Primary Osteogenic Sarcoma of the Breast: A Case Report

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Introduction

Primary osteosarcoma of the breast is a very rare and aggressive entity, which is histologically indistinguishable from conventional osteosarcoma of the bone and other extraskkeletal site [1].

Carcinoma is the most common malignancy of the breast. Extra-skeletal osteosarcomas have been reported in many tissues of the body including thyroid gland, kidneys, bladder, colon, heart, testes and penis [2–8].

When it occurs in the breast, it originates either from normal breast tissue *de novo*, or as metaplastic differentiation of a primary benign or malignant breast lesion. We reports a case of primary osteogenic sarcoma of breast

Case History

A 50-year-old lady presented with a painless, enlarging lump in her right breast with overlying skin ulceration for last 3 months. There was no history of trauma, nipple discharge, or any other breast lumps. There was no family history of breast cancer. Physical examination revealed globular enlargement of the left breast measuring 20 cm × 18 cm. The mass occupied the whole breast; it was multinodular and not fixed to underlying muscle. One ipsilateral axillary lymph node was enlarged. The left breast was

unremarkable and examination of the other systems was normal. Mammography showed features of fibroadenoma with calcification. Core needle biopsy was suggestive of malignant mesenchymal neoplasia. Plain radiograph of the chest and abdominal ultrasound scan were normal. Computed tomography of the chest and abdomen, serum alkaline phosphatase and a bone scan were all within normal limits. Our patient underwent modified radical mastectomy.

The histopathological examination revealed a tumor consisting of oval to elongated cells with pleomorphic muscles. Interspersed neoplastic osteoid were seen among these tumor cells. Osteoclastic giant cells were seen along with focal areas of cartilaginous differentiation. No epithelial component was identified (Fig. 1). Twelve axillary lymph nodes were identified and found to be reactive.

We gave six cycle of adjuvant chemotherapy in form of cisplatin and adriamycin but after 2 month of completion of chemotherapy patient developed lung metastasis.

Discussion

Sarcomas of the breast are relatively rare neoplasm accounting for less than 1 % of breast malignancies [9]. Primary osteosarcoma of the breast is extremely rare and represents 12.5 % of mammary sarcomas [1]. The pathogenesis of primary osteosarcoma of the breast is not clear, but an origin from totipotent mesenchymal cells of the breast stroma or a transformation from a pre-existing fibroadenoma or phyllodes tumor has been suggested [10–12]. Primary breast osteosarcoma is considered highly aggressive tumor associated with early recurrence and a propensity for haematogenous rather than lymphatic spread, most commonly to the lungs [1, 10]. Primary osteosarcomas of the breast are fibroblastic, osteoblastic, osteoclastic (giant cell-rich) subtypes [12–14]. Pathological bone formation in the breast tissue may be the result of inter-membranous ossification and the

Key Messages The primary osteogenic sarcoma of the breast is a rare disease with poor prognosis and needs aggressive treatment.

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Fig. 1 Primary osteosarcoma of the breast: tumor consisting of oval to elongated cells with pleomorphic muscles. Interspersed neoplastic osteoid were seen among these tumor cells. Osteoclastic giant cells were seen along with focal areas of cartilaginous differentiation. No epithelial component was identified

marrow is not observed [15]. The mammographic appearances of these tumours are of a well circumscribed dense lesion within the breast tissue with focal or extensive coarse calcifications [16]. The border may be regular or irregular. The mammographic appearances may be deceptively benign and may imitate a benign fibroadenoma in a third of cases [12]. To confirm the diagnosis of primary osteogenic sarcoma of the breast, the direct extension of an osteogenic sarcoma arising from the ribs or sternum should be excluded. A secondary lesion from a primary osteosarcoma of the bone should be considered in the differential diagnosis.

From findings at surgery and from the pathology report, our patient did not have gross or microscopic chest wall osteosarcoma extending to the breast. The absence of demonstrable metaplastic transformation of a pre-existing fibroadenoma or phyllodes tumor at histology among others, suggests that the case presented could be an example of breast sarcoma arising from previously normal breast tissue. Optimal management of localized disease should include total excision of the neoplasm with an adequate margin for control of local disease. A simple mastectomy may be indicated to ensure complete excision of large tumor with adequate margins [17]. Axillary lymph node dissection is not indicated in the setting of clinically negative nodes. Whereas, for the metastatic disease the chemotherapy basing on the classic drugs (doxorubicine, ifosfamide, cisplatinum, methotrexate) in the osteosarcoma is the main treatment [18, 19]. Prognostic factors included tumour size, number of mitoses, presence of stromal atypia, histological subtype and resection margin involvement [12].

Although osteogenic sarcoma of the breast is rare, it needs to be distinguished from carcinosarcoma and metaplastic carcinoma as the management differs.

Adequate surgical excision with adjuvant chemotherapy is the best form of treatment that offers the best outlook for patients for primary osteogenic sarcoma of breast.

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