Penile lymphoma: a report of a rare case

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Abstract

Penile lymphoma is a rare entity. Patients are often elderly, and present with an ulcerated painless mass on the shaft of the penis, strongly mimicking the more common diagnoses of infection, trauma or squamous cell carcinoma. Examination, radiological investigation and ultimately biopsy of the lesion is essential in making the diagnosis and guiding treatment. Herein, we present a case of diffuse large B cell lymphoma in the penis of an elderly gentleman, and review the salient histopathology regarding this uncommon entity.

Keywords Diffuse large B cell lymphoma; penile lymphoma; penis; primary extranodal lymphoma

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Case report

A 97-year-old gentleman was found to have a painful hard, irregular mass arising from his glans penis on hospital admission. For several months prior to admission, he had dysuria and post-void dribbling. He was referred for specialist urological opinion, and assessed as requiring a partial penectomy for a suspected squamous cell carcinoma. However, as he developed urinary retention and a catheter was not able to be passed, he was transferred from his regional hospital to our tertiary referral centre where he underwent expedited surgery. The specimen was subsequently sent for histopathological analysis.

Macroscopy

A partial penectomy (75 × 45 × 50 mm) was received, showing a large tumour (50 × 40 mm) invading the outer aspect of the albuginea of the corpus cavernosa, as shown in Figure 1.

Microscopy

This specimen showed involvement by a dense, diffuse infiltrate of predominantly large B-cells (CD20+), as shown in Figure 2, forming a mass lesion centred in the glans penis with extensive surface ulceration and extension into the corpora spongiosum and cavernosum. Within the deep tissues there was a focus of angioinvasion with associated angiodestruction, as shown in Figure 3. An interspersed population of admixed small T-cells was present (CD3+) along with scattered polytypic plasma cells (see Figure 4).

Immunohistochemistry (IHC) revealed that the neoplastic cells exhibited a germinal centre B-cell phenotype (CD10+, BCL6+, MUM1+) shown in Figures 5 and 6, and additionally expressed CD79a, PAX5, CD19, BCL2 and weak IgM (see Figures 7 and 8). CD21/23 highlighted a very occasional, somewhat disrupted follicular dendritic meshwork, however these were predominantly absent. C-Myc, p16, CK5/6, CD30, CyclinD1 and IgD were negative. The MIB-1 proliferation fraction was in the region of 90% (see Figure 9). FISH analysis showed no evidence of IGH:MYC, BCL2, BCL6 or IFR4/DUSP33 gene rearrangements.

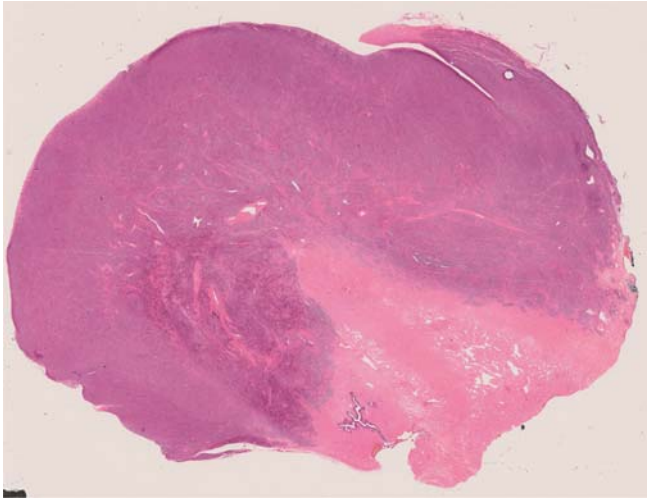

Figure 1 A whole mount cross section of the penis, showing the infiltrative tumour.

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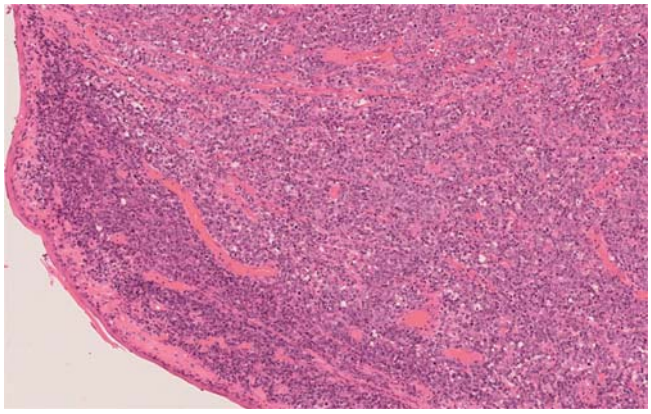

Figure 2 The tumour, comprising a dense diffuse infiltrate of lymphoid cells (H&E ×20).

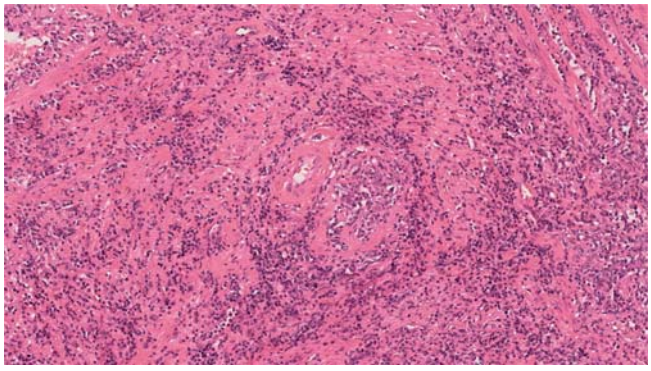

Figure 3 There was notable angioinvasion by the tumour cells (H&E ×23).

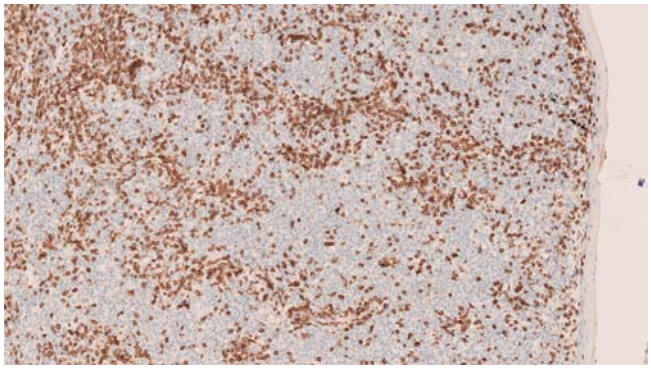

Figure 4 CD3 showed a background T lymphocyte infiltrate (×20) of the tumour.

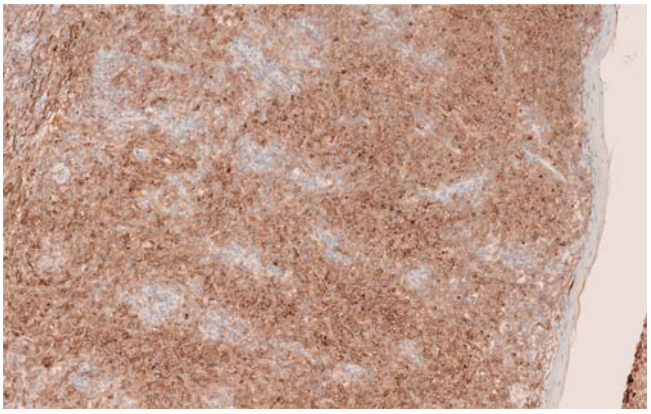

Figure 5 CD10 membranous staining highlights the DLBCL cells (×20).

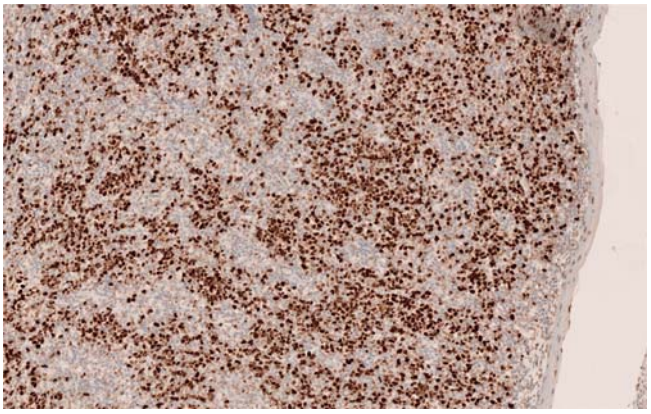

Figure 6 BCL6 shows positive staining in DLBCL, a lymphoma of follicular origin (×20).

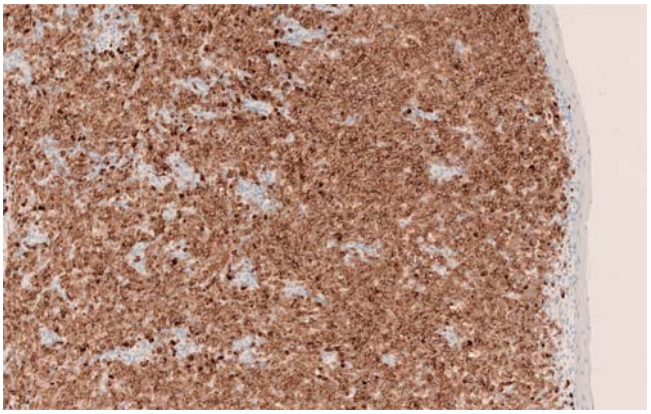

Figure 7 CD79a highlights the B lineage of the lymphocytes in the tumour (×20).

Therefore, the histopathological diagnosis was that of diffuse large B cell lymphoma (DLBCL), NOS, GCB (germinal centre B-cell) phenotype. The patient was subsequently referred to the haematolymphoid team for further management and follow up.

Discussion

Primary extranodal DLBCL is a rare entity, with sites such as the stomach, testicle and mediastinum most commonly implicated.[1,2] Primary DLBCL of the penis is even more rare, with only 20 cases reported within the literature to date[1–5] (Table 1). DLBCL is the most common subtype found at this location, but other B and T cell lymphomas have been reported.[6,7]

Patients can present with a variety of symptoms and signs including; dysuria, priapism, and phimosis. However, the most common presentation is a mass ± ulceration on the shaft of the penis.[4,7] These features often depend on the stage and level of invasion encountered, which unfortunately is normally late at

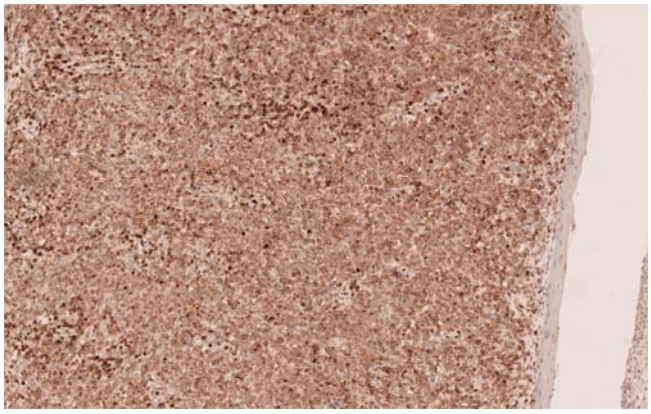

Figure 8 BCL2, an anti-apoptosis marker is switched on in DLBCL, exhibiting positive staining (×20).

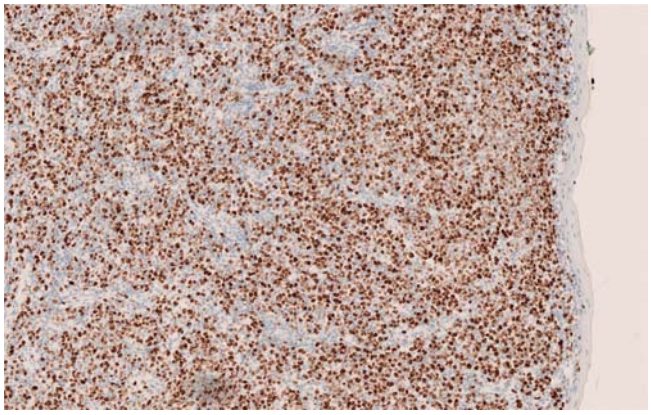

Figure 9 DLBCL have a high MIB1 fraction (typically >40%) (×20).

Clinical characteristics, treatment and outcome in 20 patients with DLBCL of the penis

Age (years)	69 (43–86)
Clinical manifestation	
Mass	*14 (73.7)*
Painless mass	7 (36.8)
Swelling	4 (21.1)
Ulceration	4 (21.1)
Urinary difficulty	*4 (21.1)*
Dysuria	*2 (10.5)*
Haematuria	2 (10.5)
Urethral stricture	1 (5.3)
Urinary retention	*1 (5.3)*
Nocturia	1 (5.3)
Initial treatment	
Chemotherapy	15 (750
Chemotherapy + radiotherapy	3 (15)
Surgery	*1 (5)*
Radiotherapy	1 (5)
Response	
Complete	18 (90)
Progressive disease	2 (10)

The cells in italic note the features identified in our case.
Adapted from Yu et al[1]

Table 1

presentation.[3] The most common differential diagnoses include squamous cell carcinoma of the penis, sexually transmitted infections, vasculitis and trauma.

Although penile lymphoma shows no distinct radiological features,[1] imaging is important to confirm of primary extranodal disease, and guide management.[4] Definitive diagnosis relies on the histopathological results from penile biopsy, and ancillary IHC stains.[5,7] Due to the rarity of penile DLBCLs, there is no standardized treatment regime for patients.[1,2,5,7] Multiple therapeutic modalities are available in the treatment of these patients, and surgical excision, radiotherapy and chemotherapy are all considered options. The management is therefore primarily guided by the age, stage, performance status of the patient, at multi-disciplinary team meetings (MDT).[1] As an extranodal DLBCL, penile DLBCL requires oncological follow-up, to aid in early detection of invasion elsewhere, particularly within the central nervous system. ◆

REFERENCES

1 Yu T, Zou L, Wang Y, et al. Primary diffuse large B-cell lymphoma of the penis: a case and literature review. *OncoTargets Ther* 2023; **16:** 631–8.

2 Arambulo S, Calle A, Vela JM, et al. Advanced penile lymphoma: case Report and review of the literature. *J Can Res Ther* 2023; **19:** 823–5.

3 Stamatiou K, Pierris N. Lymphoma presenting as cancer of the glans penis: a case report. *Case Rep Pathol* 2012; **2012:** 948352. https://doi.org/10.1155/2012/948352. Epub 2012 Sep 29. PMID: 23056979; PMCID: PMC3465891.

4 Timocin Yigman G, Peker AA, Sharifov R, et al. Secondary involvement of the penis by non-hodgkin lymphoma. *Bezmialem Sci.* 2021; **9:** 363–5.

5 Wang GC, Peng B, Zheng JH. Primary penile malignant lymphoma: report of a rare case. *Can Urol Assoc J* 2012; **6:** E277–9.

6 Gong Z, Zhang Y, Chu H, et al. Priapism as the initial symptom of primary penile lymphoma: a case report. *Oncol Lett* 2014; **8:** 1929–32.

7 Stamatiou K, Moschouris H, Marinis A, et al. Penile lymphoma presenting as an advanced penile cancer: report of a case. *J Cancer Therapeut Res* 2012; **1:** 21.

Practice points

- Penile lymphoma can be a rare location for primary extranodal lymphoma
- Clinical presentation and examination can strongly mimic that of infection, vasculitis, trauma and squamous cell carcinoma
- Radiological imaging cannot diagnose penile lymphoma, but is essential in confirming primary extra-nodal status and excluding metastatic disease
- Penile biopsy and subsequent histopathological evaluation, including IHC and FISH is essential in making the diagnosis

Self-assessment questions

Q1. What is the most common malignancy of the penis?

A) Basal cell carcinoma
B) Squamous cell carcinoma
C) Lymphoma
D) Melanoma

Answer: B

Q2. Which investigation is the most useful in diagnosing penile lymphoma?

A) Ultrasound
B) Computed tomography
C) Magnetic resonance imaging
D) Histopathological examination

Answer: D

Q3. Which is the most common lymphoma type found in penile lymphoma?

A) T cell lymphoma
B) Low grade B cell lymphoma
C) Diffuse large B cell lymphoma
D) Burkitts lymphoma

Answer: C

Q4. Which immunoprofile is most typically seen in a diagnosis of diffuse large B cell lymphoma-germinal centre type?

A) CD79a-, CD20-, CD3+, CD5+, CD10-, BCL6-, MUM1+
B) CD79a-, CD20-, CD3+, CD5+, CD10-, BCL6-, MUM1-
C) CD79a+, CD20+, CD3-, CD5-, CD10-, BCL6-, MUM1+
D) CD79a+, CD20+, CD3-, CD5-, CD10+, BCL6+, MUM1+

Answer: D