Clin Exp Dermatol 2024; **49**:1740–1743
https://doi.org/10.1093/ced/llae216
Advance access publication date: 3 June 2024

CED
Clinical and Experimental Dermatology
Clinicopathological Case

Penile nodules and ulcer

Karin Savo,[1] Pekka Taimen[2,3] and Niina Hieta[1]

[1]Department of Dermatology, Turku University Hospital and University of Turku, Turku, Finland
[2]Institute of Biomedicine and FICAN West Cancer Centre, University of Turku, Turku, Finland
[3]Department of Pathology, Turku University Hospital, Turku, Finland
Correspondence: Niina Hieta. Email: niina.hieta@utu.fi

Clinical findings

A 60-year-old man was referred to the dermatology clinic due to penile skin symptoms. His medical history included hypertension, hypercholesterolaemia, type 2 diabetes, sleep apnoea, chronic musculoskeletal pain and previous smoking.

Six months before his referral to the dermatologist, the patient had noticed the progressive development of phimosis, and subsequent ulcerations in the foreskin. He had also experienced postcoital bleeding from the glans penis. The urologist noted phimosis and erythematous prepuce with minor ulcerations. Palpable erythematous areas were noted in the inferodorsal region of the glans penis, around the meatus, and in the foreskin. Circumcision was performed, and a biopsy was taken from the hard elevated area on the glans penis.

The patient was sent to the dermatology clinic for further evaluation. Here, a superficial ulcer of 4 × 5 mm was observed in the glans penis. There were also erythematous, yellowish elevated plaques in the glans penis, around the meatal opening, and around the ulceration (Figure 1). The coronary sulcus exhibited erythema. Negative results were obtained on tests for *Treponema pallidum* antibodies, and for herpes simplex nucleic acid amplification from the ulcer.

Histopathological findings

Histopathological examination of the foreskin revealed occasional epidermal atrophy and sawtoothing of elongated rete ridges (Figure 2a), while the specimen margins showed features of epidermal hyperplasia. The dermis exhibited moderate infiltration of lymphocytes, and signs of subepidermal hyalinization and early sclerosis. Somewhat similar findings were observed in the glans penis, with the addition of some neutrophils and oedema within the epidermis, and few multinucleated histiocytes within the dermis (Figure 2b).

What is your diagnosis?

Localized penile nodular amyloidosis and lichen sclerosus.

Discussion

Congo red staining revealed widespread dermal positivity in the foreskin (Figure 2c) and glans penis biopsies (Figure 2d). Immunohistochemical amyloid A staining was negative (data not shown). The pathologist made a pathological–anatomical diagnosis of amyloidosis in the glans penis, and lichenoid

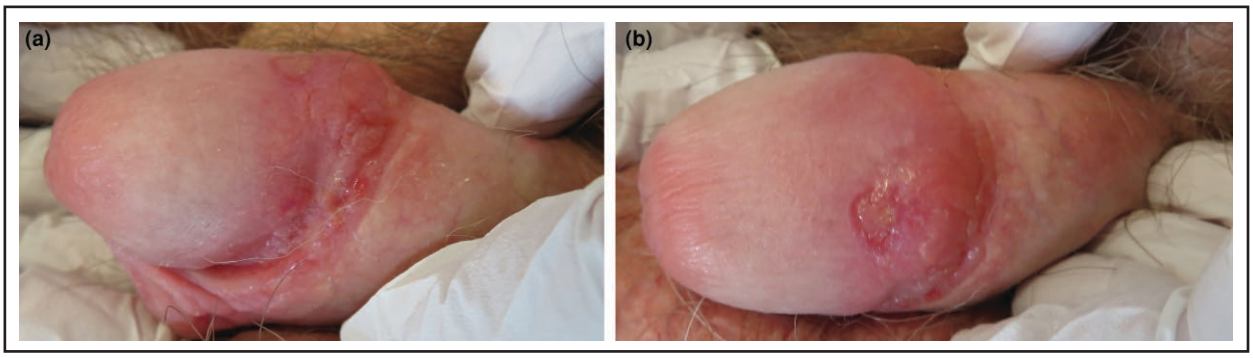

Figure 1 Clinical presentation before treatment. (a) Eroded nodular plaque on the glans penis. (b) Ulcer on the glans penis.

Accepted: 25 May 2024

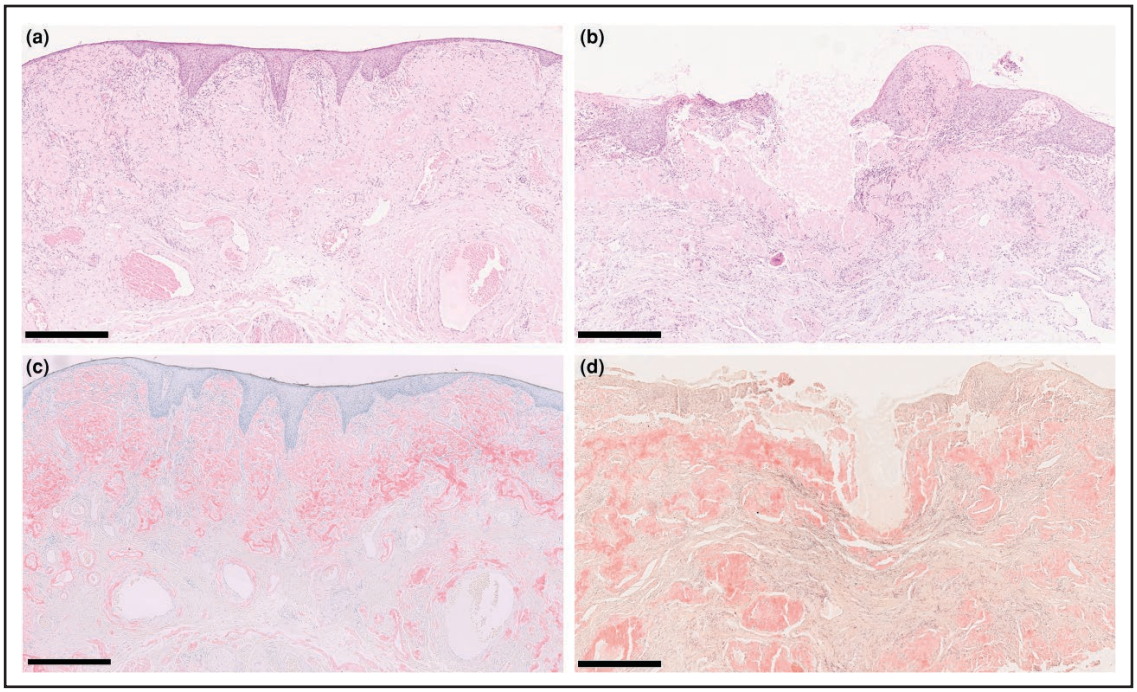

Figure 2 Histological findings. (a) The foreskin stained with haematoxylin and eosin, and (c) Congo red. (b) The glans penis stained with haematoxylin and eosin, and (d) Congo red. Scale bar 0.5 mm. Original magnification × 5.

inflammation with amyloidosis in the foreskin. Clinically, the patient had localized penile nodular amyloidosis with concomitant lichen sclerosus. Detailed typing identified the amyloid as immunoglobulin light chain amyloid. Systemic amyloidosis was thoroughly excluded, and there were no signs of multiple myeloma or monoclonal gammopathy in the immunophenotyping of the bone marrow specimen.

In the dermatology clinic, the patient was prescribed an ointment containing oxytetracycline, hydrocortisone and polymyxin B, to be used twice daily for the superficial ulcer in the glans penis. The patient reported that the ulceration had healed after 14 days. At a control visit, 1.5 months later, the patient reported no deterioration of the condition after cessation of the local treatment. The erythema was reduced, but the nodule sizes were unchanged. Local treatment with betamethasone was started. The patient reported occasional use of the local treatment, with no effect on the skin condition. Fifteen months after the first visit to the dermatology clinic, the ulcer was totally healed, and there were no erosions or marked erythema in the amyloid plaque on the glans penis (Figure 3). The patient was satisfied with the now painless skin and did not want further treatments. The skin condition remained stable during the further follow-up of 1 year.

There are three subtypes of localized cutaneous amyloidosis: lichen or papular, macular, and nodular.[1] Primary amyloidosis of the penis is an uncommon variant of localized amyloidosis. Fewer than 30 cases have been published, including a recent case series of 12 patients.[1] Most cases have involved the glans penis or, less commonly, the penile shaft, with only one case involving the foreskin[2] and one case involving the urethral or periurethral area.[3] Most reported cases of localized penile dermal amyloidosis have been nodular, with immunoglobulin light chain being the most common amyloid type.[1] The lesions have most often been treated by excision. Our case, along with a small number of previously reported cases, was conservatively treated after being biopsied for diagnosis.

The tightening of the foreskin caused by localized cutaneous amyloidosis may have resulted in urinary occlusion, which has been suggested to be an effect of lichen sclerosus.[4] Three cases of localized amyloidosis of the vulva with concomitant lichen sclerosus have previously been described.[5] We did not find any published cases of concomitant penile amyloidosis and lichen sclerosus. While lichen sclerosus is considered an inflammatory and (at least in female patients) autoimmune disease, amyloidosis is a metabolic storage disease. As our patient exhibited the immunoglobulin light chain type of amyloidosis, the possible keratinocytic damage from lichen sclerosus probably had no effect.

Although penile nodular amyloidosis has not been reported to progress to systemic disease, several published cases of systemic amyloidosis have initially presented with a painful penile ulcer.[6] Hyalinization in lichen sclerosus may histologically resemble amyloid deposits. The clinical presentation of penile amyloidosis is variable, ranging from waxy or infiltrated nodules or plaques typical for nodular amyloidosis, to hyperpigmented macules in macular amyloidosis, and papules or plaques in lichen amyloidosis.[1] Therefore, amyloidosis should be suspected and Congo red staining performed in cases of clinically uncommon penile masses or ulcers, or histologically atypical hyalinization.

Funding sources

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

Conflicts of interest

The authors declare no conflicts of interest.

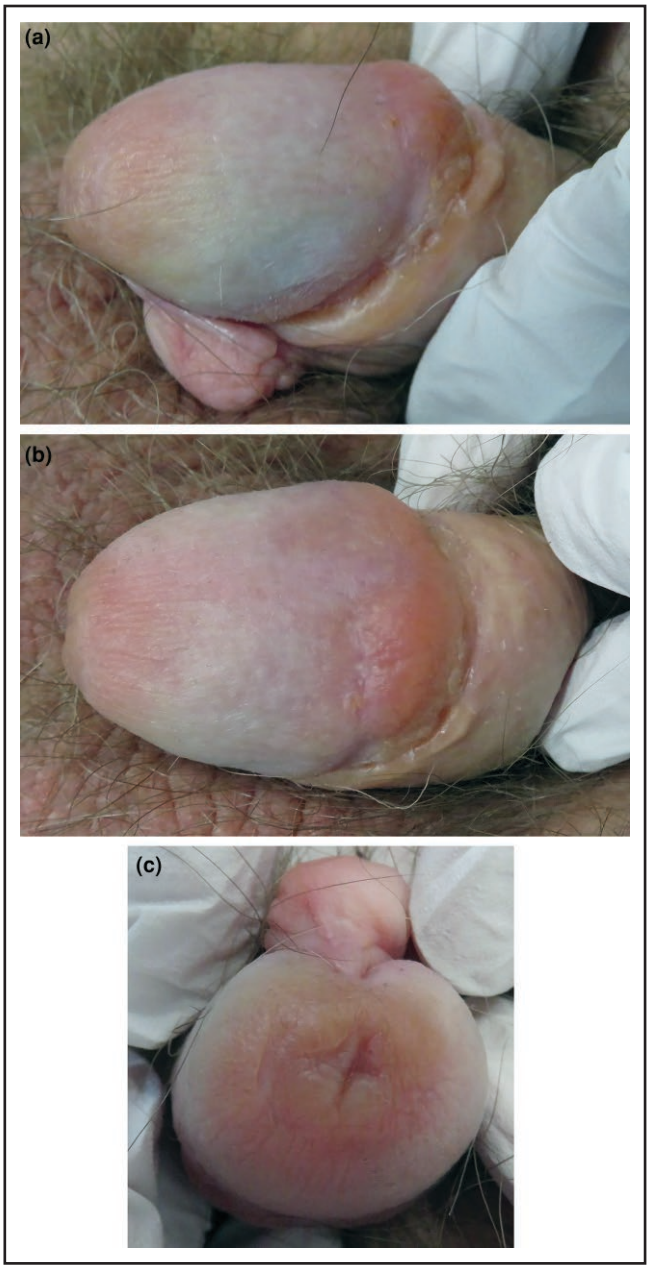

Figure 3 Clinical presentation after treatment. (a) Nodular plaque on the glans penis. (b) Healed ulcer on the glans penis. (c) Local amyloidosis in the urethral opening.

Data availability

All data are incorporated into the article.

Ethics statement

Not applicable.

Patient consent

Written patient consent for publication was obtained.

References

1 Tekin B, Gilani SI, Dasari S *et al.* Proteomic and clinicopathologic assessment of penile amyloidosis: a single institutional review of 12 cases. *Am J Clin Pathol* 2023; **160**:303–13.
2 Merika EE, Darling MI, Craig P *et al.* Primary cutaneous amyloidosis of the glans penis. Two case reports and a review of the literature. *Br J Dermatol* 2014; **170**:730–4.
3 Isaacson AL, Dahmoush L, Robinson RA. Primary localized amyloidosis presenting as urethral stricture: an important differential diagnosis on frozen section. *Hum Pathol Case Rep* 2020; **20**:200365.
4 Panou E, Panagou E, Foley C *et al.* Male genital lichen sclerosus associated with urological interventions and microincontinence: a case series of 21 patients. *Clin Exp Dermatol* 2022; **47**:107–9.
5 Quddus MR, Sung CJ, Simon RA, Lawrence WD. Localized amyloidosis of the vulva with and without vulvar intraepithelial neoplasia: report of a series. *Hum Pathol* 2014; **45**:2037–42.
6 Fernandez-Flores A, Castañón-González JA, Guerrero-Ramos B *et al.* Systemic amyloidosis presenting with glans penis involvement. *J Cutan Pathol* 2014; **41**:791–6.

CPD questions

Learning objective

To learn to recognize this rare condition, and to help physicians request the necessary diagnostic methods.

Question 1

What is the most common location of nodular penile amyloidosis?

(a) Foreskin.
(b) Glans penis.
(c) Overlapping sites.
(d) Penile shaft.
(e) Urethral opening.

Question 2

Which histopathological method is essential for diagnosing amyloidosis?

(a) Confocal microscopy.
(b) Congo red staining.
(c) Dark-field microscopy.
(d) Haematoxylin and eosin staining.
(e) Split-skin microscopy.

Instructions for answering questions

This learning activity is freely available online at https://oupce.rievent.com/a/HUDHCM

Users are encouraged to

- Read the article in print or online, paying particular attention to the learning points and any author conflict of interest disclosures.
- Reflect on the article.

- Register or login online at https://oupce.rievent.com/a/HUDHCM and answer the CPD questions.
- Complete the required evaluation component of the activity.

Once the test is passed, you will receive a certificate and the learning activity can be added to your RCP CPD diary as a self-certified entry.

This activity will be available for CPD credit for 5 years following its publication date. At that time, it will be reviewed and potentially updated and extended for an additional period.