Case Report

Eur J Breast Health 2025; 21(4): 387-388
DOI: 10.4274/ejbh.galenos.2025.2025-2-9

Primary Giant Cell Tumor of the Breast: Report of a Rare Case and Review of the Literature

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ABSTRACT

Primary giant cell tumors (GCTs) of soft tissue of the breast are extremely rare breast tumors, with only ten cases previously reported in the English literature. They are not suspected clinically, and clinically and histopathologically too, can mimic breast carcinoma or phyllodes tumor, and cause diagnostic dilemma. It is important to correctly recognize these tumors, due to management implications. Hereby, we present a case of 58 year old female with GCT of the breast presenting as a malignant breast tumor.

Keywords: Biopsy; breast; giant cell tumor; immunohistochemistry; soft tissue tumors

Cite this article as: Pradhan S, Rao M, Lodha M, Kumar P, Yadav T, Gowda VN. Primary giant cell tumor of the breast: report of a rare case and review of the literature. Eur J Breast Health. 2025; 21(4): 387-388

Key Points

- Giant cell tumor (GCT) of breast is rare entity. Complete tumor resection is essential not only for local control but also for achieving a definitive diagnosis. Given the rarity of GCT in the breast, awareness of this condition is crucial. Long-term follow-up is necessary for deeper understanding of its clinical behavior and outcomes.

Introduction

Giant cell tumor (GCT) of soft tissue is a rare tumor arising primarily from the soft tissue of extremities. GCT is very rare in the breast, and the incidence of primary GCT of breast is not known due to its extreme rarity, with only ten published cases in the English literature to date (1). These tumours mimic breast carcinoma or phyllodes tumor, and often cause a diagnostic dilemma.

Case Presentation

We recently encountered a case of a 58-year-old female who presented with a lump of size 8.5x7x6 cm in her right breast that had persisted for two months. On clinical examination, the differential diagnosis of phyllodes tumor and carcinoma of the breast were made. Imaging studies, including mammography and contrast-enhanced computed tomography of the chest, revealed a large, complex, cystic mass. An ultrasound-guided core needle biopsy from the lesion revealed a tumor comprising multinucleated giant cells admixed with mononuclear oval to plump, elongated cells. On immunohistochemistry, the multinucleated giant cells were positive for CD68, and were negative for estrogen receptor, progesterone receptor, human epidermal growth factor receptor 2/neu, and pan-cytokeratin cocktail (AE1/AE3), suggestive of a GCT of the breast. Further imaging showed no metastatic lymphadenopathy or additional lesions. The patient underwent a modified radical mastectomy, which confirmed the initial diagnosis. Grossly, the tumor was well-circumscribed, with cystic areas. Histological examination revealed features consistent with GCT of the breast, emphasizing the importance of distinguishing this tumor from commoner breast tumors, like breast carcinoma with osteoclast-like giant cells and Phyllodes tumor.

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Received: 17.02.2025
Accepted: 03.05.2025
Epub: 12.05.2025
Available Online Date: 25.09.2025

Primary GCT of the breast was first reported in 1981 by Lucas et al. (2), in a male patient. All the cases reported in the literature presented as well-circumscribed breast masses. The current case was clinically diagnosed as a malignant breast mass with differentials of phyllodes tumor and carcinoma of the breast. Primary GCT of the breast may be differentiated from carcinoma of the breast by the absence of epithelial immunostains. Similarly, malignant phyllodes is excluded by the absence of epithelial component or sarcomatous component. On microscopy, the other differentials considered were metastatic GCT, direct infiltration of breast by a primary bone tumor, reactive lesions, and granulomatosis. Metastatic GCT and direct infiltration of a primary bone tumor were excluded by the absence of bone lesions radiologically. The patient did not have any prior systemic diseases or history of any infection, which ruled out the possibilities of reactive lesions or granulomatosis. There were no epithelioid cell granulomas and the giant cells seen were osteoclastic type, so the possibility of a granulomatous lesion, such as tuberculosis, was also excluded. Cystic change can also be GCT of the breast (1). The current case also showed cystic change, which may suggest a differential diagnosis of papillary neoplasms. However, no papillae were seen grossly or on microscopy in the current case. In all cases, including the, presented case, initial concerns of malignancy were prompted by imaging findings. GCTs of the breast have a variable clinical course. Most of the cases reported in the literature did not recur. A few cases had local recurrence (3, 4) and a single case showed pulmonary metastases. (5) The current case is on regular follow-up and has been followed-up for eleven months to date, with no recurrence so far.

We report a primary GCT of the breast, which is a very rare breast lesion. The importance of immunohistochemistry in the differential diagnosis of similar lesions is highlighted.

Ethics

Informed Consent: Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

Footnotes

Authorship Contributions

Surgical and Medical Practices: S.P., M.L., P.K., T.Y., V.N.G.; Concept: S.P., M.R., S.K., M.L., V.N.G.; Design: S.P., M.R., M.L., V.N.G.; Data Collection or Processing: S.P., M.R., V.N.G.; Analysis or Interpretation: S.P., M.R., S.K., V.N.G.; Literature Search: S.P., M.R., S.K., V.N.G.; Writing: S.P., M.R., V.N.G.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declare that they received no financial support for this study.

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