

Urothelial Metastasis in Prostate Adenocarcinoma

Dear Editor,

Morbidity and mortality from prostate adenocarcinoma are mainly the result of local progression and distant metastases. We report 2 cases of urothelial metastasis of prostate adenocarcinoma to the ureter and to the anterior urethra to highlight the possibility of synchronous urothelial metastasis compounding the problem of urinary obstruction by the prostate cancer.

Case 1

A 70-year-old man presenting with an initial episode of urinary retention was subsequently diagnosed to have prostate adenocarcinoma (Gleason's grade 4+4) upon transrectal ultrasound guided biopsy of the prostate. His initial prostate-specific antigen (PSA) level was 30 ug/mL. Staging computed tomography (CT) scan revealed a locally advanced prostatic tumour with bilateral hydronephrosis. A radioisotope bone scan showed metastases at T5 and T6 vertebrae. Serum creatinine was 160 umol/L. A channel transurethral resection of the prostate (TURP) was offered to relieve the bladder outlet obstruction with a simultaneous bilateral orchidectomy. At cystoscopy, there were 2 isolated tumour masses, approximately 2 cm in size each, obstructing the ureteric orifices (Fig. 1a). Interestingly, the intervening bladder mucosa was normal and free from tumour deposits. These masses were resected, exposing the ureteric orifices. In view of the ureteric obstruction, insertion of bilateral double J stents was attempted. A double J stent was successfully inserted on the right side. However, it was impossible to stent the left ureter. Postoperatively, the patient was able to pass urine with no significant residual urine. In addition, the hydronephrosis resolved on the right

side and his serum creatinine improved significantly to 95 umol/L. Serum PSA also subsequently decreased to a nadir of 0.16 ug/L. Histology of the tissue from transurethral resection of the prostate and the isolated tumour masses obstructing the ureteric orifices confirmed the diagnosis of prostate adenocarcinoma (Gleason's grade 4+4) with urothelial metastasis.

Two months later, he underwent a change of the right double J stent and successful insertion of a left double J stent. Findings on ureteroscopy of the left and right ureters showed multiple obstructing tumour nodules along the lumen of the ureters. Serum PSA and creatinine levels have remained stable at last follow-up 6 months post-diagnosis.

Case 2

A 73-year-old man presented with urinary retention 3 months following laparoscopic surgical repair of bilateral inguinal herniae. He denied any previous lower urinary tract symptoms but was catheterised during the laparoscopic procedure. The catheter was removed 1-day post-hernia repair and the patient was initially able to pass urine. Clinical examination during the presentation of urinary retention revealed a hard nodular prostate. The serum PSA value was 502 ug/L and serum creatinine was normal. Treatment options were discussed at length and the patient opted for TURP and refused an ultrasound-guided transrectal biopsy of the prostate. A presumed diagnosis of metastatic prostate cancer was made when a radioisotope bone scan showed multiple sites of metastases.

At cystoscopy, multiple tumour nodules were seen along the anterior penile urethra, which were partially obstructing the lumen (Fig. 1b). These nodules were not seen more

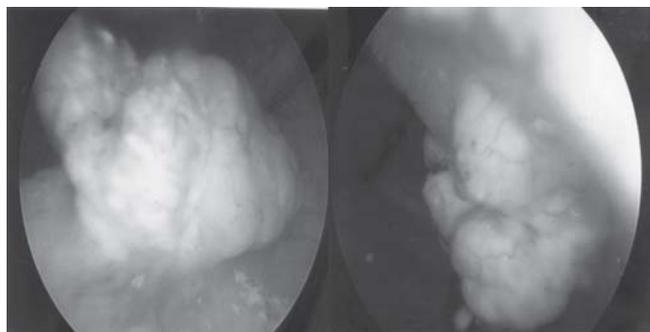


Fig. 1a.
Left

Right



Fig. 1b.

Fig. 1. Cystoscopic photographs showing the appearance of urothelial metastasis from prostate adenocarcinoma in a) the bladder obstructing the left and right ureteric orifices and b) the anterior penile urethra.

proximally in the bulbar or posterior urethra. In addition to the TURP, these nodules were resected to facilitate the relief of the urinary obstruction. Histology of both the prostatic chips from the TURP and the urethral nodules showed prostatic adenocarcinoma (Gleason grade 4+5). The patient reported a significant improvement in urinary symptoms. With the histological confirmation of prostate cancer, he underwent a subsequent bilateral orchidectomy. Serum PSA post-therapy decreased to a nadir of 9.16 ug/L and he has stable disease at 1-year follow-up.

Discussion

Common sites of metastases that have been reported are bone, lung, liver and brain with the most common site being bone. Distant metastases of prostate adenocarcinoma to the ureter as well as urethra, with no intervening lesions to suggest a direct extension of tumour, are relatively rare.¹⁻⁹ There are several proposed hypotheses regarding the mechanisms of metastases of prostate adenocarcinoma to the urethra.⁹ These include implantation by instrumentation, arterial tumour emboli, direct invasion and venous or lymphatic dissemination in a retrograde manner.^{2,8} Mechanisms of metastases to the ureter can be hypothesised in a similar manner.³ The few cases in the literature have reported some form of preceding genitourinary tract instrumentation such as urethral catheterisation or cystoscopy which may be a risk factor for urothelial seeding of prostate cancer. It is noteworthy that both our patients had urethral catheterisation to relieve urinary retention at initial presentation.

The significance of diagnosing urothelial metastasis from prostate cancer is that these lesions may compound the problem of urinary obstruction caused by the primary lesion. As such, local therapy may be needed in addition to TURP and hormonal management in relieving obstruction. Opinions on the management of prostate adenocarcinoma with metastases to the ureter differ widely from segmental resection of isolated lesions in the ureter, to nephro-ureterectomy (if a one-sided disease) or a more conservative approach involving ureteral stenting and maintaining the patency of the ureteral lumen.^{6,7} As in the first case reported here, stenting was performed following the finding of persistent nodules within the ureter even though the bladder and uretric orifices obstruction were relieved. As for cases of prostate adenocarcinoma with isolated metastases to the urethra, resection of the urethral tumour nodules (if possible)

and subsequent anti-androgen hormone therapy had also been reported by others to provide symptomatic relief of urinary obstruction.^{1,4,5}

In conclusion, for patients with prostatic adenocarcinoma, there may be a need to screen other parts of the urinary tract for urothelial seeding of the prostate cancer, especially in the setting of obstructive symptoms (urinary retention and hydronephrosis) and when previous urinary tract instrumentation has been performed. This is important as in addition to systemic therapy, local therapy may be needed to treat the urothelial metastasis for relief of obstruction.

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