Case Report
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Benign Granular Cell Tumor of the Breast: A Case Report

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Abstract

Granular-cell tumor (GCT) is a rare neoplasm of the soft tissues. It is one of the uncommon causes of breast mass in women that presents as a painless lump. GCT is seen more in head & neck region especially tongue, however, 4 to 6% of GCTs are seen in the breast. Granular-cell tumor is usually benign with less than 1% are found malignant. Initially, GCT was considered to be a myogenic lesion affecting female breast (myoblastoma). It is assumed as a tumor originating from perineural or putative Schwann cells of peripheral nerves or their precursors that grows in the lobular breast tissue, due to the immunohistochemical features. It can highly mimic infiltrating carcinoma clinically and radiologically. The main diagnosis is made by both histopathology & immunohistochemical studies. Treatment is by wide local excision. Definitive pre-operative diagnosis helps to avoid unnecessary mastectomy. I'm presenting an interesting case of the rare benign granular-cell tumor of the breast in a 60-year-old woman in un-usual location in the right upper outer quadrant infraclavicular region laterally just at edge of the breast. The case was highly suggestive of breast cancer radiologically, however, with the correct and precise diagnosis of both histopathologic examination and immunohistochemical studies, it was accurately identified as a benign GCT.

Keywords: Breast carcinoma; S100 protein; Granular cell

Case Presentation

A 60-year-old post-menopausal- 8 years back- female patient was referred for a diagnostic mammogram. She presented with the complaints of a lump in the right infra-clavicular region laterally. It was noticed by her one month back. There was no family or personal history of carcinoma of the breast.

On examination, there was an ill-defined, immobile, hard mass at the right infra-clavicular region almost at 11 o'clock position just at edge of the breast. The overlying skin was intact. No axillary adenopathy was noted.

Diagnostic mammography was challenging .Both (right mediolateral oblique and craniocaudal views) were unremarkable, apart from partially visualized density on the right axilla in MLO view only (Figure 1 & 2). The ordered additional right axillary view demonstrated an irregular rounded mass corresponding to the site of the lump (Figure 3). No enlarged right axillary lymph nodes.

High-resolution sonography (HRS) of the right breast reveals, an ill-defined rounded irregular mass lesion in the infra-clavicular region laterally just at the edge of the breast at 11 o'clock posterior third (Figure 4). It measures 1 x 1 x 1.4 cm (Figure 5). No internal vascularity noted. The lesion was resting on the pectoralis muscle with mild infiltration couldn't be excluded .No enlarged right axillary lymph nodes noted.

Given the upper mentioned features in both mammogram & ultrasound, Malignancy was highly suspected with a final report of BI-RADS category 5 was given, and a core biopsy was done. The histopathology showed cores of breast tissue with infiltrating cords of polygonal cells with abundant eosinophilic cytoplasm and rounded nuclei with prominent nucleoli. The stroma is collagenous with mild lymphocytic infiltrate. There was no evidence of mitotic activity, atypia, carcinoma in situ or invasive malignancy. The tumor cells were strongly positive for S100 and are negative for panCK. A final diagnosis of granular-cell tumor (GCT) of the breast was made.

Discussion

GCT is a rare, usually benign neoplasm occurring anywhere in visceral or cutaneous sites [1], predominantly in the head, neck, and chest-wall regions [2]. It is commonly seen on the tongue [1]. Granular cell tumor (GCT) was initially considered to be a myogenic lesion affecting female breast

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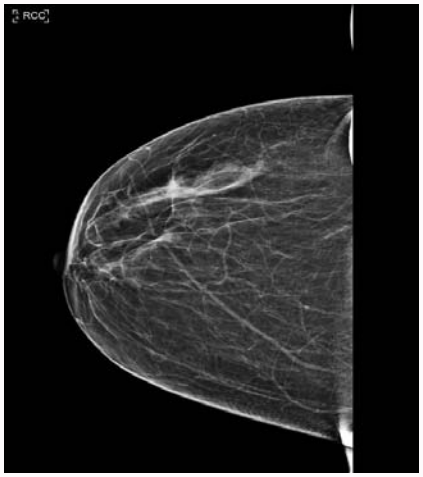

Figure 1:

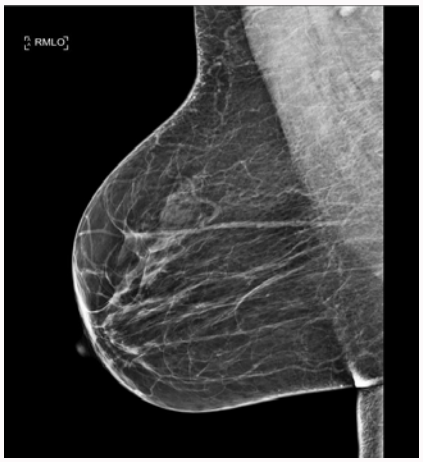

Figure 2:

(myoblastoma) [3], was actually assumed to be a tumor originating from perineural or putative Schwann cells of the peripheral nerves or their precursors [4]. It grows in the lobular breast tissue, due to the immunohistochemical features. GCT is usually described as a benign tumor since <1%, including those of the breast, is malignant [5].

Between 4 and 6% of GCTs are seen in the breast [6]. Among breast cancers, GCTs are seen in 1 in 1,000 cases [2]. A review of the literature reveals that the tumor is commonly located in the upper inner quadrant [1,7], axillary region, and periareolar region. The distribution of supraclavicular nerve cutaneous sensory territory is said to be the cause for this predilection for the upper inner quadrant [1,7]. However, interestingly in our case it was seen in upper outer quadrent, infraclavicular region just at edge of the breast. Most of the reported cases are seen in the right breast [6,8].

Usually GCT is presenting as a painless chronic lump. Except in one case, where an axillary GCT lesion was reported in a screening mammogram [2], otherwise, all other reported cases were diagnosed via diagnostic mammogram or ultrasound.

Imaging diagnosis

GCT has a growth pattern very similar to that of infiltrating carcinoma. They can mimic each other strongly clinically and on diagnostic imaging. Infiltration into superficial tissue is seen as skin

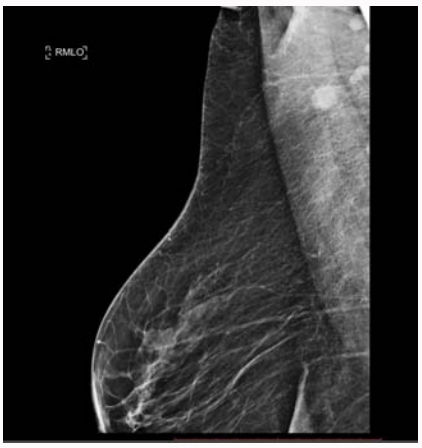

Figure 3:

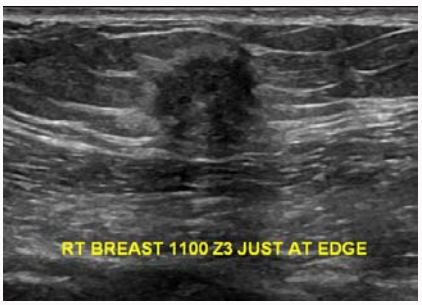

Figure 4:

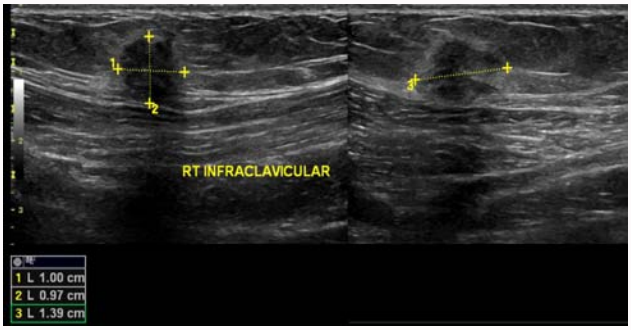

Figure 5:

dimpling, and underlying structures as a fixation to the pectoralis muscle [3].

As seen with HRS, GCT presents as an indeterminate-category hetero-echoic mass with an ill-defined margin, with or without increased vascularity [9]. Our patient had an irregular ill-defined hypoechoic mass without any significant internal vascularity.

In mammography, GCT is seen as an isodense spiculated mass with an indistinct margin. No calcifications are described in the literature [2]. Our patient had an ill-defined, dense mass at axillary tail (seen better in additional axillary view).

As seen with computed tomography (CT), GCT is an enhancing oval or spiculated mass without lymphadenopathy [6].

As seen with magnetic resonance imaging (MRI) mammography, GCT is a low-signal lesion in the T1 sequence, an iso-to slightly

hyperintense lesion in T2, and a lobulated, variably enhancing mass with indistinct margin in contrast. Its hyper intensity in T2 is less than that of other masses and is considered as characteristic for GCT [3,10].

Positron-emission tomography (PET) can differentiate a benign from malignant GCT. A benign GCT shows an uptake value of 1.8 in a series reported by Hoess et al, which is less than the cutoff value of 2.5 [11].

Histopathology

GCT should be differentiated accurately from breast malignancy since they have totally different approach in treatment & prognosis. The characteristic cytomorphological features of GCT are the presence of large granular cells with abundant granular cytoplasm, and stroma with thin-walled blood vessels [9]. Cells positive for S-100 protein, CD68 (KP-1), neuron-specific enolase (NSE), and CEA support Schwann cell origin [11,12]. GCT shows a negative reaction against cytokeratin [11]. It is negative for desmin and estrogen receptors [6]. Reactivity for vimentin differentiates GCT from carcinoma [1].

In histopathology, when malignant lesions with granular cells are seen, apocrine carcinoma and alveolar soft-part carcinoma are considered as possible diagnoses [12].

Core biopsy and histopathology give a definitive diagnosis. It is important to make definitive diagnosis pre-operatively to avoid extensive resection and axillary clearance for carcinoma. Wide local excision is the treatment of choice [1]. Local recurrence is seen with incomplete resection [11]. 1% of GCT cases are malignant [11]. Metastasis to liver, lung, bone, and axillary lymph nodes are reported with malignant GCT [13].

Differential diagnosis

The differential diagnosis includes carcinoma & fibroadenoma based on the findings. Our lesion was thought to be a carcinoma because it was seen in upper outer quadrant (though in un-usual location just at the edge of breast in infraclavicular region laterally) - the common site for breast malignancy. In addition to the ill-defined margins and the posterior acoustic shadowing. However, there was no lymphadenopathy or increased vascularity on HRS.

Teaching point

Granular cell tumor (GCT) can be easily mistaken for carcinoma by radiological imaging. Knowledge of this tumor is very important since the treatment & prognosis are totally different. GCT has to be considered in the differential diagnosis in BI-RADS category 4 or 5 lesions. The location of this tumor in the subcutaneous, intradermal, and submucosal layers or a breast lesion with its epicenter in the subcutaneous plane should be used as a clue to guide for the imaging diagnosis.

GCT is commonly benign. The treatment option is wide excision. The definitive diagnosis preoperatively is only possible with image-guided biopsy. This is mandatory, as it will avoid unnecessary mastectomy and axillary clearance, done in the case of carcinoma.

References

1. De Simone N, Aggon A, Christy C. Granular cell tumor of the breast: Clinical and pathologic characteristics of a rare case in a 14-year-old girl. Journal of Clinical Oncology. 2011; 29: 656–657.
2. Gavriilidis P, Michalopoulou I, Baliaka A, Nikolaidou A. Granular cell breast tumour mimicking infiltrating carcinoma. BMJ Case Rep. 2013.
3. Tran TA, Kallakury BV, Carter J, Wolf BC, Ross JS. Coexistence of granular cell tumor and ipsilateral infiltrating ductal carcinoma of the breast. South Med J. 1997; 90: 1149–1151.
4. Le BH, Boyer PJ, Lewis JE, Kapadia SB. Granular cell tumor: immunohistochemical assessment of inhibin-alpha, protein gene product 9.5, S100 protein, CD68, and Ki-67 proliferative index with clinical correlation. Arch Pathol Lab Med. 2004; 128: 771–775.
5. Pergel A, Yucel AF, Karaca AS, Aydin I, Sahin DA, Demirbag N. A therapeutic and diagnostic dilemma: granular cell tumor of the breast. Case Rep Med. 2011; 2011: 972168.
6. Vasselli F, Pediconi F, Luciani ML, Casali V, Telesca M, Miglio E, et al. Breast localization of granular cell tumor (GCT). Euro Rad. 2011.
7. Adeniran A, Al-Ahmadie H, Mahoney MC, Robinson-Smith TM. Granular cell tumor of the breast: a series of 17 cases and review of the literature. Breast J. 2004; 10: 528–531.
8. Al-Ahmadie H, Hasselgren PO, Yassin R, Mutema G. Colocalized granular cell tumor and infiltrating ductal carcinoma of the breast. Arch Pathol Lab Med. 2002; 126: 731–733.
9. Yang WT, Edeiken-Monroe B, Sneige N, Fornage BD. Sonographic and mammographic appearances of granular cell tumors of the breast with pathological correlation. J Clin Ultrasound. 2006; 34: 153–160.
10. Scaranelo AM, Bukhanov K, Crystal P, Mulligan AM, O'Malley FP. Granular cell tumour of the breast: MRI findings and review of the literature. Br J Radiol. 2007; 80: 970–974.
11. Shetty A and Radswiki, et al. Granular cell tumour of the breast. radiopaedia.org.
12. Rosso RI, Scelsi M, Carnevali L. Granular cell traumatic neuroma: a lesion occurring in mastectomy scars. Arch Pathol Lab Med. 2000; 124: 709–711.
13. Kim EY, Kang DK, Kim TH, Jung YS, Kim KS, Yim H. Granular cell tumor of the male breast: Two case descriptions and brief review of the literature. J Ultrasound Med. 2011; 30: 1295–1301.