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Case Report

Advanced Penile Squamous Cell Carcinoma: Multimodal Therapy with Penectomy for High-Risk Disease

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Abstract: Penile cancer is a rare disease, but its global incidence is on the rise. Human papillomavirus (HPV) is the primary risk factor, making HPV status assessment an essential part of pathological evaluation. The primary goal of treating the tumor is complete eradication while preserving as much of the organ as possible without compromising oncological outcomes. Early detection and treatment of lymph node (LN) metastasis are crucial for survival. In our case, the patient had a high-risk advanced penile cancer (PSCC) which had requirring a multimodal treatment approach, combining chemotherapy, radiotherapy with consolidation surgical treatment.

Keywords: Penile Squamous Cell Carcinoma, Penile Cancer, Human Papillomavirus, Lymph Node Metastasis, Penectomy.

INTRODUCTION

Penile cancer is a rare but potentially aggressive disease, predominantly represented by squamous cell carcinoma. Diagnosis is often delayed due to lack of awareness and social stigma, leading to late presentation at a locally advanced stage. At this stage, the tumor frequently infiltrates deep penile structures, such as the corpora cavernosa and corpus spongiosum, and is often accompanied by inguinal lymph node involvement.

Diagnosis is based on clinical examination, imaging studies, and histopathological confirmation via biopsy. Treatment typically requires a multimodal approach, including surgery, radiotherapy, and/or chemotherapy, depending on the tumor stage. Early diagnosis and appropriate treatment strategies are essential to improving patient outcomes and quality of life.

We report the case of a 68-year-old patient with locally advanced penile cancer.

OBSERVATION

Our case concerns a 68-year-old male farmer, admitted with ulceronecrotic lesions on the shaft of the penis. His medical history includes a childhood posthectomy and a perineostomy at the age of 60 due to post-infectious, multi-level urethral strictures.

The current illness began 18 months ago with the onset of a swollen, painful penis and an ulceration in the penoscrotal groove, which progressively increased in width and depth. This condition evolved in the context of general health deterioration.

The patient presented with a swollen, firm, painful penis, bleeding upon contact, with an ulcerated lesion discharging pus at the penoscrotal groove (Figure 1).

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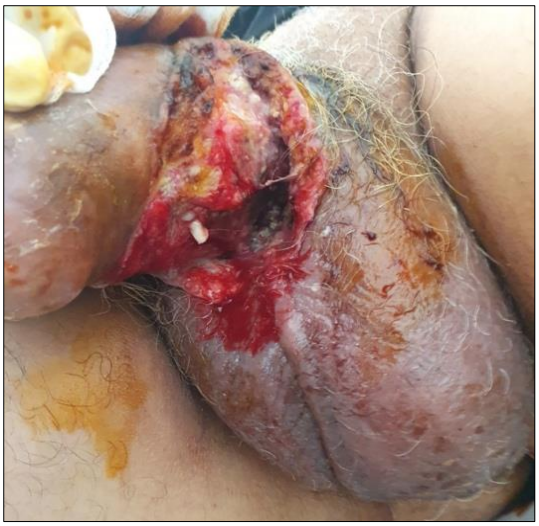

Figure 1: Clinical appearance of the ulcerative penile lesion

Examination of the lymph node areas revealed bilateral, firm, centimeter-sized, mobile inguinal lymphadenopathy. Digital rectal examination showed a flat, homogeneous prostate with a soft bladder base.

Laboratory tests revealed leukocytosis with neutrophilic predominance (14,770/mm³). Pelvic MRI showed an infiltrative penile mass involving the corpora cavernosa and corpus spongiosum up to the penile root, encasing the penile urethra, along with bilateral inguinal lymphadenopathy. A biopsy of the lesion was performed, and histopathological analysis confirmed an invasive, well-differentiated keratinizing squamous cell carcinoma.

Staging workup, including thoracoabdominopelvic CT scan, showed no evidence of secondary metastases. The patient underwent total penectomy with scrotectomy, bilateral inguinal lymphadenectomy, and urinary diversion via perineostomy (Figure 2).

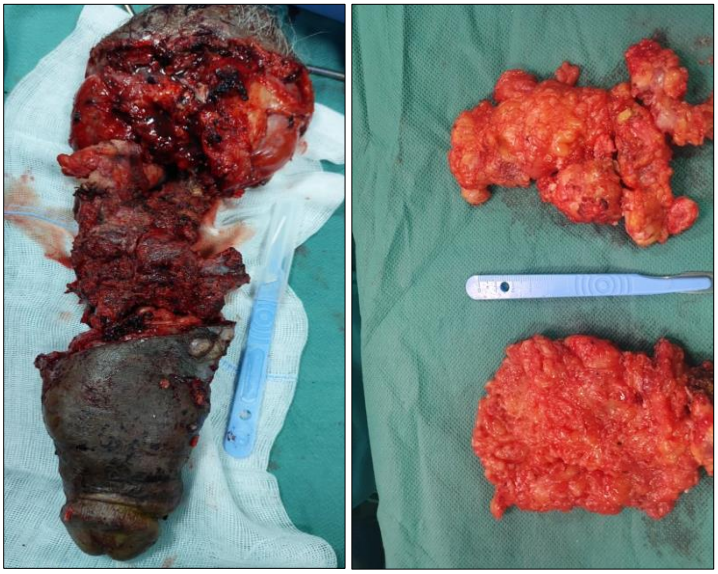

Figure 2: Surgical specimen of the total penectomy with scrotectomy and bilateral inguinal lymphadenectomy

Histopathological examination of the surgical specimen confirmed a high-grade squamous cell carcinoma infiltrating the corpora cavernosa, corpus spongiosum, and urethra, with microscopically positive surgical margins pT3N2R1. The patient was subsequently referred to oncology for adjuvant chemotherapy and radiotherapy.

DISCUSSION

Penile cancer is a rare disease, with a prevalence of 0.1–1 per 100,000 men in high-income countries (Brouwer *et al*., 2023; Thomas *et al*., 2021).

The global incidence of penile cancer varies significantly across populations, influenced by risk factors such as human papillomavirus (HPV) infection,

increased age, smoking, and poor hygiene, as well as protective factors like routine infant circumcision. As a result, penile cancer accounts for up to 10% of male malignancies in certain regions of Africa, Asia, and South America. The majority (95%) of penile cancers originate from the squamous cells of the glanular and preputial skin, classified as penile squamous cell carcinomas (PSCCs). Carcinoma of the penis develops from penile intraepithelial neoplasia, a pre-cancerous condition that precedes an infiltrating cancer by around ten years. According to WHO guidelines, PSCCs can be further categorized into subtypes such as basaloid, warty, papillary, verrucous, sarcomatoid, and adenosquamous, and may be either HPV-driven or unrelated to HPV (Bruce Turner, 2011; Thomas *et al*., 2021).

Penile cancer is often apparent when presenting as large exophytic lesions. Lesions are often painless but may be associated with purulent discharge under a phimotic foreskin. While exophytic lesions strongly suggest malignancy, ulcerative lesions have a broader differential diagnosis, including inflammatory disorders and sexually transmitted infections, requiring biopsy confirmation (Thomas *et al*., 2021).

Imaging is crucial for staging and assessing tumor invasion. CT scans help evaluate lymph node involvement and distant metastases. Penile ultrasonography and MRI are preferred for assessing the primary lesion. MRI is a useful adjunct in planning primary surgery, particularly when the extent of corpus cavernosum invasion is unclear and, therefore, adjustment of the surgical resection margins to include the distal corpora is required if the tumour breaches the tunica albuginea (Thomas *et al*., 2021).

Regional lymph node involvement remains the most significant predictor of survival in patients with PSCC. Those with locally advanced regional disease face a higher risk of disease-related mortality if treated with surgery alone and benefit most from a multimodal approach. Management of suspected clinical lymphadenopathy typically involves confirming nodal involvement through clinical examination, imaging, and percutaneous biopsy to assess the extent of disease spread. Treatment strategies include a combination of chemotherapy, radiotherapy, and surgical consolidation with inguinal and pelvic lymph node dissection (Chahoud *et al*., 2021).

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