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Granular Cell Tumor (Abrikossoff' tumor) Mimicking a Breast Cancer: Case Report

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Abstract

Granular cell tumor is a very rare benign neoplasm. It is called Abrikossoff'tumor, after the Russian pathologist Abrikossoff, who described it for the first time in 1926. This type of tumor can be found anywhere in the body particularly the head and neck regions, especially the tongue. Multiple atypical presentations of this lesion were reported in the literature (genitourinary system, upper arm, breast...). We hereby report the case of a 54-year-old Lebanese woman who presented with a 1.5 cm palpable mass in her right breast. Mammography and ultrasound examination revealed an irregular and poorly limited mass, located at the upper outer quadrant of her right breast. A histological examination combined with immunohistochemical study revealed it to be a granular cell tumor.

Keywords: Abrikossoff's tumor; Granular cell tumor; Breast cancer;

Introduction

Granular Cell Tumor (GCT) or Abrikossoff'tumor is usually a lesion of the soft tissues. Its origin was thought to come from the myocytes. However, the immunohistochemical studies have subsequently revealed its neurogenic origin as its cells express the 100-S proteinon their surfaces and have similar ultrastructural features to Schwan cells [1, 2].

Although GCT is a benign tumor, malignancy can be seen in 1% of cases [3]. This lesion can affect any part of the body. The most common sites are the oral cavity, the soft tissues and less frequently the respiratory and digestive systems [4]. Breast involvement is very rare and unusual (1 GCT in 1000 cases of breast cancer). It represents 6% of all the granular cell tumor reported cases and has the same clinical and radiological features of a breast cancer [5, 6].

Below, we report a case of a 54 year-old woman who developed a Granular Cell Tumor (GCT) of the mammary gland, confused for a breast carcinoma on ultrasonography, mammography and clinical examination.

Case presentation

A 54-year old Lebanese woman, presented with a palpable mass of the right breast associated with retraction of the skin at the level of the tumour. She is known to have no medical or surgical history except for 2 vaginal deliveries. There is no familial or personal history of gynaecological cancer. At that time, the patient was experiencing a menopausal syndrome.On the physical examination, the mass was firm, painless, of 1.5 cm approximately, located at the upper outer quadrant of the right breast with a retraction of the skin. No axillaries lymph nodes were palpated.

A mammogram and an ultrasound were done showing an ill-defined, speculated mass of 1.5 cm, hypoechoic with posterior shadowing, highly suspicious for malignancy the Breast Imaging Reporting and Data System, category 4 (Figure1). On macroscopic examination, the mass appeared white with irregular borders, measuring 1.5 cm (Figure 2).

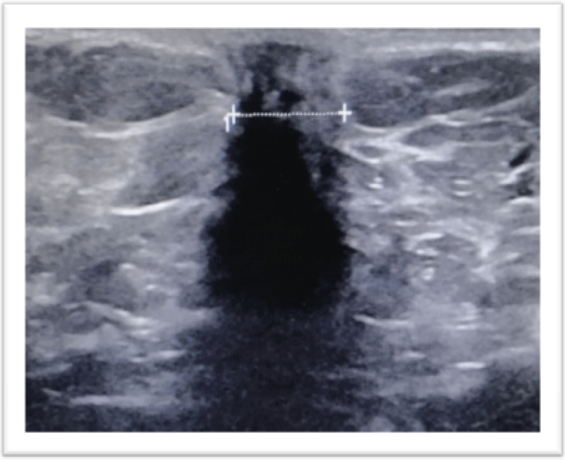

Figure 1: Ultrasound showed a 15mm hypoechoic, heterogeneous, spiculated and poorly limited mass, that mimics carcinoma.

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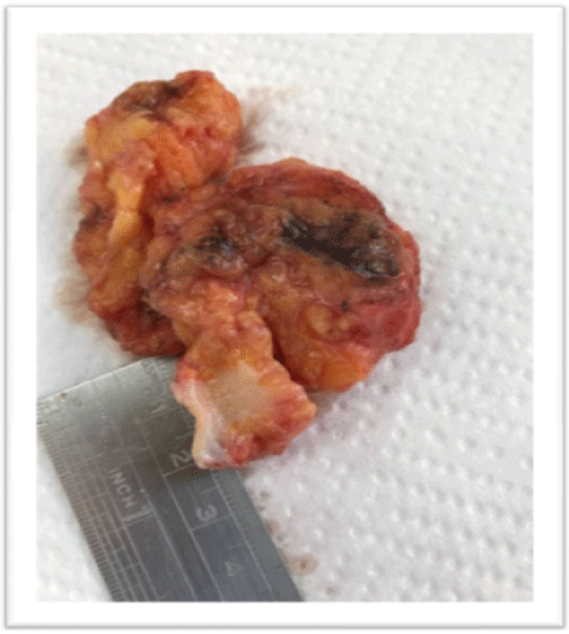

Figure 2: A 1.5 cm whitish mass with irregular borders.

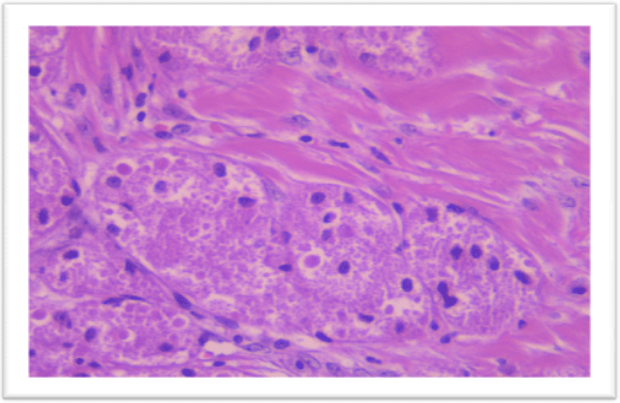

Figure 3: Microscopic appearance: proliferation of polygonal cells arranged in nests and sheets (Original magnification ×400).

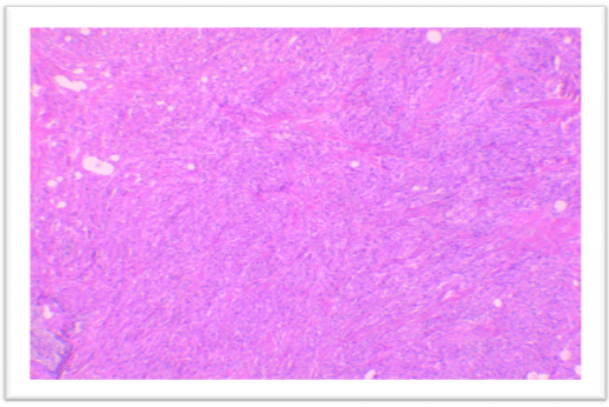

Figure 4: Microscopic appearance: Tumor cells contained granular eosinophilic cytoplasm, and small, uniform, roundnuclei (original magnification ×40).

Microscopic exam showed a proliferation of cells arranged in nests and sheets. These cells are uniform, large and polygonal with picnotic nuclei. There is an absence of mitoses, nuclear multiplicity and atypia. Variable amounts of collagenous stroma are present. Necrosis was not seen within the tumor. Special stains confirmed the presence of granules that are Periodic acid-Schiff positive and diastase resistant (Figure 3&4).

Based on these features, the diagnosis of benign Granular Cell Tumor (GCT) had been made. Later on, an immunohistochemical study revealed a strong expression of S-100 protein hence affirming the diagnosis of GCT. The patient underwent a wide excision of the tumor.

Discussion

Abrikossoff's tumor or Granular cell tumor is a very rare benign tumor [1].Less than 1% is found to be malignant [3].At the beginning, GCT was considered a myogenic tumor (myoblastoma) but the immunohistochemical analysis revealed that it originates from Schwann cells due to the positive staining for S-100 protein [2]. It affects the females between the age of 20 and 50 year- old. Nevertheless, some cases targeting men have been reported in the literature [7]. The most common appearance was in the tongue, but it can also occur in the breast with 5% of all the cases [5-6]. GCT of the breast is usually located in the upper inner quadrant [5]. In our patient's case, the tumor was found in the upper outer quadrant which is a common location of breast carcinoma. Some described a thickening or a retraction at the level of the lesion [6]. On imaging examination, this tumor is very suggestive of a breast carcinoma.

Mammography usually reveals a small, dense, spiculated lesion with no calcifications. On ultrasound, the mass appears solid, poorly defined, with marked posterior shadowing as viewed in our case [7, 8]. The definitive diagnosis is made by excisional biopsy and confirmation with immunohistochemical study. The tumor cells are highly reactive to S-100 protein, and in some cases positive for other proteins such as CD68, carcinoembryonic antigen and vimentin.

Furthermore, these cells don't express on their surfaces cytokeratins, epithelial membrane antigen or mucin [9]. Macroscopically,the mass is firm, homogenous, grayish-white to yellow, smaller than 3cm. Most of the tumors appear to be well circumscribed, but in some examples, they may have irregular borders, similarly to our case [5, 6-10].

On microscopy, the tumor can have regular or irregular margins, as noted in our paper. The cells are generally polygonal, large and arranged in nests and sheets. In some cases they may be round or spindle-like in shape [5, 6]. They embody pathognomonic granular eosinophilic cytoplasm that reflects the accumulation of lysosomes. The nuclei, located at the centre of every cell, and housing one or two nucleoli, are small and hyperchromatic. Rarely, we can find multiple nuclei; in these cases, the tumor isn't necessarily malignant .The nuclei do not display mitoses, pleomorphism, nuclear multiplicity or atypia [5, 6, 8 &10]. Collagen fibers are present. As showed in our case, the

granules are diastase resistant and Periodic acid-Schiff positive. In case of incomplete excision, this tumor can recur. Therefore, the treatment of choice in case of GCT is a wide excision with free margins. In case of malignancy, the axillaries lymph nodes can be invaded [9].

Conclusion

GCT is a very rare condition. On imagery, GCT looks like a breast carcinoma. The definitive diagnosis relies on the histopathology and immunochemical exam. Consequently, GCT should be considered as a differential diagnosis in any female presenting a breast tumor suspicious for malignancy. A pre-operative diagnosis is crucial as it highly affects the surgical approach as well as the prognosis.

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