

A Rare Case of Benign Granular Cell Tumor of the Breast

Elham Jafari, M.D. ¹, Hamid Tabrizchi, M.D. ², Foroogh Mangeli, M.D. ³, Hamid Zeynali nezhad, M.D. ⁴

1- Assistant Professor of Pathology, Stem Cells Research Center & Pathology Department, Afzalipour School of Medicine, Kerman University of Medical Sciences, Kerman, Iran

2- Associate Professor of Pathology, Department of Pathology, Afzalipour School of Medicine, Kerman University of Medical Sciences, Kerman, Iran

3- Pathologist, Department of pathology, Taleghani Hospital, Shahid Beheshti University of Medical Science, Tehran, Iran (Corresponding author; E-mail: mangeli.forogh@gmail.com)

4- Associate Professor of Surgery, Department of Surgery, Afzalipour School of Medicine, Kerman University of Medical Sciences, Kerman, Iran

Received: 11 January, 2019

Accepted: 8 February, 2020

ARTICLE INFO

Article type:

Case Report

Keywords:

Granular cell tumor

Breast granular mass

S100 positive tumors

Breast imaging

Abstract

Granular cell tumor is a rare benign non-encapsulated tumor that mostly presents in oral cavity. Breast localization is uncommon and occurs in about one per 1000 cases of breast cancers. It mainly affects premenopausal women showing the possible role of estrogen and progesterone levels in the progression of this tumor. Granular cell tumor is a great emulor of the invasive ductal carcinoma of the breast clinically and radiologically, and the definite diagnosis especially in fine needle aspiration cytology (FNAC) is a great challenge. Granular cell tumor almost always has a benign clinical behavior and malignant transformation is seen in less than 1% of cases, which requires additional therapy other than local surgical resection. Here, we report a rare case of benign granular cell tumor of breast that should be differentiated from other breast neoplasms especially invasive carcinomas.

Copyright: 2020 The Author(s); Published by Kerman University of Medical Sciences. This is an open-access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Citation: Jafari E, Tabrizchi H, Mangeli F, Zeynali nezhad H. A Rare Case of Benign Granular Cell Tumor of the Breast. *Journal of Kerman University of Medical Sciences*, 2020; 27 (1): 95-98.

Introduction

Granular cell tumor (GCT) is a benign rare neoplasm that was first reported by Abrikossoff in 1926 (1). Although the definite origin of this tumor is not clear yet, and many possibilities such as fibroblastic, odontogenic, gingival, endothelial and histiocytic origins have been proposed, nowadays because of the tumoral cells positive immunoreaction for S100 protein, researchers have suggested Schwann cell as its origin (2). Tongue is the most common location of the tumor and breast localization is so rare and is only about 5 -15 % according to the literature (1, 3). GCT usually affects adult women especially in the 3rd to 6th decades

of life (4). This tumor often presents as a single mass but multifocality has also been reported (5, 6). GCT is a great emulor of the breast invasive carcinomas both clinically and radiologically, although rare cases of coexistence have been also reported (7-9). The tumor, almost always, has benign clinical course but malignant transformation is seen in less than 1% of cases showing poor prognosis and higher rate of metastasis (9, 10).

Case report

A 49 year-old woman referred with a single painless tumoral lesion of right breast since two weeks ago. There was

no evidence of skin retraction, lymphadenopathy and nipple discharge on physical examination. On mammography a single isodense mass with ill-defined borders on right lower outer quadrant measuring about 2 cm without calcification and lymphadenopathy was observed. The patient underwent core needle biopsy which revealed a neoplasm composed of nests and cords of polygonal cells with uniform peripherally located nuclei, inconspicuous nucleoli and prominent eosinophilic granular cytoplasm that showed diffuse positive

immunoreaction for S100 protein and NSE and negative reaction for estrogen receptor (figure 1). Finally, with definite diagnosis of GCT, the patient underwent local resection surgery (quadrantectomy) and the cut section of the specimen showed a firm fibrotic area measuring about 1.6 cm in greater dimension, with the same microscopic feature as previously explained (figure 1). The 6- month follow up of the patient revealed no tumoral recurrence.

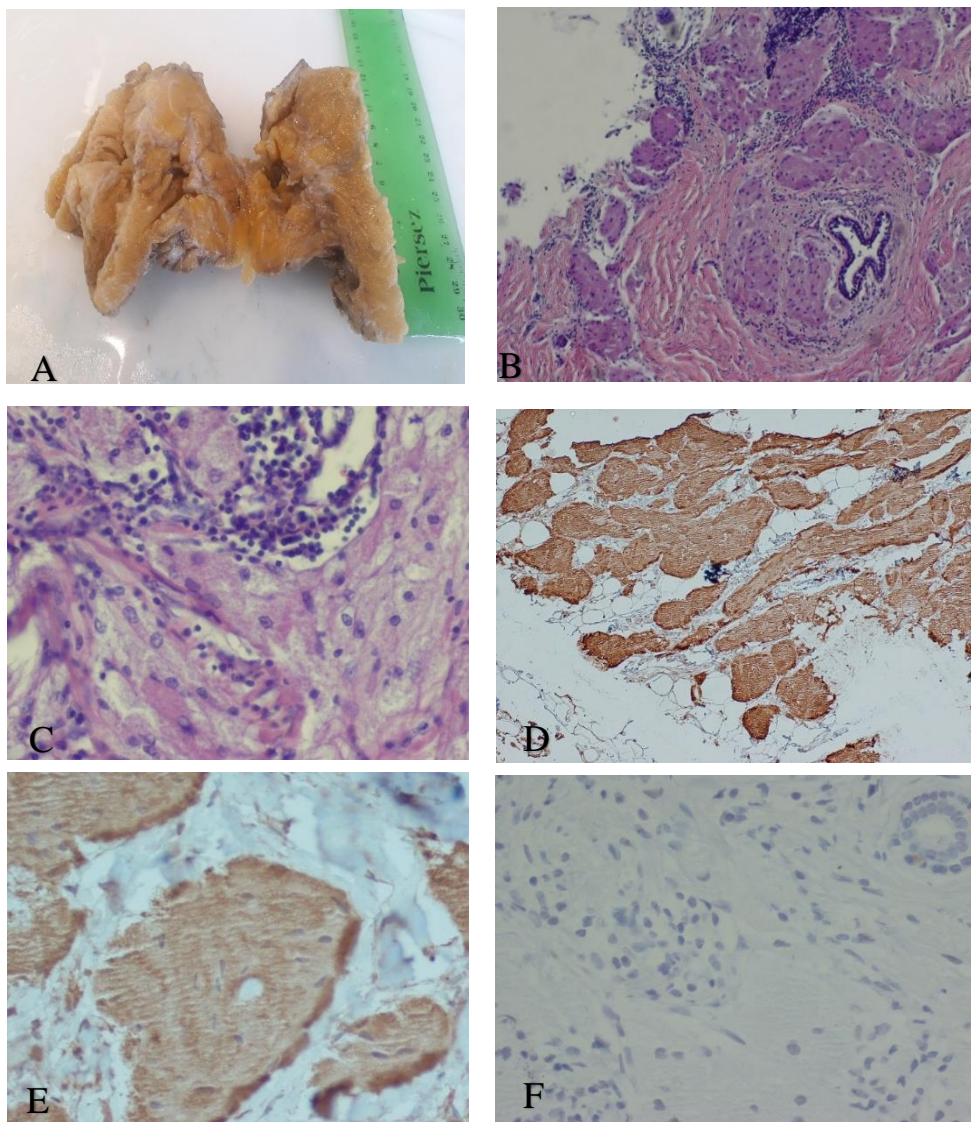


Figure 1. Gross examination of the GCT shows an ill-defined fibrous area (A) composed of clusters of polygonal cells with densely eosinophilic granular cytoplasm on histologic slides B (H&E staining x100) and C (H&E staining x400) with diffuse strong positive reaction for S100 D (Immunohistochemical staining x 100) and NSE (E x 400) and negative reaction for estrogen receptor (F x400).

Discussion

Granular cell tumor accounts about 1 in 1000 cases of breast cancer and to the best of our knowledge less than 400 cases have been reported so far (3,4). This tumor commonly affects middle-aged African women and mostly has been reported in premenopausal women showing the possible effect of estrogen and progesterone levels on the progression of the tumor (2). GCT of the breast usually presents as a single non-encapsulated firm mass which is sometimes with the involvement of pectoral muscles and cubcutis resulting in skin retraction and ulceration, the same as invasive breast carcinomas (11).

Although there is no specific finding in radiography, on mammography, usually, a round to ovoid mass lesion most commonly in upper-inner quadrant (in contrast with breast invasive carcinomas which present mostly in upper-outer quadrant), with irregular and sometimes stellate borders penetrating to the adjacent tissues and hypodense rims are visualized (7,12). In microscopic investigation, the intra-lobular stroma of the breast tissue show a neoplasm composed of cords and nests of polygonal cells with eosinophilic pas positive granular cytoplasm, uniform peripherally located nuclei and

inconspicuous nucleoli, penetrating to the adjacent paranchyma, an infiltrative pattern, like invasive breast carcinomas (8). The neoplastic cells in 90% of cases demonstrate diffuse positive immunoreaction for S100 protein and NSE which confirm the neural origin of the tumoral cells (2, 8). On cytology, a highly cellular smear composed of loosely sheets of ovoid granular cells with uniform nuclei are seen, which causes a great challenge for definite diagnosis (8,9). The main differential diagnosis is invasive breast carcinomas, because of its gross feature, fibrous consistency and adhesion to pectoral muscles (3). Other differential diagnoses consist of neurofibroma, apocrine neoplasms, sclerosing adenosis and malignant fibrous histiocytoma (11). Surgical resection is the choice of treatment and the rate of recurrence is about 5 - 10 % which mostly seen in inadequate tumoral resection due to non-encapsulation of the tumor (2). This tumor, almost always, has a benign clinical course and malignant transformation (based on the 6 criteria of necrosis, high nucleoplasmid ratio, more than two mitosis per 10 HPL, polymorphism, vacuolated nucleus and marked desmoplasia) in less than 1% of cases is visualized (3,11,13). In these cases, additional therapies such as chemo- or radiotherapy are required (3).

References

1. Hammas N, El Fatemi H, Jayi S, Hafid I, Fikri G, El Houari A, et al. Granular cell tumor of the breast: a case report. *J Med Case Rep* 2014; 8:465.
2. Brown AC, Audisio RA, Regitnig P. Granular cell tumour of the breast. *Surg Oncol* 2011; 20(2):97-105.
3. Aoyama K, Kamio T, Hirano A, Seshimo A, Kameoka S. Granular cell tumors: a report of six cases. *World J Surg Oncol* 2012; 10:204.
4. Kadivar M, Sangsari R, Alavi A. Prenatal diagnosis of granular cell tumor. *Iran J Med Sci* 2014; 39(2):144-7.
5. Parmigiani S, Giordano G, Fellegara G, Brevi B, Magnani C. A rare case of multiple congenital

- epulis. *J Matern Fetal Neonatal Med* 2004; 16(Suppl 2):55-8.
6. Qian X, Chen Y, Wan F. Granular cell tumor of the breast during lactation: a case report and review of the literature. *Oncol Lett* 2014; 8(6):2565-8.
 7. 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(6):731-3.
 8. Di Bonito M, Cantile M, Collina F, De Cecio R, Petrosino T, Botti G. Coexistence of granular cell tumor and invasive ductal breast cancer in contralateral breasts: a case report. *Int J Mol Sci* 2014; 15(8):13166-71.
 9. Tural D, Akar E, Oztürk T, Turna H, Serdengeçti S. Malignant clinical presentation of a benign granular cell tumor of breast in a patient with previously treated contralateral invasive ductal carcinoma. *Case Rep Oncol Med* 2012; 2012:974740.
 10. Andalib A, Heidary M, Sajadieh-Khajouei S. Granular cell tumor presenting as a large leg mass. *Arch Bone Jt Surg* 2014; 2(4):265-7.
 11. Castillo Lara M, Martínez Herrera A, Torrejón Cardoso R, Lubián López DM. Granular cell tumor in breast: a case report. *Breast Cancer (Dove Med Press)* 2017; 9:245-8.
 12. 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(6):528-31.
 13. Gavriilidis P, Michalopoulou I, Baliaka A, Nikolaidou A. Granular cell breast tumour mimicking infiltrating carcinoma. *BMJ Case Rep* 2013; 2013:bcr2012008178.