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Case Report

Unusual Case of Granular Cell Tumour of the Little Finger

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Abstract

We present an unusual case of a 16 year-old female with benign granular cell tumour in fifth digit soft tissue. While granular cell tumours are common in peripheral soft tissues, head and neck and oesophagus, they are particularly unusual in digits. Tumour showed typical nests and ribbons of cells with abundant eosinophilic cytoplasm and these were immunoreactive with S-100 and CD68 and showed cytoplasmic inclusions with Periodic Acid Schiff (PAS) histochemistry. This case allows for consideration of granular cell tumour in the differential diagnosis of soft tissue masses in digits.

Keywords: Soft Tissue Tumour; Granular Cell Tumour; Digit Soft Tissue; Hand Tumours; Atypical Soft Tissue

Introduction

Granular cell tumour is defined as a soft tissue tumor with neuroectodermal differentiation composed of large cells with eosinophilic, granular cytoplasm [1]. It presents in a wide variety of sites, including peripheral soft tissues, trunk, head and neck, tongue and oesophagus, [2] and may present as multiple lesions [3]. Granular cell tumours present most commonly in 30–50-year-olds, but rarely do occur in elderly and young children [4]. There is reported female predominance, 5:4, [5] and some cases are familial [6]. They can be associated with Noonan or LEOPARD Syndrome and gene mutations *PTPN11* or *PTEN* [7]. Sporadic cases do not harbor these mutations. Malignant transformation is rare [8,9].

Case presentation

A 16-year-old female complained of solitary fleshy tan bean-sized mass on her left little finger (surrounding soft tissue of 5th metacarpal proximal phalanx) of approximately two-year duration. The mass was mildly tender but there was no paraesthesia or hypo- or anaesthesia or difficulty with strength or movements. Schwannoma was clinically suspected. Histology showed nests and ribbons of spindle and epithelioid cells with mild pleomorphism and abundant eosinophilic cytoplasm (Figure 1). Necrosis or mitoses were not seen. Cells were immunoreactive with S-100 and CD68 (Figure 2) and showed cytoplasmic inclusions with Periodic Acid Schiff histochemistry (Figure 3). Pancytokeratin and CD34 were negative and Ki67 showed proliferation in 1-2% of cells. Tumour was removed by excision.

Discussion

Granular cell tumours present in peripheral soft tissue, head and neck and oesophagus, but rarely in soft tissue of digits. We

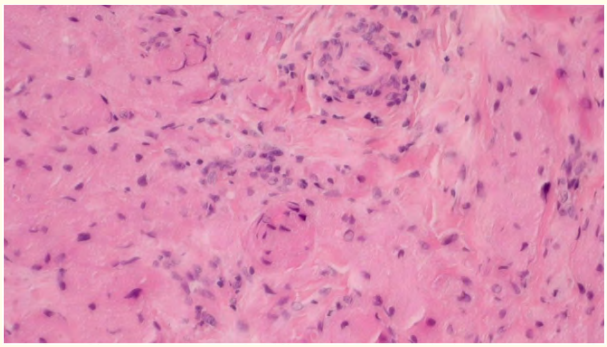

Figure 1: Nests and ribbons of spindled and epithelioid cells with abundant eosinophilic cytoplasm, Hematoxylin and Eosin stain, medium power.

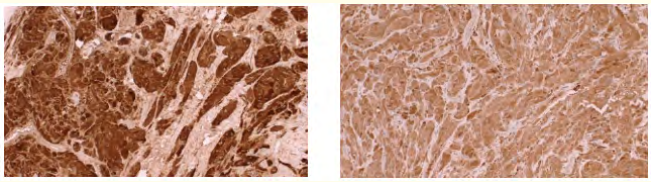

Figure 2: Immunoreactivity with S-100 (left) and CD68 (right), low power.

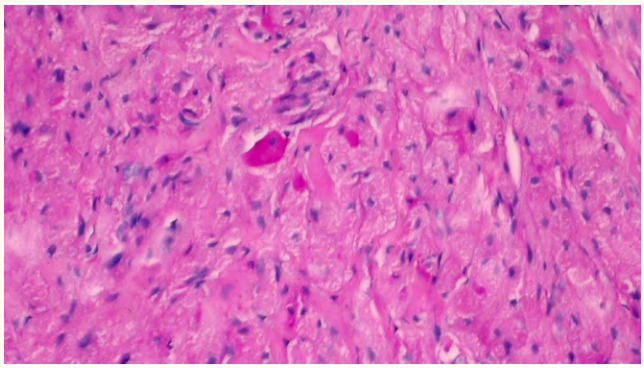

Figure 3: PAS-positive large cytoplasmic inclusions (fusion of endocytic vesicles into phagolysosomes), low power.

present a case of granular cell tumour in upper extremity digit soft tissue to add to the medical literature of this rare event.

Granular cell tumours are uncommon soft tissue neoplasms of Schwann cell origin [2]. They are composed of polygonal to spindle-shaped cells with abundant eosinophilic granular cytoplasm, a feature attributed to the accumulation of intracytoplasmic lysosomes. Immunohistochemically, these tumours characteristically show positivity for S-100 protein [10] and are negative with other melanocytic markers. They are negative with CD34 helping to distinguish from neurofibroma. The lack of Verocay bodies, hyper- and hypocellular areas and hyalinised vessel walls separate granular cell tumour from Schwannoma. Most granular cell tumours are benign and can be difficult to distinguish from other soft tissue lesions based solely on clinical presentation [2-4,11,12], hence the reliance on histomorphology and immunohistochemistry for accurate diagnosis. Tumours typically demonstrate classic morphological and immunohistochemical characteristics, and complete surgical excision is curative [13].

The typical sites of granular cell tumours include the oral cavity and head and neck region, but case series have documented their rare occurrence in areas such as the palm and finger, where they present as slow-growing nodules [13]. Rare cases of granular cell tumour involving the digits have also been reported in younger patients. A paediatric case described by Bercu., *et al*. (2025) involved a granular cell tumour arising from a digital nerve, emphasising the close association these tumours can have with neurovascular structures in the hand. That report underscored the importance of careful surgical planning to achieve complete tumour excision while preserving function.

Malignant criteria are still debated but include Fanburg-Smith criteria [15] of necrosis, tumour cell spindling, vesicular nuclei with large nucleoli, > 2 mitoses/10 high power fields, high nuclear to cytoplasmic ratio and pleomorphism (0 features: benign; 1 – 2 features: atypical; ≥ 3 features: malignant). There are also the Nasser-Ahmed-Kowalski criteria [16] of necrosis and > 2 mitoses/10 high power fields (0 features: benign; ≥ 1 feature: uncertain malignant potential; and metastasis being the only criteria to diagnose malignancy).

The present case adds to the limited literature on granular cell tumours of the digits and supports their inclusion in the differential

diagnosis of digital soft tissue masses when histologic and immunohistochemical features are consistent with the diagnosis. Pathologic confirmation is critical, particularly when they present in unusual anatomic locations.

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