CASE REPORT

An unusual breast lump: osseous metaplasia

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SUMMARY

We present a rare case of osseous metaplasia in the breast with no other associated breast pathology. A 46-year-old HIV-positive lady presented to the breast clinic with new onset intermittent left-sided mastalgia. Clinical examination revealed an indeterminate mass in the left breast with palpable left axillary lymphadenopathy. Mammography and ultrasonography were suggestive of a possible malignancy, with the latter also detecting the presence of abnormal nodes in the axilla. An ultrasound-guided core biopsy of the breast lesion showed only hyalinised normal breast tissue on two occasions. Owing to the diagnostic uncertainty, the patient underwent a wire-guided excision biopsy of the breast lesion, with the final histology demonstrating bone matrix deposition with viable osteocytes within lacunae and associated osteoclasts with spindle cells, consistent with osseous metaplasia. A core biopsy of the axillary lymph nodes was normal. The patient was therefore reassured and discharged from the clinic.

BACKGROUND

Osseous metaplasia is the potentially reversible presence of heterotopic bone tissue, which can occur in any soft tissue, including the breast. Suspected causes include trauma, haematoma and soft tissue tumours.¹ It is frequently diagnostically challenging as it may mimic neoplasms both clinically and radiologically.²

An osseous or cartilaginous matrix has commonly been linked to matrix-producing carcinomas, a rare type of breast neoplasms which approximates 0.1% of all breast malignancies.³ Osseous matrices have also been associated with benign breast pathologies such as fibroadenomas,⁴ papillomas⁵ and amyloid.^{6, 7} However, it is very unusual to detect heterotopic bone matrix in breast tissue, without the presence of any other associated pathology.

CASE PRESENTATION

A 46-year-old HIV-positive lady presented to the breast clinic with a 1-week history of left-sided intermittent mastalgia. There was no history of trauma, and she denied any other symptoms of breast disease or any previous breast problems. There was no relevant family history of note. Her menarche was aged 14, her menstrual cycles were regular and she was nulliparous. Her viral load was under control and she had regular hospital follow-up for her HIV. She worked as a support worker and led a healthy lifestyle, drinking minimal alcohol and never having smoked. She was not on any medication and had no allergies.

Clinical examination revealed a firm, well-defined 5×2 cm mass in the upper outer quadrant of her

left breast. It had an even surface and no associated overlying skin changes. There were also multiple palpable lymph nodes in the left axilla with the largest one measuring about 2×1 cm.

INVESTIGATIONS

Mammography showed a suspicious-looking 21×16 mm lobulated lesion in the upper outer quadrant of the left breast.

An ultrasound scan of the area confirmed the presence of a 2×1 cm lesion in the breast, while also detecting axillary lymphadenopathy. An ultrasound-guided core biopsy of the breast lesion showed hyalinised normal breast tissue on two occasions. The abnormal-looking lymph nodes were first investigated with fine needle aspiration cytology. The sample, however, was inadequate for diagnosis, and the patient subsequently underwent a lymph node core biopsy. This showed normal lymphoid tissue.

Haematological and biochemical investigations revealed the presence of an isolated normochromic normocytic anaemia (Hb 10.4 g/dl, mean corpuscular volume 86.9 fl, mean corpuscular haemoglobin 29.4 pg) with no evidence of a haemoglobinopathy on electrophoresis.

DIFFERENTIAL DIAGNOSIS

The differential diagnoses can broadly be classified into benign or malignant. The former consists of lesions such as fibroadenomas, fibrocystic changes, fat necrosis and breast abscesses. Malignant lesions, or lesions associated with a malignant potential include invasive breast cancer, ductal or lobular carcinoma in situ, atypical ductal hyperplasia, intraductal papilloma, phylloides tumour as well as metastatic cancers from a different primary.

TREATMENT

After careful consideration of the discordant clinical and radiopathological findings at a multidisciplinary team level, the patient was advised to undergo a surgical excision biopsy of the breast lesion.

OUTCOME AND FOLLOW-UP

The procedure was uncomplicated and histology of the breast specimen showed a completely excised area of bone matrix deposition with viable osteocytes within lacunae (figure 1) and associated osteoclasts with spindle cells (figure 2). There was no evidence of invasive cancer on using an array of cytokeratin markers (AE1/3, MNE, Cam5.2, CK5/6, CK14, P63). The appearances were benign and consistent with a diagnosis of osseous metaplasia. The benign lesion had bland spindle cells with small nucleoli and collagen. The presence of a spindle cell carcinoma was excluded morphologically and on

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Figure 1 Focal osseous metaplasia with bone matrix deposition and viable osteocytes within lacunae.

immunohistochemistry. There were surrounding fibrocystic changes, tissue fibrosis and hyalinisation.

The patient made an excellent recovery postoperatively and was discharged from clinic, 1 month later.

DISCUSSION

Osseous metaplasia has commonly been described in association with benign⁴⁻⁷ and malignant^{3, 8} breast lesions. It is very rare, however, to identify it in the absence of any other breast

Figure 2 Benign spindle cell lesion, comprising bland spindle cells with small nucleoli and a collagenous background.

pathology. To the best of our knowledge, only one such case has been previously reported, but on that occasion adequate diagnosis was achieved using vacuum-assisted core biopsy.¹

The differentiation between atypical lesions and carcinomas is imperative in order to guide future patient management; however, it can be diagnostically challenging. In general, the incidence of such atypical lesions is low, accounting for about 2% of the cases,⁹ but with about a quarter of them being upgraded to be carcinomas after a surgical excision biopsy.^{9–10} As expected, the volume increase in surgically harvested tissue reduced the sampling error in diagnosis.¹⁰

Metaplastic breast carcinomas are a rare subgroup of invasive breast cancers that show some similar heterogeneous histological findings to osseous metaplasia and have recently been classified into the following four groups: squamous epithelial, spindle cell, osteocartilagenous and matrix elements.⁸ The appearance of bone associated with spindle cells in this patient acted as a red flag and made us suspicious of malignancy. Cancers with more spindle cells, high cellularity, high mitotic activity and nuclear pleomorphism seem to have a worse prognosis.¹¹

Our patient had previously been diagnosed with HIV. We are unaware of any cases in the literature identifying a link between HIV and osseous metaplasia, and indeed, this may have been a coincidental finding. However, the HIV status may have explained her palpable axillary lymphadenopathy. Although more is documented about osseous metaplasia in association with breast cancer or benign breast conditions, this case is a reminder that osseous metaplasia can be found in isolation. Malignant causes, however, must be excluded first.

Competing interests None.

Patient consent Obtained.

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Learning points

- ▶ Osseous metaplasia is an unusual cause of a breast lump.
- ▶ In unusual breast lumps a tissue diagnosis is needed.
- ▶ The distinction between benign and malignant osseous metaplasia needs to be made.
- ▶ The appearance of spindle cells should act as a red flag in searching for malignant causes.

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