

# Urothelial carcinoma involving the distal penis

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## Abstract

Urothelial carcinoma (UC) rarely metastasizes to the penis and skin. We report the case of a 73-year-old man with UC metastases to the corpus spongiosum and dermis of the distal penis. We also review the clinicopathologic characteristics and management options for UC metastasizing to the penis. The patient presented with priapism and edema of the genital region. This follows a 5-year history of urothelial carcinoma in situ that progressed to invasive cancer despite intravesical immunotherapy. Seventeen months prior to presentation, the patient underwent a radical cystectomy with adjuvant chemotherapy. The cystectomy specimen demonstrated a pT4a N2 M0 G3 UC and margins were positive for carcinoma in situ. Follow-up had been negative for recurrence until his presentation with priapism. Incisional biopsy of the glans revealed UC and radical penectomy was performed with negative margins. The penile specimen demonstrated extensive involvement of the corpus spongiosum by UC with lymphovascular invasion and subepidermal involvement. Three months after penectomy, the patient presented with inguinal nodal recurrence. Palliative radiotherapy was administered and the patient passed away eight months after surgery.

## Introduction

Urothelial carcinoma (UC) rarely metastasizes to cutaneous or penile tissue. Mueller and colleagues found 78 reported cases or a 0.84% incidence in UC series of cutaneous metastases.<sup>1</sup> Similarly, Chaux and colleagues identified only 437 reported cases of secondary penile cancers, of which 29% had a primary bladder source.<sup>2</sup> It is unknown what proportion of UC metastasizing to the penis has dermal involvement, but cutaneous penile metastases have been explicitly reported several times.<sup>3-6</sup> We report a case of UC metastasis to the distal penis with dermal involvement.

## Case report

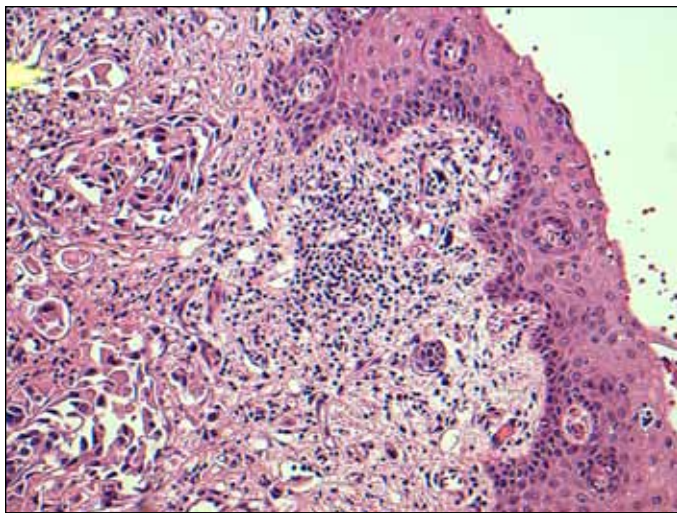
A 73-year-old patient presented in June 2010 with edema and induration of the suprapubic area, penis and scrotum. These symptoms had an acute onset 3 weeks prior and caused difficulty in retracting the foreskin. The patient had a history of UC first detected in 2005 as carcinoma in situ (CIS). Despite multiple courses of Bacillus Calmette-Guérin (BCG), the CIS progressed necessitating a radical cystectomy in January 2009. This cystectomy revealed a pT4a N2 M0 G3 tumour with urethral and ureteral margins positive for CIS. Adjuvant gemcitabine and cisplatin were administered. Follow-up included computed tomographic imaging every 3 months. There was no evidence of recurrence on follow-up prior to June 2010.

Following incisional biopsy demonstrating UC, a radical penectomy, total urethrectomy and bilateral transposition of local muscle flaps for pelvic floor coverage were performed in August 2010. Pathologic analysis demonstrated a high-grade urothelial carcinoma with extensive invasion of the corpus spongiosum and lymphovascular invasion. Neoplastic cells were found subepidermally in the glans (Fig. 1). There was no involvement of the corpora cavernosa and resection margins were negative.

Postoperatively, the patient experienced swelling in the right leg and suprapubic region. This proceeded to worsen until follow-up in December 2010 when the patient presented again with severe bilateral nonpitting edema of the lower limbs and suprapubic area. There were more than 15 firm painful erythematous suprapubic and inguinal nodules at that time. He received palliative radiotherapy with no measured effect and he passed away in April 2011.

## Discussion

We report the case of a 73-year-old man with UC metastases to the corpus spongiosum and dermis of the distal penis. The postulated mechanisms for penile metastases have



**Fig. 1.** Microscopic appearance of glans penis demonstrating subepidermal malignant cells (hematoxylin & eosin stain).

been reviewed by Osther and Lontoft and include direct invasion, retrograde venous spread, retrograde lymphatic spread, direct arterial spread and instrumental seeding.<sup>6</sup> In this case, the initial tumour was locally invasive, margins were positive for carcinoma in situ, lymphovascular invasion was identified, nodes were positive and the urinary tract was instrumented numerous times. It is not possible to determine which of these mechanisms was responsible for metastasis in this case.

This patient presented with priapism and edema of the scrotum and suprapubic fat pads. Cherian and colleagues<sup>7</sup> and Chaux and colleagues<sup>2</sup> have recently reviewed the clinical presentation of the limited number of reported secondary penile tumours. Priapism was the clinical presentation of 27% of secondary penile tumours in a series by Chaux and colleagues<sup>2</sup> and their review found that up to 40% of patients may present similarly.<sup>8</sup> Although a visible penile tumour was absent in our case, most patients (80%) in the aforementioned series presented with it,<sup>2</sup> which is consistent with previous reviews.<sup>6,7</sup> Pain, skin changes, hematuria and obstructive voiding symptoms were rarer presentations.<sup>2,6,7</sup>

Tumour involved only the corpus spongiosum in this case. This is slightly atypical as most reported secondary penile tumors involved the corpora cavernosa.<sup>2</sup> This anatomic location contrasts with primary penile tumours that are distal and involve the glans, frenulum or coronal sulcus.<sup>6</sup>

The patient was managed with radical penectomy. Patients with penile metastases secondary to UC have a poor prognosis, generally surviving 6 months to a year.<sup>2</sup> Therefore, the management of penile metastases of UC must be individualized to maximize remaining quality of life. The reported patient already had an ileal conduit and no sexual function. Radical penectomy thus resulted in few additional functional limitations. The ability to achieve negative penectomy margins and the extensive infiltration of tumour into

the corpus spongiosum reinforced this approach. The curative potential of this approach was limited by this patient's ineligibility for further systemic chemotherapy.

Metastasectomy combined with chemotherapy is an approach used at other centres for patients with metastatic urothelial carcinoma. In four small, uncontrolled, retrospective series, the 5-year overall survival of this approach was 28% to 50%.<sup>9-12</sup> Patients eligible for surgery are highly selected and these series did not include secondary penile cancers. Other curative or palliative options for the management of a penile metastasis would include external beam radiotherapy, brachytherapy and chemotherapy. Comparative trials do not exist due to the rarity of this condition, but there have been isolated reports of disease remission with limited follow-up after undergoing non-surgical treatment.<sup>3-5</sup> Optimal treatment for this condition involves a careful evaluation of treatment goals and patient preferences. As such, palliative total penectomy or dorsal nerve section also warrant consideration for symptomatic cases.<sup>13,14</sup>

## Conclusion

We report a rare case of UC metastasis to the distal penis with dermal and corpus spongiosal involvement. Clinical features of this condition include priapism, presence of a mass and rarely pain, hematuria, obstructive voiding symptoms and skin changes. This report underscores the importance of careful genital and cutaneous examination in UC at high risk of metastasis. Penile metastases portend a poor prognosis necessitating that management options be individualized to maximize remaining quality of life.

**Competing interests:** None declared.

This paper has been peer-reviewed.

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