpatient clinic at one week and six weeks after surgery. She recovered well with no complaints, and the breast had healed well without complications or recurrence.

- Table 1 (The progress of the patient case from initial presentation to diagnosis, treatment, and follow-up).

3. Discussion

When bone tissue is found in neoplastic stroma it is called osseous metaplasia. Osseous metaplasia is very rare but has been reported in many organs including the breast, gastrointestinal tract, lung, thyroid, parathyroid, and pancreas [4]. Osseous metaplasia was first described in the early 18th century in association with several conditions including hematoma, post-traumatic hematoma, and soft tissue tumors [5]. Virchow postulated that osseous metaplasia arises from fibroblasts, i.e., osteoblasts are modified fibroblasts. Osseous metaplasia may arise directly from fibroblasts or from cartilage [6,7].

Only a few cases of osseous metaplasia are reported in the literature. Most reported cases are malignant, such as in fibrosarcoma [8],

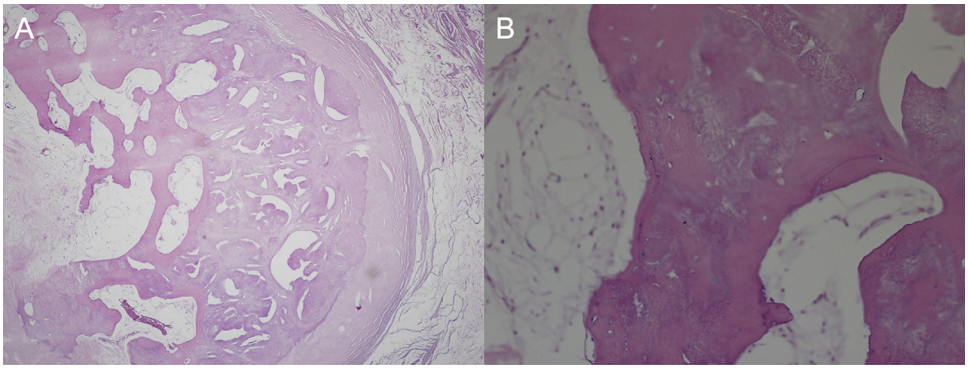

Fig. 2. (A, B) Bone matrix deposition occupying most of the nodule with peripheral hyalinized tissue and no evidence of malignancy.

malignant mesenchymoma, osteoid sarcoma [9], osteogenic sarcoma [10], and osteochondrosarcoma [1]. Very few cases of osseous sarcoma are reported in benign lesions such as fibroadenoma, pleomorphic adenoma, benign mesenchymoma [11], phyllodes tumor [12], and amyloid tumor of the breast [7]. Approximately 200 cases of osseous metaplasia have been reported, most of which were reported as arising in fibroadenomas, phyllodes tumors, and sarcomas [13]. In a review of 307 cases of breast neoplasms containing bone or cartilage,1/90 fibroadenomas and 2/158 breast carcinomas contained bone, one benign mesenchymoma contained cartilage, and one was a benign "mixed" tumor containing both bone and cartilage [11].

The mammographic and ultrasound findings of osseous metaplasia depend on the cause. For example, and as in our case, it can present as a well-defined oval lesion with calcification in benign neoplasms such as fibroadenoma or benign phyllodes tumor [14]. In the case of malignant neoplasms, it can present as a circumscribed mass with calcification or with a spiculated malignant appearance [15–18]. Joshi et al. first reported a case of benign osseous metaplasia of the breast presenting as breast lump in an HIV-positive patient [19]. We, therefore, consider this case to be the second case report of benign osseous metaplasia of the breast presenting as a breast lump, but the patient had no chronic illness. In conclusion, a breast lump can be the first presentation of benign osseous metaplasia.

Conflict of interest

Authors deny any conflict of interest.

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Ethical approval

Approval has been granted by the Clinical Research Committee based on written consent from the patient.

Consent

Written consent was taken from the patient for publication of this case report and the accompanying images.

Author contribution

Hassan Alyami: Operated the patient, Review the manuscript.
Emad AL-Osail: Wrote the Manuscript.
Shawgi Harbi: Wrote the literature review.
Mohammed Bu Bshait: collected the data for the case report.

Guarantor

Dr Hassan Alyami and Dr Emad AL-osail.

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