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Granular cell tumour of the breast: A rare presentation of a breast mass in an elderly female with a subsequent breast cancer diagnosis

Mahmoud Al-Balas[1], Antonio De Leo[2,3], Margherita Serra[4], Donatella Santini[2] and Mario Taffurelli[4]

Abstract

A 74-year-old female patient presented with a hard breast mass and dimpling with a clinical suspicion of a carcinoma. Histological evaluation revealed a granular cell tumour. Granular cell tumour is a rare neoplasm, mostly benign in origin that may arise in every body site, 5%–15% of cases occur in the breast. It is strongly suggested that granular cell tumours origin is Schwann cells. Clinically, granular cell tumours presentation may mimic mammary carcinoma and their similar features on mammography and ultrasound make it difficult to differentiate between them.

Keywords

Granular cell tumour, rare tumour, breast cancer

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Introduction

Granular cell tumour (GCT) of the breast is a rare neoplasm, usually benign in nature that accounts for 5%–6% of all GCTs.[1] Most of these tumours occur in young women between 30 and 50 years of age,[2] women of African American origin were reported to be more affected by some authors.[3] They were first described in 1926 by Abrikossoff,[4] their source was determined to be derived from perineural Schwann cells between the lobular breast tissue.[5] GCTs can arise anywhere in the body but occur most frequently in the oral cavity, typically the tongue.[4,6]

Case presentation

A 71-year-old female with no significant medical or surgical history presented to our clinic with a rapidly growing left breast mass in parasternal area. This mass was clinically palpable, about 1 cm × 1 cm, associated with dimpling. There was no pain, nipple changes or discharge and no palpable axillary lymphadenopathy.

Ultrasonography showed a hypoechoic mass with an acoustic shadow, and mammography revealed a 1 cm dense nodule in the parasternal area of the left breast, no microcalcifications or other abnormal fibroglandular tissue patterns in other parts of the left breast or the right breast were observed.

A preoperative core biopsy showed a GCT, and the patient was planned for a quadrantectomy. Intraoperatively, a hard 1 cm × 1 cm nodule was identified with an invasion of underlying pectoralis major muscle. Patient performed a quadrantectomy with muscular dissection at the tumour bed and a level I oncoplastic reconstruction.

The final histopathological report showed a 1.2 cm nodule with morphological and immunohistochemical features of GCT (S-100 positive, Calretinin positive) that was excised completely with free margins, associated with invasion of the

[1]Department of General and Specialized Surgery, The Hashemite University, Zarqa, Jordan
[2]Pathology Unit, S.Orsola-Malpighi Hospital, Bologna, Italy
[3]Department of Experimental, Diagnostic and Specialty Medicine, University of Bologna, Bologna, Italy
[4]Department of the Health of Woman, Child and Urological Diseases, S.Orsola-Malpighi Hospital, University of Bologna, Bologna, Italy

Corresponding author:
Antonio De Leo, Department of Experimental, Diagnostic and Specialty Medicine, Pathology Unit, S.Orsola-Malpighi Hospital, University of Bologna, 40138, Bologna, Italy.
Email: antonio.deleo@studio.unibo.it

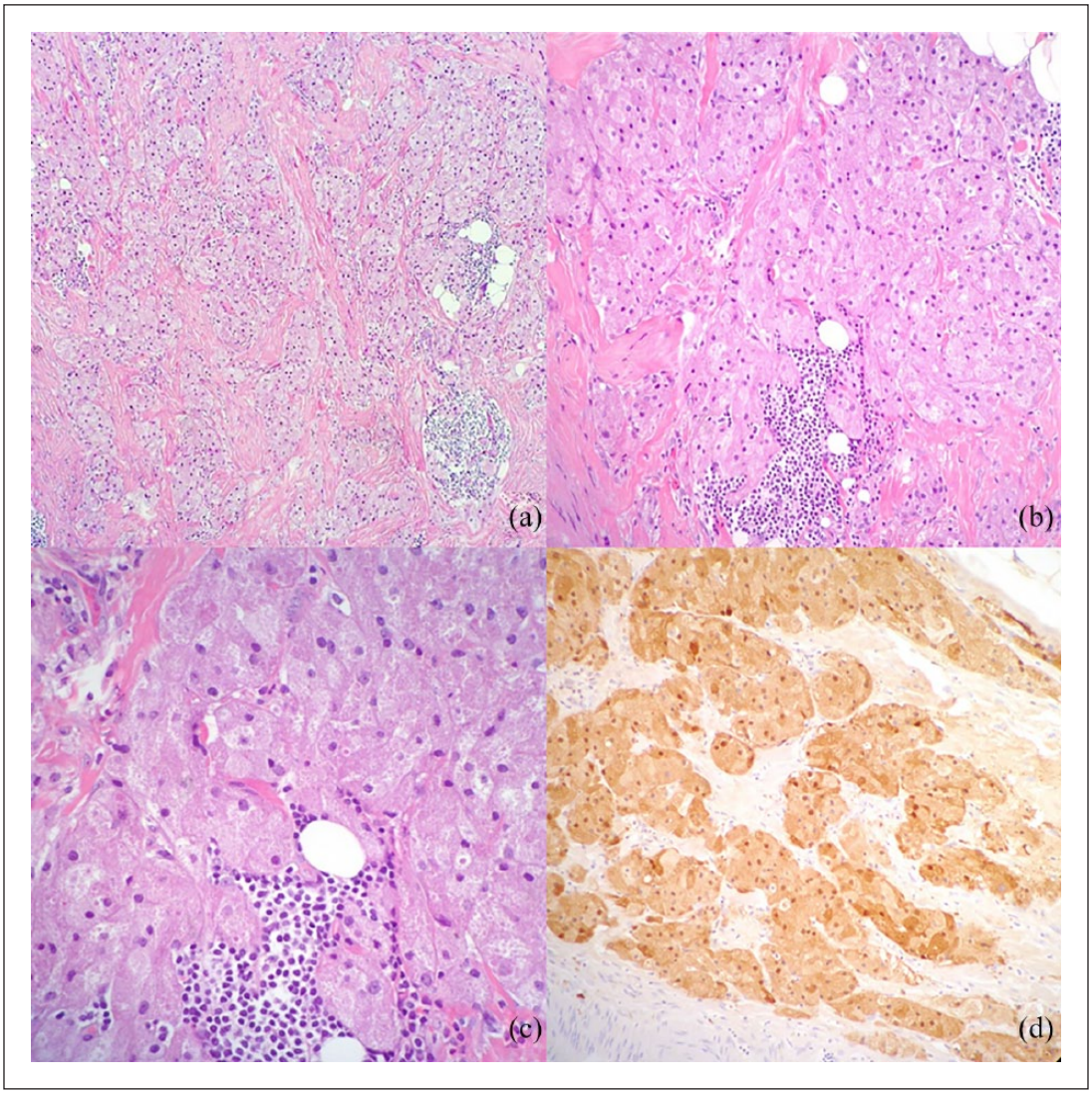

Figure 1. Histopathologic features of granular cell tumour of the breast composed by nests of tumour cells with abundant granular cytoplasm (a, b, c). (Hematoxylin and eosin; original magnification, ×50, ×200, ×400). Strong and diffuse immunoreactivity for S-100 (d) (IHC, ×200).

underlying muscular plane with a deep margin less than 1 mm. No mitosis demonstrated within the specimen (Figure 1).

Patient was followed clinically during the first year, and there was no evidence of local recurrence in the index quadrant either clinically or radiologically. A mammogram performed at the end of the first year showed new microcalcifications within the same breast in the upper outer and central quadrants with a diagnosis of grade 2, ductal carcinoma in situ (DCIS) by core needle biopsy. A total mastectomy and sentinel lymph node biopsy was performed. A final diagnosis of high-grade invasive ductal carcinoma T1aN0M0 with extensive in situ component (DCIS) was established.

Discussion

GCTs of the breast are rare, almost benign tumours that arise from perineural Schwann cells between the lobular breast tissues.[3] These tumours are often seen in premenopausal women between 30 and 50 years of age, they represent about 5%–6% of all GCTs of the body and occur approximately in one of every 1000 breast cancers.[1,7–11] Rare cases of GCTs in the male breast also have been reported.[11–13]

GCTs present clinically as a hard painless mass that can develop in any part of the breast with the most frequent location is the upper inner quadrant.[5,7] They may be solitary or multiple nodules, may present with nipple and/or skin retraction and behave clinically as breast cancer because of its infiltrative growth pattern.[6,8]

Radiologically, GCTs have variable features that range from benign to malignant ones. On mammogram, they might appear as round, well circumscribed mass or as a speculated lesion,[14,15] microcalcifications are not typical finding for GCTs. On ultrasound, GCTs might look like a solid lesion

with irregular margins associated with dense shadow or they demonstrate more benign features.[16]

Grossly, GCTs are hard, greyish-white in colour and firm to cut similar to scirrhous carcinoma.[13,15] Microscopically, the tumour is composed of loosely infiltrating large round or polygonal cells with abundant coarse granular eosinophilic cytoplasm, arranged in nests and sheets in a variable amounts of collagenous stroma. Nuclei are centrally located and ranged from small and dark to large with vesicular chromatin.[5,8] Necrosis and/or mitotic activity are absent. Typically, Periodic acid–Schiff (PAS) stain shows granular cytoplasmic positivity which is resistant to diastase. Immunohistochemistry shows positivity for S-100 protein, Calretinin, Inhibin and all epithelial markers are negative.[8,17,18]

Malignant GCTs are very rare lesions, represent less than 1% of all GCTs,[7,8] they are considered high-grade sarcomas with high rate metastasis and short survival.[19] Clinical and histological features that suggest malignant variant include large size (>4 cm), rapid growth, local invasion, increased mitotic rate (>2 mitosis/10 high-power fields at ×200 magnification) and variation in cell size and shape.[18,20] It is supposed that if three or more features are present, GCTs will behave in a malignant fashion.[20] Metastatic malignant GCTs have been reported in lung, liver, bone and axillary lymph nodes.[21]

Complete surgical excision is the only treatment for GCTs with no need for adjuvant chemotherapy or radiotherapy.[1,2,7]

Conclusion

GCT of the breast is an uncommon, usually benign tumour that may mimic breast cancer both clinically and radiologically. Preoperative diagnosis with core needle biopsy is essential for optimal treatment planning, requiring only a wide local excision. An accurate definition of the lesion can be made by a complete pathological examination. There are few reports on breast masses in adolescent patients and in elderly as well as in men.

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Ethics approval

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Informed consent

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ORCID iD

Antonio De Leo https://orcid.org/0000-0002-3761-5135

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