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Solitary circumscribed neuroma of the glans penis. An unusual finding

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Abstract

Palisaded encapsulated neuroma is a rare, benign neural tumor. The involvement of the glans penis is rare; few cases have been reported. We present a 52-year-old man with a five-month course of a solitary painless lesion of the glans penis. Full excision of the nodule was performed. Histopathological and immunohistochemical analyses and examination was consistent with a palisaded encapsulated neuroma. We describe one of a few existing cases of this kind of tumor in the glans penis.

Keywords: solitary neuroma, capsule, glans penis, S100 protein, surgical excision

Introduction

Solitary circumscribed neuroma, also called palisaded encapsulated neuroma (PEN), is a benign spontaneously occurring adult neural tumor with facial predominance (nose and cheeks). Generally, no other organs are affected. Clinically, a single non-pigmented, well defined and asymptomatic papule is usually observed [1]. Glans penis involvement has rarely been reported, without a clear description of its clinical and histological presentation. The case described should aid clinicians in the diagnosis of similar presentations of this tumor.

Case Synopsis

We present a case of a 52-year-old man with a five-month course of a solitary non-painful glans penis

lesion. He denied any trauma to the area or any high-risk sexual behavior. He reported no improvement with topical corticosteroid treatment. He had a history of several colonic adenomatous polyps, epididymis cysts without intratesticular alterations, and an infundibular epidermoid cyst of the lower right eyelid.

Physical examination of the growth revealed a solitary, well circumscribed, slightly red, firm, pearly 4x5mm papule, on the glans penis (**Figure 1**). The remainder of the skin examination was normal. He did not have any lymphadenopathy. Urological and



Figure 1. Physical glans penis examination with a solitary well circumscribed, firm, pearly 4x5mm papule, slightly redness, in its upper-lateral left side.

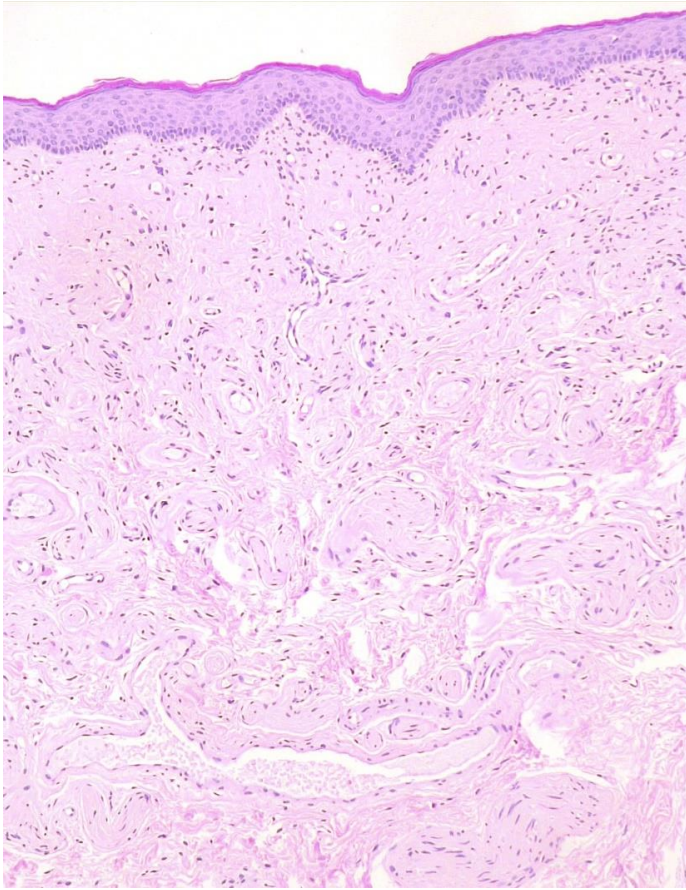


Figure 2. Histologic features of glans penis palisaded encapsulated neuroma: A dermal overgrowth of scattered small neuroid structures and a palisaded growth. H&E, 20x.

sexually transmitted diseases tests were negative. Owing to the small size of the lesion full excision was performed.

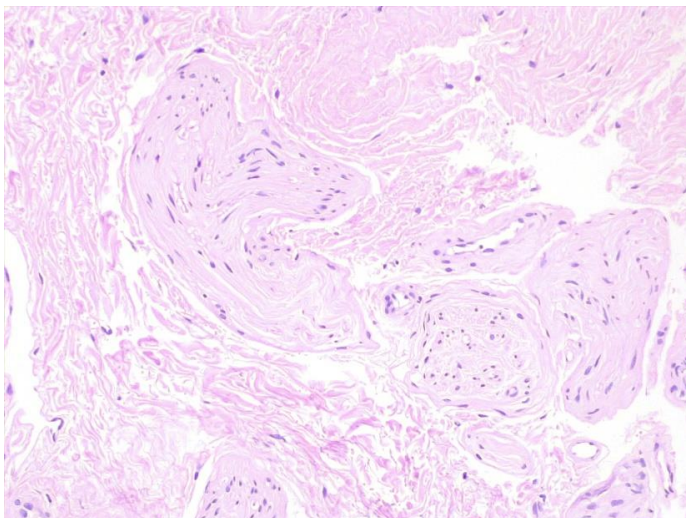


Figure 3. A well circumscribed, encapsulated, intradermal nodule comprised of interdigitating nerve cells grouped in distinct fascicles was observed. H&E, 40x.

Histologic examination showed an overgrowth of both axons and Schwann cells surrounded by a thin capsule of perineural cells in the dermis (**Figure 2**). A well circumscribed, encapsulated, intradermal nodule comprised of interdigitating nerve cells grouped in distinct fascicles was observed (**Figure 3**). The papillary dermis was comprised of scattered small neuroid structures and palisaded growth. A pseudocapsule composed of flattened elongated cells was present around the proliferation. The whole lesion was surrounded by a slight myxoid stroma together with a prominent dermal capillary proliferation. Immunohistochemical analyses demonstrated positive neural cell staining for S100 protein (**Figure 4**). Moreover, positive staining for epithelial membrane antigen (EMA) expression by the perineurium of dermal nerves was also found (**Figure 5**). There was no atypia or mitotic evidence of malignancy.

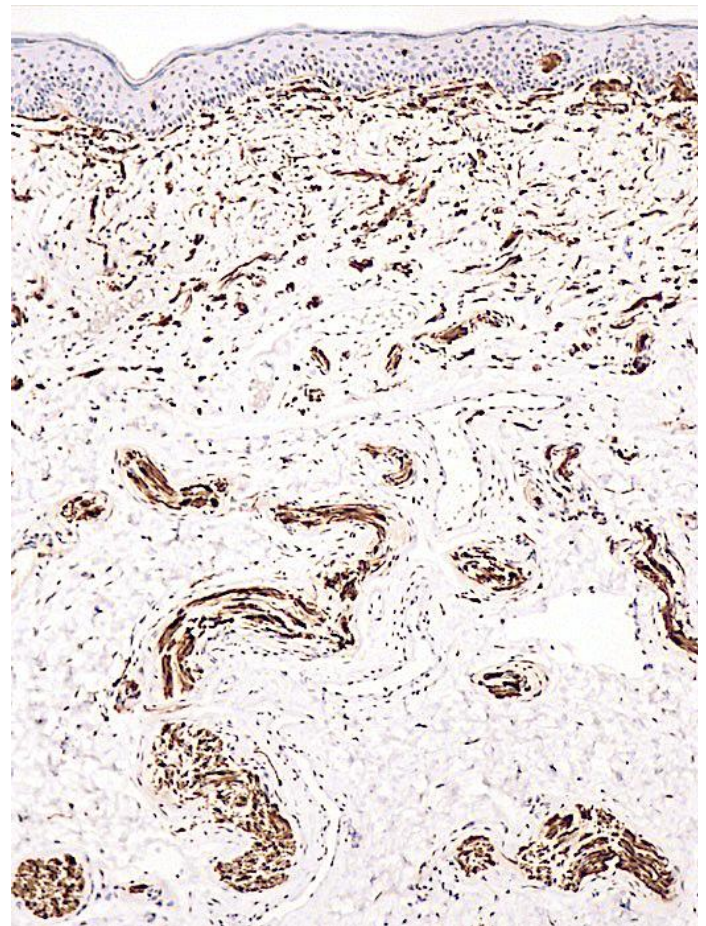


Figure 4. Positive neural cell immunostaining for S100 protein in the dermis, 20x.

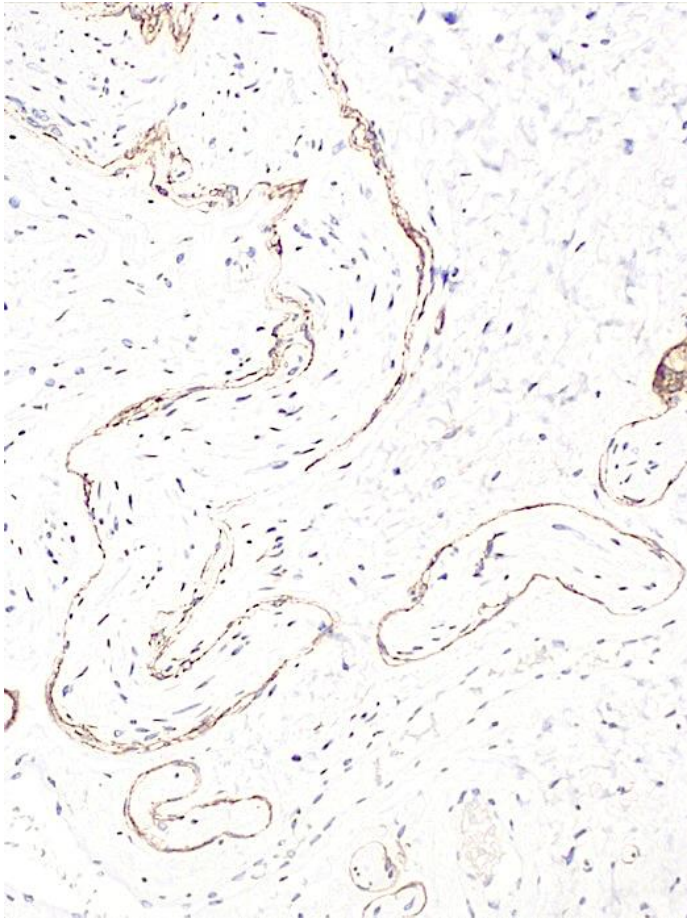


Figure 5. A perineurium pseudocapsule composed of flattened elongated cells stain positively for epithelial membrane antigen (EMA), 40 \times .

The histopathologic diagnosis in the context of the clinical picture was consistent with a PEN. No further treatment was required. No recurrence of the lesion has been seen after 12 months of follow-up.

Case Discussion

Palisaded encapsulated neuroma is an often-misdiagnosed neural tumor [2]. We describe one of a few cases of PEN in the glans penis found in the literature [3-5], [Table 1](#). This unusual location makes diagnosis more difficult. In our patient it presented as a single painless firm, flesh-colored, dome-shaped 2-6mm papule with loss of overlying skin markings [2]. Approximately 90% of PENs are located on the face, mainly around the nose, but rarely occurring in the mucous membranes and the glans penis. Lesions of the trunk have been also described [6]. Palisaded

encapsulated neuroma spontaneously and gradually develops during adulthood (half-life 45.5 years). Koutlas et al. report a male/female ratio of 2.4 [7].

Histopathologic examination showed features of both a neurofibroma and a schwannoma. It consists of a proliferation of neural tissue, axons and Schwann cells, surrounded by a perineural cell capsule. Compact fusiform cell fascicles with mixed palisade nuclei areas are identified with tooth-like slots between the fascicles. Immunohistochemical analyses demonstrate positive tumor cell staining for S100 protein and the perineural capsule stains positively for EMA [1,2]. However, unlike other tumors, PEN lacks an association with underlying systemic disease or malignancy [2].

There are a number of entities in the histologic differential diagnosis, including traumatic neuroma, solitary schwannoma, neurofibroma, angioleiomyoma, plexiform neurofibroma, and basal cell carcinoma ([Table 2](#)).

Complete excision of these lesions is important for both treatment and diagnosis [8]. Laser treatment has also been used in some cases [9]. No testing for underlying systemic disease is required if PEN is diagnosed. It has not been associated with neuroendocrine syndromes or another phakomatoses [8-10]. Although our patient had a history of multiple polyps and cysts, these were likely unrelated to his penile lesion.

Conclusion

We describe one of a few existing cases of PEN in the glans penis. Our case could contribute to a better clinical and histological understanding of this entity in the genital area and help to avoid misdiagnosis of this tumor. It is necessary to include this pathology in the differential diagnosis of glans penis lesions. Once identified, it can be successfully treated by surgical excision.

Potential conflicts of interest

The authors declare no conflicts of interests

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Table 1. Characteristics of glans penis palisaded encapsulated neuroma reported in the literature.

Case	Onset age (years)	Location	Duration	Symptoms	Morphology of lesion	Pathology	Treatment	Follow-up	Reference
1	84	Upper side of the glans penis	2 months	Painful draining lesion. A fistula was developed	Smooth dome-shaped, 0.4cm skin-colored papule	Well-delineated dermal mass composed of compact fascicles of spindle cells showing evidence of palisaded aggregates. An incomplete capsule was also seen. S100+ and EMA+	Simple excision	*	[3]
2	55	Glans penis	20 years	Asymptomatic	Well circumscribed 0.5cm pink-colored shiny papule	Dermal nodule of fusiform cells with elongated nuclei arranged in interlacing fascicles. S100+ and EMA-	Simple excision	*	[4]
3	28	Crown of the glans penis	12 months	Asymptomatic	Well circumscribed, firm and skin color 0.6cm papule	Dermal nodule of neural tissue surrounded by a perineural cell capsule. S100+ and EMA+	*	*	[5]

*no information published in the report.

Table 2. Main differential diagnosis of palisaded encapsulated neuroma tumors.

Diagnosis	Comments	References
PEN	Proliferation of neural tissue, axons and Schwann cells, surrounded by a perineural cell capsule. Positive tumor cell staining for S100 protein and positive perineural staining for EMA	[1-5,11]
Traumatic neuroma	It is circumscribed but not encapsulated like PEN, with inflammatory cells and scarring also seen.	[10,12]
Solitary schwannoma	They are usually subcutaneous, contain small, fusiform nuclei, with Antoni A and B tissue and Verocay bodies. They also lack axons.	[10,12,13]
Neurofibroma	They have bands of fusiform cells immersed in a collagenous stroma admixed with mast cells and lymphocytes. They also lack a capsule	[10,12]
Angioleiomyomas	It presents blood vessels in the dermis surrounded by smooth muscle positive staining for vimentin.	[10,12]
Plexiform fibrohistiocytoma	Dermal/subcutaneous mesenchymal neoplasms which show fibroblastic and histiocytic (macrophage-like) differentiation	[14]
Basal cell carcinoma	Long-lasting telangiectasias and ulceration. It does not appear in the mucous membrane.	[15]
Amelanotic melanoma	An erythematous, scaly, ill-defined papule-plaque. Atypical invasion of melanocytes in the dermis. Melan-A positivity.	[16]