Granular cell tumor of the breast: a rare lesion resembling breast cancer

J. Gogas, C. Markopoulos, E. Kouskos, H. Gogas, D. Mantas, Z. Antonopoulou, K. Kontzoglou

Breast Unit - 2nd Department of Propedeutic Surgery, Athens University Medical School - "Laiko" General Hospital, Athens (Greece)

Summary

Granular cell tumor (GCT) is an uncommon, usually benign tumor that occasionally involves the breast. It is possibly of neural origin (Schwann cells) and usually occurs in premenopausal black women. Physical examination, mammographic, ultrasonographic findings and pathologic examination may suggest breast malignancy. Positive immunohistochemical staining of the cells for S-100 protein, NSE, and CEA is indicative of GCT. Surgical treatment of choice is wide local excision.

We report a case of granular cell tumor of a female breast. A 52-yr-old white woman had a palpable mass close to her right axilla. Computer tomography (CT) showed a 3.74 cm mass in the mammary tail of Spencer. The findings were suspicious for malignancy and the lesion was widely resected. Pathologic examination showed granular cell tumor.

Key words: Granular cell tumor; Breast; Benign neoplasm; Immunohistochemistry.

Introduction

Granular cell tumor (GCT) is a rare stromal lesion, first described by Abrikossof in 1926 as a tongue lesion, while in 1931 the same author referred the presence of GCT in a female mammary gland [1].

In order to delineate the diagnostic challenges and the therapeutic options of GCT, we report a case of a female patient who presented such a tumor in the tail of Spencer of her right breast.

Case Report

A 52-year-old female patient noticed by self-examination a mass close to her right axilla. Physical examination showed a firm, painless, well-defined mass, located on the right anterior axillary line, in the area of the tail of Spencer. Mammogram of the right breast did not show the mass due to its high location, close to the axilla. Ultrasonography described a solid mass with regular borders. Computer tomography (CT) revealed a tumor (maximum diameter: 3.74 cm) along the right anterior axillary line (Figure 1). Fine needle aspiration (FNA) cytology of the mass was not diagnostic.

A wide local excision was performed removing a 4.5 x 4.0 x 4.0 cm lesion. Histology showed a firm, solid, nonencapsulated, partly circumscribed, yellowish-white tumor composed of clusters of distinctive cells arrayed between dense bundles of collagen and invasive into fat (Figure 2). Microscopically the cells are large and spindle shaped, having indistinct cytoplasmic borders and abundant eosinophilic granular cytoplasm and their nuclei are small, lacking prominent nucleoli. Immunohistochemical staining of tumor cells shows positivity for S-100 protein, carcinoembryonic antigen (CEA), keratin and PAS. The lesion was not hormonally sensitive.

The patient recovered well and her follow-up has not revealed any abnormality.

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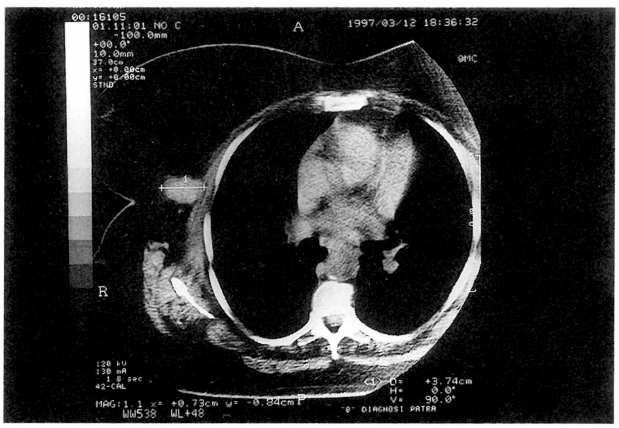

Figure 1. — CT scan showing a tumor (maximum diameter: 3.74 cm) along the right anterior axillary line.

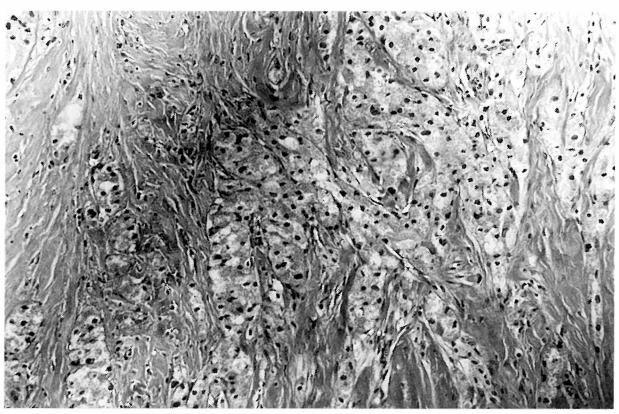

Figure 2. — Photomicrograph of surgical specimen showing clusters of distinctive cells arrayed between dense bundles of fibrous tissue (1:125).

Discussion

GCT is a rare neoplasm that can appear in many visceral and cutaneous sites. Its most common location is the oral cavity (mainly the tongue), while other sites are the neural system, the alimentary tract and the vulva [2]. About 6-16% of GCT occur in the breast area and most of them appear in the upper outer quadrant. The lesion is more common in black premenopausal middle-aged women, can be seen also in males and sometimes is multifocal [3, 4].

The histogenesis of GCTs is still uncertain. Their origin has been considered to be from the nerve sheath. Originally the cells were thought to be muscular in origin *(hence, the term granular cell myoblastoma)* [5, 6].

The frequency of GCT is 1 per 1,000 cases of breast cancer [7]. There is a limited number of GCT cases reported in the English literature. Most of them are benign, while just a few are malignant [8]. Furthermore, there are case reports presenting coincidence of breast GCT with infiltrating breast cancer [9].

Recognition of GCTs is very important since they may be confused with breast cancer clinically, mammographically, sonographically and histologically [5]. They present as a hard mass, usually fixed to the skin. Mammogram reveals either a dense, stellate mass or a well-circumscribed lesion. Ultrasound findings are not indicative of the lesion [10]. Moreover, a new imaging procedure, dynamic magnetic resonance mammography has the potential of distinguishing this rare condition from cancer [11]. FNA is usually diagnostic, but not for our patient [6, 10]. Core needle biopsy almost always obtains an accurate diagnosis of GCT [12]. Pathology reveals large, solid tumors with regular or infiltrating borders and a yellowish-white cut surface. Microscopically, tumor cells are spindle shaped or polygonal, forming clusters. They have abundant eosinophilic granular cytoplasm and small nuclei and they are not hormonally sensitive. Immunohistochemistry reveals positivity for S-100 protein, CEA and neuron specific enolase (NSE) [13].

Histologic characteristics of GCTs suggesting malignancy are the large tumor size (> 5cm), the presence of necrosis, the cellular pleomorphism, the increased mitotic activity and the local recurrence [13]. The differential diagnosis includes breast carcinoma, histiocytic mammary lesions and metastatic breast malignancies [5].

The surgical procedure of choice is wide local excision of the tumor (with free margins). Local recurrence occurs in a 10-year period after primary surgery and is related to incomplete primary resection. Axillary lymph node dissection is not necessary because nodal invasion is extremely rare [7]. Malignant GCTs are handled by multimodality treatment (surgery + radiotherapy + chemotherapy), unfortunately with poor results [14].

In conclusion, surgeons should be aware that this rare breast tumor can resemble breast cancer in order to avoid performing needless radical breast surgery [15].

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Address reprint requests to:
E. KOUSKOS, M.D., Surgeon
Ourania Douka Str. 10-12,
New Smirni 171 22,
Athens (Greece)