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Malignant priapism in metastatic prostate cancer: A late event occurring early

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Introduction

Priapism as a de novo presentation of malignant prostate cancer is rare. Superficial dermal lesions of the phallus from prostate cancer have been reported, however, priapism from intracavernosal infiltration is often a late event in patients with end stage disease. The penis is a rich vascular structure with direct extension to pelvic organs which explains the proposed mechanisms for disease infiltration usually via direct extension and retrograde lymphatic, venous or vascular invasion. Computed tomography (CT) and magnetic resonance imaging (MRI) of the pelvis are valuable methods of determining corpus cavernosum involvement as well as evaluating the primary tumor. Biopsy or corporal aspiration offers a histopathological diagnosis but may not be necessary in most cases given the high sensitivity of imaging. Treatment is palliative and includes androgen deprivation therapy, chemotherapy, radiotherapy, local excision and partial or total penectomy. The treatment that is recommended depends on the patient's functional performance, local disease extent and metastatic disease burden. However, to date, there has been limited success in reversing malignant priapism particularly in the setting of newly diagnosed non-castrate metastatic prostate cancer. We present a case report that uses a chemotherapy doublet that reversed the priapism and improve the patient's quality of life.

Case presentation

A 65-year-old Caribbean man with multiple co-morbidities including chronic kidney disease and a family history of prostate cancer presented to his physician with chronic lower obstructive urinary symptoms. He was treated with Finasteride 5mg and Tamsulosin 0.4mg daily for years with mild improvement. Transrectal ultrasound showed an enlarged prostate; abdominal ultrasound showed mild bilateral hydronephroses. A transurethral resection of the prostate (TURP) was performed revealing Gleason 4 + 4 (8) prostate cancer with ductal differentiation in 5% of the tissue. Patient did not recall any prior PSAs, but per medical record, initial PSA was 37 with subsequent values of 74, 56.3 and 69, respectively over 3 months. Imaging with CT on 1/30/2017 showed multiple liver lesions, retroperitoneal adenopathy and subcentimeter lesions in the lung. CEA was 36. CA-125, CA 19-9 and AFP were within normal limits. No bone scan was performed nor was a liver or lymph node biopsy performed. He was started on bicalutamide and Leuprolide 22.5mg locally, and referred for further evaluation.

At initial consultation, he complained of new onset penile swelling, discomfort with foreskin tightness that started within weeks of the TURP and unintentional weight loss of 30 pounds over 3 months. Examination revealed a large hard multinodular prostate and an engorged, erected phallus. Karnofsky performance score was 80%. Further work-up revealed testosterone level of 17ng/dl. MRI of the pelvis showed multifocal prostate cancer with extracapsular extension, invasion of the bladder and seminal vesicles, liver, pelvic adenopathy and

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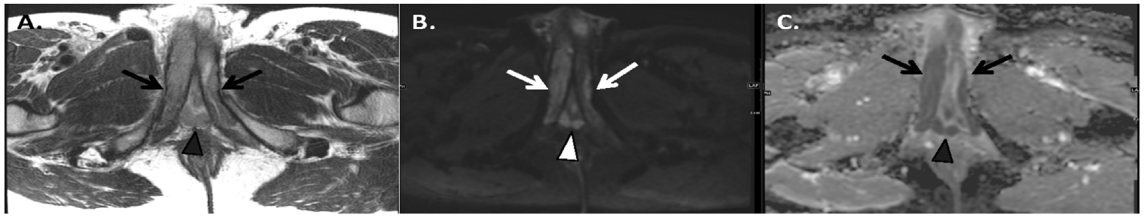

Fig. 1. Pre treatment MRI: (A) axial T2 image without fat saturation, (B) axial diffusion weighted imaging (DWI) and (C) axial apparent diffusion coefficient (ADC). Engorged penis (priapism) with abnormal signal on T2 and corresponding restricted diffusion in the bulb of the penis (arrowhead), and bilateral corpora cavernosa (arrows).

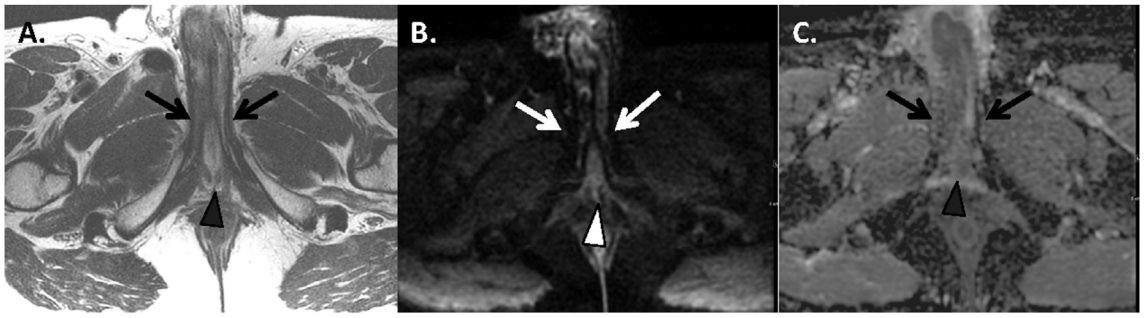

Fig. 2. Post treatment MRI following 8 cycles of chemotherapy: (A) axial T2 image without fat saturation, (B) axial diffusion weighted imaging (DWI) and (C) axial apparent diffusion coefficient (ADC). Decreased penile engorgement. Improved T2 signal and less restricted diffusion at the bulb of the penis (arrowhead), and bilateral corpora cavernosa (arrows).

an engorged phallus with marked restricted diffusion of the corpus cavernosum (Fig. 1). Bone scan showed heterogenous uptake in the thoracic and lumbar spine, corresponding to a combination of degenerative changes and sclerotic metastases on CT. A CT guided liver biopsy was positive for adenocarcinoma, PSMA+, NKX3.1 + and RB+, but negative for chromogranin and synaptophysin. Serum carcinoembryonic antigen (CEA) and chromogranin A were elevated at 233.1ng/ml and 222ng/ml, respectively. Given the high-grade nature of the histology, multiple sites of metastases, and in the face of renal insufficiency, he was started on combination chemotherapy with weekly carboplatin AUC 1.5 and docetaxel at 30mg/m^2 on a 3 week on, one week off cycle. He continued leuprolide. After 4 cycles, the patient had a non-erected phallus, had notable decline in PSA to near-undetectable levels with MRI that showed decreased signal in the corpus cavernosum (Fig. 2). He has completed cycle 8 with a proposed plan for consolidating radiation to the phallus to maintain durability of response.

Discussion

The presentation of malignant priapism is usually with end-stage disease although de novo presentation is rare. Treatment has been largely palliative and includes androgen deprivation therapy, chemotherapy, radiotherapy, local excision and partial or total penectomy. Radiotherapy has been useful but may confer anatomic changes that can preclude normal voiding. Tu et al.,[1] conducted a retrospective study of 12 patients with penile or testicular metastases from prostate cancer and found that the median duration of response to androgen blockade was 33 months but androgen blockade did not address local symptoms. Various older chemotherapy regimens included cyclophosphamide, gemcitabine, mitomycin, estramustine, vinblastine, carboplatin-based combinations that had with limited success. However, cabazitaxel was found to have some promise. Atag et al.[2] reported a case of metastatic castrate resistant prostate cancer with successful response following 21 cycles of cabazitaxel (25mg/m^2 IV every 3 weeks) but this was in the setting of dermal metastases. The difference in this patient was that a docetaxel combination regimen was able to reduce the engorgement with complete relief of symptoms.

The average time of presentation sited for penile metastases is between 3 and 4 years after the initial diagnosis of prostate cancer[3,4] which further highlights rarity of malignant priapism in this case. MRI offers the most reliable technique in the differentiation of lesions of the phallus and involvement of neighboring pelvic organs. This is due to the excellent soft tissue contrast capability, the ability to evaluate the invasion of structures such as the corpora cavernosum and tunica albuginea.

Conclusion

The optimal management of carcinomatous involvement of the phallus due to prostate cancer remains a challenge due to the limited number of cases available. The finding of penile metastasis often coincides with widespread metastatic disease and has been shown to be an ominous sign that portends a poor prognosis. However, this case shows that there can be reversal of priapism with combination chemotherapy but the duration of treatment to sustain a treatment response with this regimen is yet to be determined. It remains undetermined, as to the type of consolidation treatment that is available following initial response to chemotherapy. Local radiation therapy[5] may offer pain relief and improvement micturition by lessening the tumor bulk, when penile infiltration is present. The side effects of radiation therapy may include dermatitis, burns and ulcerations, edema which may be lead to acute urinary retention and urethral strictures.

Conflicts of interest

The authors have no conflict of interest relevant to this publication.

Declaration of interest

None.

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