

## Case Studies

# Slowly Growing Nodule on the Trunk: Cutaneous Granular Cell Tumor

Özge Gündüz<sup>a</sup> Gül Erkin<sup>b</sup> Banu Bilezikçi<sup>c</sup> Gökhan Adanalı<sup>d</sup>

<sup>a</sup>Department of Dermatology, Ufuk University Faculty of Medicine, and Departments of

<sup>b</sup>Dermatology, <sup>c</sup>Pathology and <sup>d</sup>Plastic Surgery, Guven Hospital, **Ankara**, Turkey

## Key Words

Soft-tissue tumors · Granular cell tumor

## Abstract

Granular cell tumor (GCT) is a rare benign neoplasm of the skin that accounts for 0.5% of all soft-tissue tumors. The tumor mostly presents with a symptomatic slowly growing solitary nodule and overlying normal skin; therefore, it is not always considered in the differential diagnosis. Here, we report a 58-year-old female patient who presented with a 4-year history of a slowly growing mass, with a dimension of 5 × 4 cm on her left waist, diagnosed as a GCT at the histopathological examination. The neoplastic cells had centrally located nuclei and granular eosinophilic cytoplasm and stained positively for S100, neuron-specific enolase, and CD68 antibodies. Fifteen months after surgery, the patient still showed no signs of local recurrence or metastases. Although a large diameter is a feature of malignant GCT, our case with cutaneous GCT was localized on the trunk and did not present malignant features clinically and histopathologically.

© 2016 The Author(s)  
Published by S. Karger AG, Basel

## Introduction

Granular cell tumor (GCT) is a rare benign neoplasm of the skin and was first described by Abrikossoff [1] in 1926. Due to their subtle presentation, these tumors are often misdiagnosed clinically, and a histopathological examination leads to the correct diagnosis. GCTs can arise both on the mucosa and skin. They are commonly located on the tongue, upper respiratory tract, breast, and upper extremities. According to the reported cases, they have rarely been located on the torso [2].

Özge Gündüz, MD  
Department of Dermatology, Ufuk University Faculty of Medicine  
Dr Rıdvan Ege Hastanesi B Blok, Deri ve Zührevi Hastalıklar Anabilim Dalı  
TR–06520 Balgat, Ankara (Turkey)  
E-Mail drozgegunduz@yahoo.com



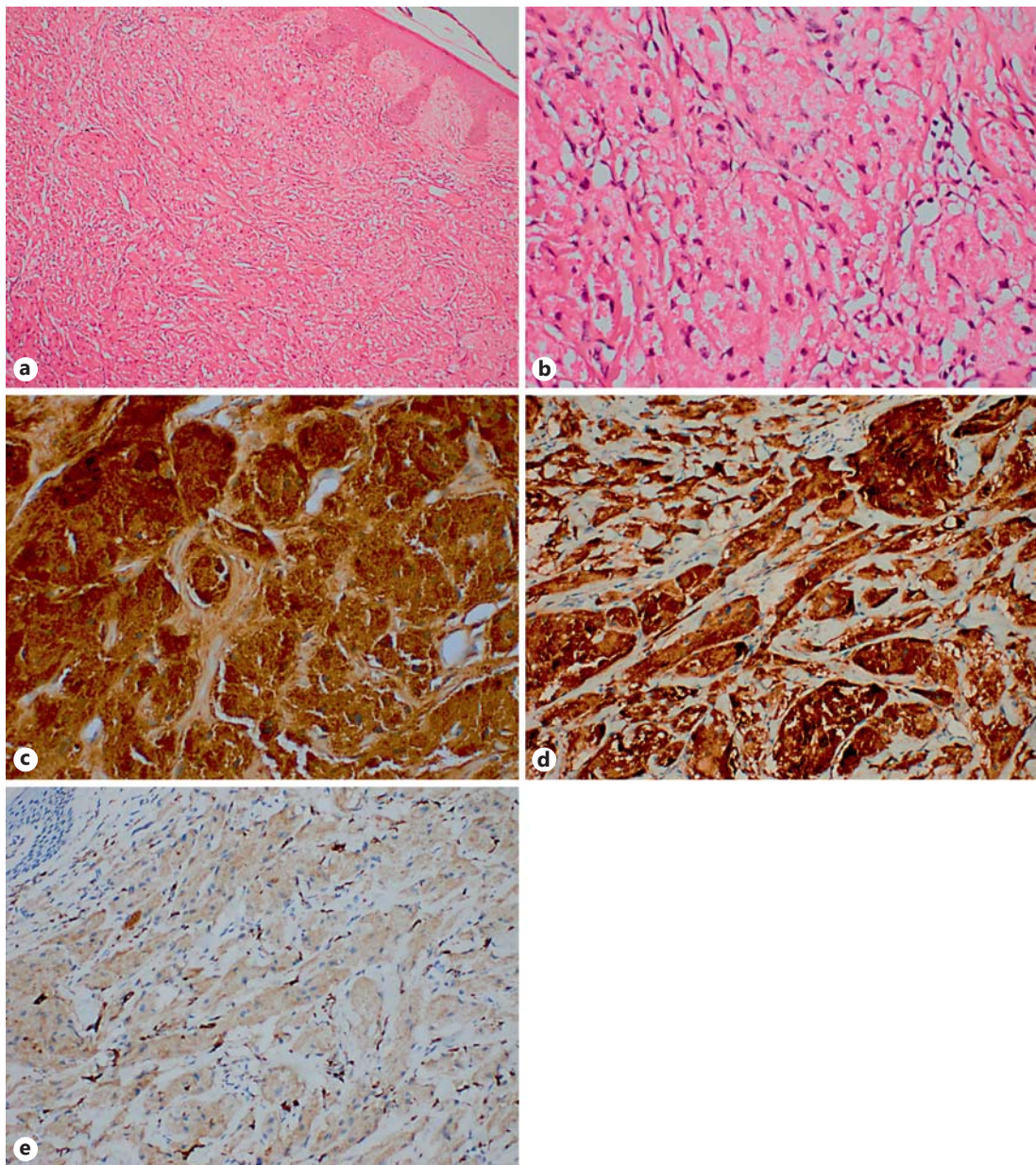
**Fig. 1.** Asymptomatic, firm, purple-colored, mobile 5 × 4 cm subcutaneous nodular lesion with well-defined borders located on the left waist area.

Here, we report a 58-year-old female patient with a GCT on an unusual location. She presented with a 4-year history of a slowly growing mass, with a dimension of 5 × 4 cm on her left waist, diagnosed as a GCT at the histopathological examination.

### Case Report

A 58-year-old female patient presented with the complaint of a slowly growing mass on her left waist for 4 years. The lesion was neither painful nor tender. In the past, she had frequently developed furuncles on the body; so, at first, she thought it was a furuncle and tried several times to force it manually to discharge its contents. There was no discharge, and it continued to increase in size. On clinical examination, a single, firm, purple-colored, mobile subcutaneous nodular lesion with well-defined borders was noticed (**fig. 1**). The subcutaneous nodule was rather big with a dimension of 5 × 4 cm, and there was no surface change on the overlying skin. Laboratory examinations were within normal ranges. A 3-mm punch biopsy was performed, and the histopathological examination of HE sections demonstrated diffuse infiltration of the dermis with tumoral nests. These neoplastic cells had centrally located nuclei and granular eosinophilic cytoplasm (**fig. 2a, b**). The immunohistochemistry





**Fig. 2.** **a** Diffuse infiltration of the dermis with tumoral nests (HE,  $\times 100$ ). **b** Tumoral cells with centrally located nuclei and granular eosinophilic cytoplasm (HE,  $\times 400$ ). **c** Strong positive cytoplasmic staining with S100 (IHC,  $\times 400$ ). **d** Positive staining with neuron-specific enolase (IHC,  $\times 400$ ). **e** Positive staining with CD68 (IHC,  $\times 400$ ).

(IHC) with S100, neuron-specific enolase, and CD68 antibodies revealed a strongly positive staining (fig. 2c–e). The diagnosis of GCT was made, and the lesion was completely excised by the plastic surgeon. The histopathological examination of the excised specimen revealed no lymphovascular invasion, necrosis, high-rate mitotic activity, or cellular atypia. Postoperatively, the patient's recovery was uneventful, and 15 months after surgery, the patient had no local recurrence or metastases.

## Discussion

GCT was originally named granular cell myoblastoma, but currently, GCT is considered to be neural in origin according to immunohistochemical studies [3]. GCT accounts for 0.5% of all soft-tissue tumors [4]. In the literature, there is a female preponderance, and usually, the reported cases occurred between the third and fifth decades [5]. These tumors mostly present as a painless mass in the subcutaneous tissue; however, they may rarely be multicentric at the time of diagnosis. Familial cases and cases of congenital GCT have been reported to be associated with multiple lesions [6].

The tumor can be localized on the skin or submucosa of various locations. In 30–45% of cases, GCT affects the skin, followed by the area of the head and neck, where the most common location is the tongue and oral cavity [7]. Other affected locations are the breast, the gastrointestinal tract, the respiratory tract, the thyroid gland, the urinary bladder, the central nervous system, and the female genitalia [8]. Location on the torso has rarely been reported. Torrijos-Aguilar et al. [6] showed that 3 out of 34 patients had involvement of the back. Fragulidi et al. [7] reported a case of subcutaneous GCT in the lumbar region in a 31-year-old male patient.

GCT of the skin mostly presents with a symptomatic slowly growing solitary nodule with overlying normal skin. Since the clinical presentation of cutaneous GCT does not have any specific features, it is not always considered in the differential diagnosis. The diagnosis of GCT is mostly reached by a histopathological examination with immunohistochemical staining. Histopathologically, GCT is composed of large cells with an eosinophilic granular cytoplasm. This granular appearance is the result of secondary dense cytoplasmic lysosomes. These cells contain a large amount of dense cytoplasmic lysosomes which yield a granular image under the microscope. These granules are Periodic acid-Schiff positive and diastase resistant. In GCT, immunohistochemical stains are positive for S100, neuron-specific enolase, and vimentin, whereas tumoral cells are not stained with epithelial, melanocytic, muscle, endothelial, and glial cell markers. This staining pattern is also suggestive of a Schwann cell origin [6].

The clinical differential diagnosis of GCT in the subcutaneous tissue includes dermatofibroma (fibrous histiocyctoma), lipoma, adnexal tumors, neurofibroma, and schwannoma, all of which could be differentiated by histopathological and immunohistochemical features. Dermatofibromas clinically present with brownish nodules and often have the dimple sign; histopathology reveals a dermal mass composed of close whorls of spindled fibroblasts or histiocytes. Lipomas are very common subcutaneous soft nodules composed of encapsulated tumor or normal fat cells. Histopathological examination of adnexal tumors shows features of the cells which they stem from. Sometimes, neurofibromas and schwannomas show granular changes in limited parts of the tumor, but these are never extensive through the tumor to create a diagnostic challenge. On the other hand, basal cell carcinomas, melanomas, leiomyomas, leiomyosarcomas, dermatofibrosarcomas, angiosarcomas, dermatofibromas, and ameloblastomas have granular cell variants in a pathological manner, which can be differentiated from GCT with immunohistochemical studies. In our case, the tumor was composed of typical neoplastic cells with a granular eosinophilic cytoplasm, which stained positive for S100, neuron-specific enolase, and CD68; therefore, with these distinctive histopathological and immunohistochemical features our patient was diagnosed as having GCT.

GCT mostly behaves in a benign fashion, but malignant transformation can be recognized in 1–2% of cases. The most common metastatic sites are regional lymph nodes, lungs, and bones. It is a challenge to predict the malignant behavior at the time of diagnosis. When the tumor size is >4 cm, the risk of malignancy is increased. But Liu et al. [9] stated that metastases usually occur when the tumor arises from a visceral or deep location. Histopathological features of malignant transformation were investigated in several studies. Fanburg-Smith et al. [10] defined histopathological criteria to identify malignant GCT: (1) the presence of necrosis; (2) the emergence

of spindle cells; (3) a vacuolar nucleus with an enlarged nuclear body; (4) an increase in mitotic activity (2 mitoses/10 high-power fields); (5) high nuclear-to-cytoplasmic ratio, and (6) pleomorphism. If none of these features are seen, the tumor is considered to be benign. If 3 or more criteria are met, it is considered to be malignant, and if 1–2 criteria are met, it is atypical. Also, GCTs of the skin may show locally invasive features. Battistella et al. [11] reported that the tumor infiltrated arrector pili muscles in 23% of 119 cases and had a perineural spread in 66%.

In our case, the size of the tumor was >4 cm; however, it presented as a nonulcerated and painless nodule with a slow growth rate. Additionally, the histopathological examination revealed no change in favor of a malignant transformation, such as lymphovascular invasion, necrosis, mitosis, or pleomorphism; and 15 months after surgery, the patient still showed no signs of local recurrence or metastases.

The treatment of choice in GCT is a local wide excision with clear margins. Radiotherapy and chemotherapy have not shown to be effective in the clinical course of recurrent or malignant disease [4]. In a recent report of a patient with recurrent malignant GCT, the patient was treated with pazopanib (a multi-kinase inhibitor) 800 mg/day based on data from a phase 3 trial for metastatic soft-tissue sarcoma [12].

Although a large diameter is a feature of malignant GCT, here, we reported a rare case with a cutaneous GCT localized on the trunk, which did not present malignant features clinically and histopathologically.

### Statement of Ethics

We state that an informed consent was obtained from the patient.

### Disclosure Statement

The authors declare that there was no financial support and there are no conflicts of interest.

### References

- 1 Abrikossoff A: Über Myome, ausgehend von der quergestreiften willkürlichen Muskulatur. *Virchow Arch Path Anat* 1926;206:215–233.
- 2 Lack EE, Worsham GF, Callihan MD: Granular cell tumor: a clinicopathologic study of 110 patients. *J Surg Oncol* 1980;13:301–316.
- 3 Rejas RA, Campos MS, Cortes AR, Pinto DD, de Sousa SC: The neural histogenetic origin of the oral granular cell tumor: an immunohistochemical evidence. *Med Oral Patol Oral Cir Bucal* 2011;16:e6–e10.
- 4 Rose B, Tamvakopoulos GS, Yeung E, Pollock R, Skinner J, Briggs T, Cannon S: Granular cell tumours: a rare entity in the musculoskeletal system. *Sarcoma* 2009;2009:765927.
- 5 Tsuchida T, Okada K, Itoi E, Sato T, Sato K: Intramuscular malignant granular cell tumor. *Skeletal Radiol* 1997;26:116–121.
- 6 Torrijos-Aguilar A, Miquel VA, Pitarch-Bort G, Mercader-Garcia P, Fortea-Baixaui JM: Cutaneous granular cell tumor: a clinical and pathologic analysis of 34 cases (in Spanish). *Actas Dermosifiliogr* 2009;100:126–132.
- 7 Fragulidi GP, Chondrogiannis KD, Lykoudis PM, Karakatsanis A, Georgiou CA, Vouza E, et al: Subcutaneous granular cell tumour of the lumbar region. *J Cutan Aesthet Surg* 2011;4:132–134.
- 8 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.
- 9 Liu K, Madden JF, Olatidoye BA, Dodd LG: Features of benign granular cell tumor on fine needle aspiration. *Acta Cytol* 1999;43:552–557.
- 10 Fanburg-Smith JC, Meis-Kindblom JM, Fante R, Kindblom LG: Malignant granular cell tumor of soft tissue: diagnostic criteria and clinicopathologic correlation. *Am J Surg Pathol* 1998;22:779–794.
- 11 Battistella M, Cribier B, Feugeas JP, Roux J, Pelletier F, Pinquier L, et al: Vascular invasion and other invasive features in granular cell tumours of the skin: a multicentre study of 119 cases. *J Clin Pathol* 2014;67:19–25.
- 12 McGuire LS, Yakoub D, Möller MG, Rosenberg A, Livingstone A: Malignant granular cell tumor of the back: a case report and review of the literature. *Case Rep Med* 2014;2014:794648.