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Case Report

Granular Cell Tumour of the Penis: A Case Report of a Rare Phenomenon

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Abstract

Granular cell tumour (GCT) is an uncommon neoplasm of presumed neuroectodermal origin, rarely occurring in the male genital tract. We report a case of GCT involving the penile glans, highlighting its histopathological features and immunohistochemical profile.

Keywords: *Granular cell tumour, Penis, Case report, Neuroectodermal tumour.*

Introduction

Granular cell tumour is a rare, usually benign neoplasm first described by Abrikossoff in 1926 (Ordóñez, 1999). It is believed to originate from Schwann cells, supported by its consistent expression of neural markers such as S100 and SOX10 (Ordóñez, 1999). While most GCTs occur in the tongue, skin, and subcutaneous tissue, involvement of the male genital tract is exceptionally rare, with only a small number of cases documented worldwide (Laskin et al., 2005; Bulstrode et al., 2004).

Clinically, penile GCT often presents as a small, slow-growing nodule or plaque, which may be mistaken for more common lesions such as condyloma, squamous cell carcinoma, or melanocytic tumours (Zerda et al., 2022). This diagnostic challenge underscores the importance of histopathological and immunohistochemical evaluation. Misdiagnosis can lead to unnecessary aggressive treatment, including partial or total penectomy. Therefore, awareness of this entity among clinicians and pathologists is crucial for appropriate management (Dema et al., 2009).

Case Presentation

A middle-aged male presented with a 5 mm lesion on the edge of the glans penis, clinically suspected to be warty. A biopsy was performed.

Gross Examination: A cream-coloured tissue fragment measuring 5 × 5 × 3 mm.

Microscopic Findings: The biopsy showed mild hyperkeratosis and squamous hyperplasia. Within the scant subepithelial tissue, nests of polygonal cells with abundant granular cytoplasm and small, bland nuclei were identified (figure 1, top left). No evidence of penile intraepithelial neoplasia or squamous carcinoma was seen.

Immunohistochemistry: The lesional cells were strongly positive for S100 (figure 1, top right), and negative for AE1/AE3 (bottom left) and CD68 (bottom right). These findings support the diagnosis of granular cell tumour.

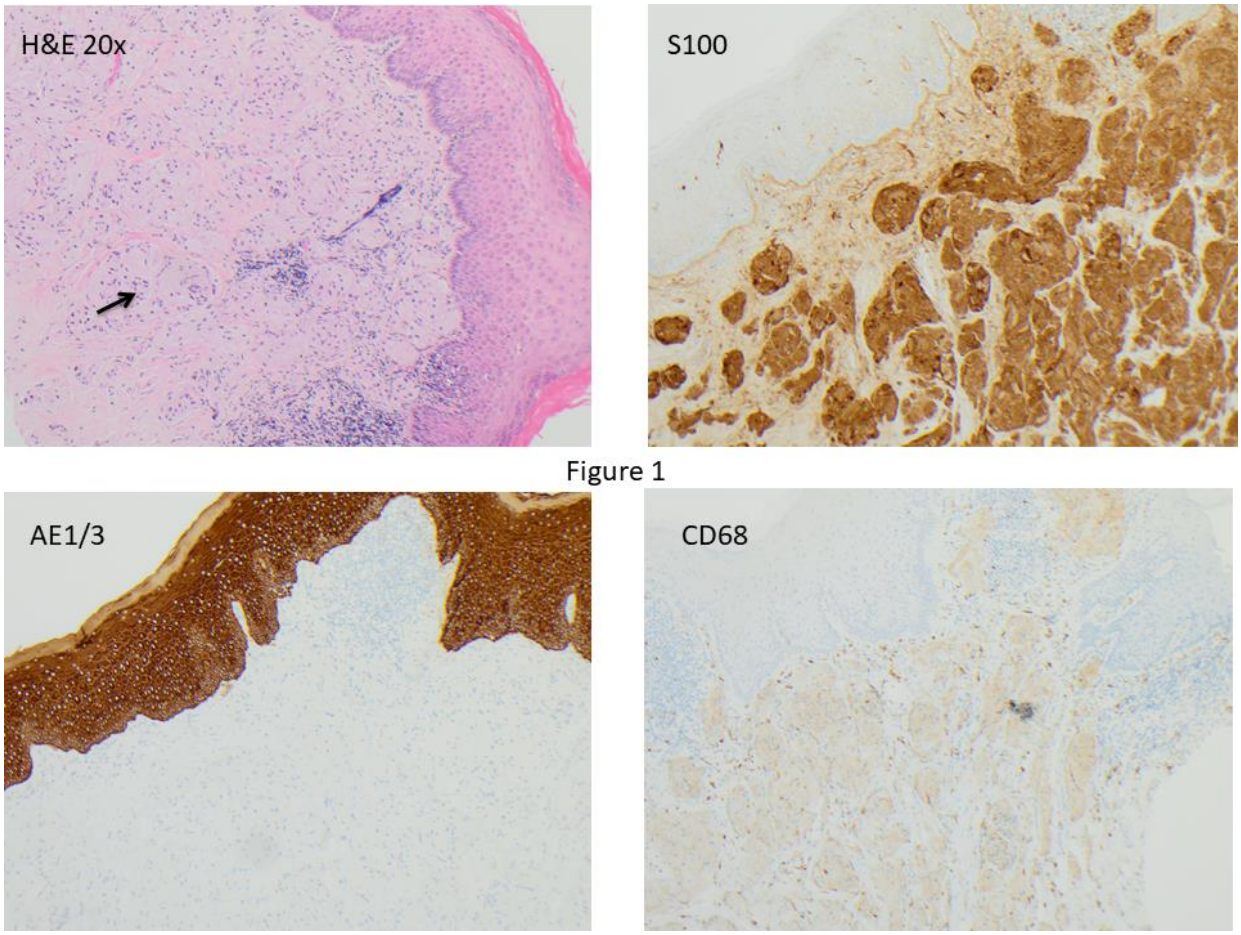

Figure 1

Figure 1: Histological and immunohistochemical features of granular cell tumour of the penis. (Top left) H&E stain showing nests of granular cells beneath squamous epithelium. (Top right) Strong S100 positivity. (Bottom left) Negative AE1/AE3 staining. (Bottom right) Negative CD68 staining.

Discussion

Granular cell tumour of the penis is extremely rare, with fewer than 30 cases reported globally. The lesion typically presents as a solitary, painless nodule on the glans or shaft, often discovered incidentally. Its rarity and nonspecific clinical appearance frequently lead to diagnostic uncertainty ((Laskin et al., 2005; Bulstrode et al., 2004; Zerda et al., 2022).

Histologically, GCT is characterised by nests or sheets of polygonal cells with abundant granular eosinophilic cytoplasm and small, bland nuclei. The granular appearance results from lysosomal accumulation within the cytoplasm (Ordóñez, 1999). Immunohistochemistry is essential for diagnosis: strong positivity for S100 confirms neural differentiation, while negativity for epithelial markers (AE1/AE3) helps exclude squamous neoplasms (Dema et al., 2009).

The biological behaviour of GCT is usually benign, but local recurrence can occur if excision is incomplete. Malignant transformation is exceedingly rare (<2% of cases) and is associated with features such as necrosis, increased mitotic activity, and nuclear pleomorphism (Richmond et al., 2016). In the penile region, complete local excision with clear margins is considered adequate treatment. Radical surgery is not warranted unless malignancy is suspected.

This case reinforces the need for awareness of GCT in unusual sites and highlights the importance of immunohistochemistry in differentiating it from other penile lesions. Given its benign nature, conservative management is appropriate, provided complete excision is achieved (Ordóñez, 1999).

Recent studies (Choy, 2024 and Benjamin, 2024) have expanded our understanding of granular cell tumours (GCTs) of the penis. Immunohistochemistry remains essential, with S100 and SOX10 positivity confirmed, but newer markers such as TFE3 have been reported as useful adjuncts in challenging cases. Molecular profiling has identified occasional alterations in PIK3CA and KRAS pathways, suggesting potential targets for therapy in aggressive variants.

These findings reinforce the need for a nuanced approach to diagnosis and management, integrating histology, immunohistochemistry, and emerging molecular data to guide treatment and surveillance strategies.

Conclusion

Granular cell tumour should be considered in the differential diagnosis of penile lesions. Complete excision is recommended to prevent recurrence.

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