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Case report *Health research*

Primary osteosarcoma of the breast- A case report

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ABSTRACT

Primary extra-osseous osteogenic sarcomas in the breast is extremely rare. It can arise as a result of osseous Primary extra-osseous osteogenic sarcomas have been reported in many tissues of the body metaplasia in a pre-existing benign or malignant neoplasm of the breast or as non-phylloides sarcoma from the soft tissue of a previously normal breast. Case presentation**:** A 45 year-old north indian woman was clinically diagnosed to have carcinoma of the right breast. The histology report of excisional biopsy of the mass showed a malignant neoplasm comprising islands of chondroblastic and osteoblastic stromal cells. This report changed the diagnosis from carcinoma to osteogenic sarcoma of the breast. Sections from the lumpectomy specimen confirmed the diagnosis of osteogenic sarcoma. She lost in follow-up. Conclusion: A diagnosis of osteogenic sarcoma of the breast was made based on histology report and after excluding an osteogenic sarcoma arising from underlying ribs and sternum.

Keywords: Primary osteosarcoma, Breast, Lumpectomy.

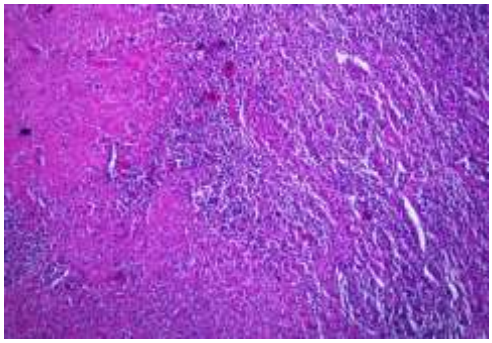
INTRODUCTION

Sarcomas of the breast are heterogeneous neoplasms derived from nonepithelial elements of the gland, and they represent less than 1% of breast cancers and less than 5% of all sarcomas[1]. Primary osteosarcoma of the breast is infrequently reported. In fact, although osteosarcomas constitute a common histology after breast radiation therapy, they arise mostly from adjacent bone structures (sternum, ribs) and therefore do not represent primary breast sarcomas [2]. Because of the rarity of the disease, both clinical features and optimal treatment are still to be defined. In contrast to skeletal osteosarcoma affecting mainly young patients, primary osteosarcoma of the breast occurs in older patients, with a mean age at presentation around 65[3].

CASE REPORT

A 45-year-old north Indian woman presented to the Prience Bijaysingh Hospital Outpatient department with complaints of a lump in the right breast that was self-detected 3 month prior to presentation. There was no history of nipple discharge, fever and pain. There

was no history of breast trauma, prior local irradiation and surgery, nor any other tumour history. The patient denied using any hormonal therapy or a family history of breast disease. A breast examination showed a 3x3.5x4-cm irregular, firm mass in the outer upper quadrant of the right breast. The mass was mobile and not adherent to the skin and chest wall. No axillary lymphadenopathy was detected upon physical examination. Mammography showed that the mass was relatively well demarcated and partially calcified. The tumour did not invade the overlying skin and underlying chest wall. FNAC done by 25 gauge needle which was in-conclusive. Patient underwent lump - ectomy. The lumpectomy specimen contained a 4x4 cm, relatively well-circumscribed mass, which had a gray-white cartilaginous to firm calcified appearance in the cross-section. Microscopically, the tumor was slightly lobular and relatively well demarcated. Patient loss in follow up.



Figure[1]

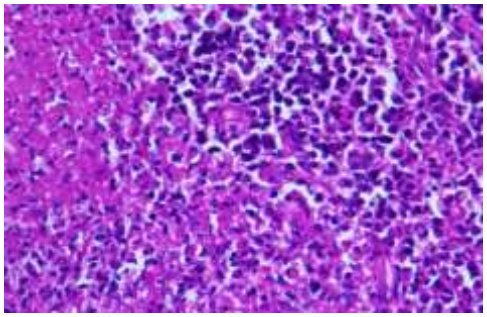
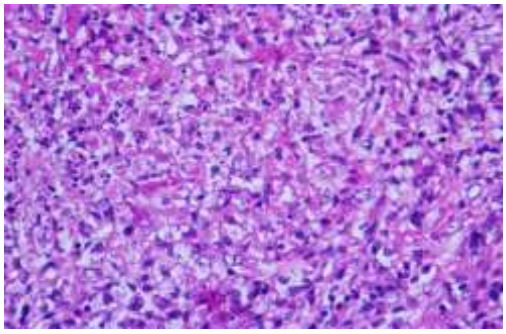


Figure [2]



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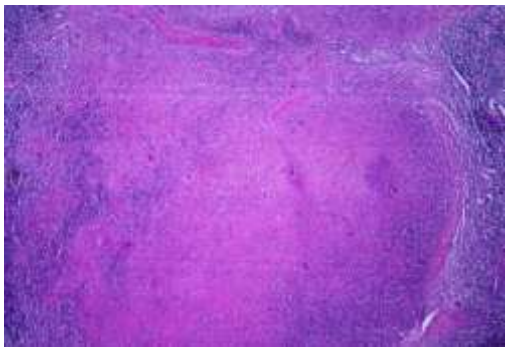

Figure[4]

DISCUSSION

Osteogenic sarcoma of the breast tissue can arise from a pre-existing benign or malignant neoplasm of the breast or may arise from previously normal breast tissue as non phylloides sarcoma. It is known to differentiate from the connective tissue elements of fibroadenomas and has been reported following intraductal papilloma [4].

Breast osteosarcoma can also arise as an osseous metaplasia of a primary carcinoma of the breast and as a whole or partial metaplastic replacement of phylloides tumor stroma [5,6]. In its pure form and in exceptional cases, osteogenic sarcoma can arise from the soft tissues of a previously normal breast[7] .

Extra-skeletal osteosarcomas are uncommon. The majority arise in the soft tissue of lower extremity[8]. Their origin in a number of parenchymal organs has been documented. Mammary sarcomas are rare, representing less than 1% of all primary breast malignancies. In comparison, bone producing spindle cell neoplasms with an epithelial origin, so called metaplastic (sarcomatoid) carcinomas, are more common[9]. POB is considered a disease of middle and old age in comparison to the younger age group of patients with skeletal osteosarcoma. To diagnosis primary breast osteosarcoma, an osteogenic sarcoma arising from the underlying chest wall bony cage and infiltrating the breast tissue must be excluded. 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 phylloides tumor at histology among others, suggests that the case presented could be an example of breast sarcoma arising from previously normal breast tissue. Clinically, the breast lump is of varying consistency and maybe rapidly growing. At the time of presentation, most patients have developed metastasis in different parts of the body including the chest and bones, though this was not the case with our patient [10].

A preoperative diagnosis is unusual and most patients have a correct diagnosis only after histological examination of the surgical specimen. Mammographic findings generally consist of large masses with well-defined margins and lobulated borders, which often contain coarse or dense calcifications as in fibroadenomas. A definitive diagnosis can only be made when an osteogenic sarcomas arising from the underlying bones is excluded, and immunohistochemical tests show positivity for vimentin with absence of epithelial, neural, muscular, and other markers [11]. Prognostic factors for primary osteosarcomas of the breast include tumor size, number of mitoses, and presence of stromal atypia . In general, osteosarcomas are aggressive tumours with blood-borne spread more common than lymphatic spread. For this reason lymphatic axillary dissection is not considered as a mainstay of surgical treatment, and diagnosis of metaplastic carcinoma should be considered in the presence of lymph nodes metastases [12].

Indications for adjuvant chemotherapy and radiation therapy, in the absence of specific data on breast sarcoma, should follow those for soft-tissue sarcomas in general [13].The role of postoperative radiotherapy and chemotherapy incuratively resected soft-tissue sarcomas is still controversial.

Conclusions: The pathology of these aggressive tumours is poorly understood and hence the right treatment modality is unknown. With the advent of screening programmes for the detection of breast cancers we have no doubt that more cases will be picked up at an early stage leading to treatment dilemmas. In order to understand the molecular biology and thus its behavior we suggest pooling of the specimens in biobanks so that they can be analysed. More research is needed to understand its pathology which may help us to treat complex cases in the future.

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