Invasive Adenocarcinoma of the Prostate With Urethral Tumor

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Metastases of prostate cancer to the penis and urethra are rare and often represent advanced disease. We describe a case of newly diagnosed prostatic adenocarcinoma with metastases to the corpus spongiosum, cavernosum, and the anterior urethra. A male patient, 77 years of age, initially had lower urinary tract obstruction symptoms. His prostate-specific antigen level was 5.02 ng/mL. Digital rectal examination disclosed stony hard tumors at both lobes of the prostate. Transrectal ultrasound-guided biopsy of the prostate revealed adenocarcinoma over both lobes; the Gleason score was 4 + 4 = 8. Cystoscopy showed a penile urethral tumor and biopsy disclosed metastatic adenocarcinoma of the prostate; the Gleason score was 4 + 4 = 8. The patient initially received hormone therapy. Biochemical failure developed after 15 months and rapidly progressed to a hormone-refractory stage. Docetaxel was then prescribed. The patient died in the 25th month after the diagnosis. [*J Chin Med Assoc* 2010;73(2):101–103]

Key Words: anterior urethra, corpus cavernosum, corpus spongiosum, metastasis, prostate cancer

Introduction

Metastatic lesions over the penis and anterior urethra are rare, and most commonly develop from pelvic organs such as the prostate, urinary bladder and colon, or, in some cases, from advanced lung and kidney malignancies. Despite the proximity, prostate cancer seldom metastasizes to the urethra. Most reported urethral metastases from prostate cancer are related to previous surgeries or disease progression.[1,2] Newly diagnosed prostate cancer presenting as a urethral tumor has never been reported.

Case Report

A 77-year-old man presented with voiding straining and a bifurcated voiding stream for 3 months. He had a history of cerebral vascular accidents 6 months before the above symptoms and had undergone a urethral catheterization at that time. His prostate-specific antigen (PSA) level was 5.02 ng/mL. Digital rectal examination disclosed stony hard tumors at both lobes of the prostate. Cystoscopy revealed a tumor lesion at the penile urethra, 8 cm from the meatus and 2 cm distal to the bulbous urethra. The urethral lumen was partially obstructed (Figure 1). Transurethral resection of the tumor found metastatic adenocarcinoma of the prostate; the Gleason score was 4 + 4 = 8. Transrectal ultrasound-guided biopsy of the prostate revealed adenocarcinoma over both lobes of the prostate; the Gleason score was 4 + 4 = 8. Computed tomography showed enlarged lymph nodes around the para-aortic space and the pelvic cavity. A bone scan showed metastatic lesions at the sacroiliac joint, right ischium and left acetabulum. Magnetic resonance imaging demonstrated a linear lesion extending from the prostate gland to the corpus spongiosum and the corpus cavernosum (Figure 2).

The patient received hormone therapy with the antiandrogen cyproterone acetate. The serum PSA levels decreased to a nadir of less than 0.01 ng/mL 8 months later and then rapidly rose to 2.24 ng/mL in the 15th

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E-mail: fisherfishli@yahoo.com.tw • Received: May 25, 2009 • Accepted: November 12, 2009

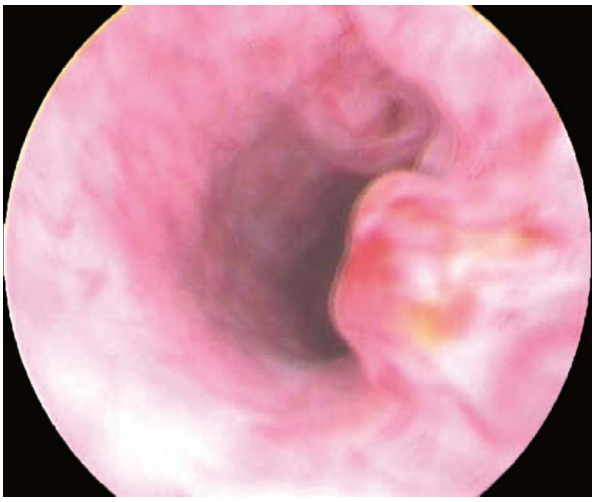

Figure 1. Cystoscopy shows a urethral tumor located 8 cm from the urethra meatus with partial obstruction.

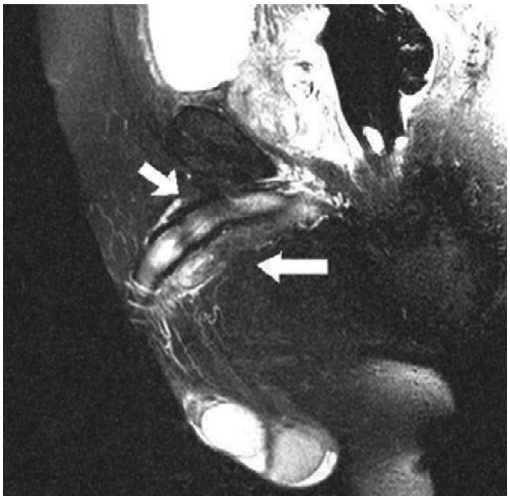

Figure 2. Multiple linear nodular lesions (arrows) are found in the left side of the corpus spongiosum and corpus cavernosum of the penis, with relatively heterogeneous signal intensity on T2-weighted imaging, sagittal view, which is compatible with prostate cancer metastasis.

month. PSA levels continued to increase after discontinuing cyproterone acetate and were resistant to luteinizing hormone-releasing hormone agonist therapy. A bone scan revealed increasing uptake in the metastatic area. Cystoscopy showed diffuse tumor seeding in the prostatic, bulbous and penile urethra with partial obstruction. The patient then received chemotherapy with docetaxel 75 mg/m^2 in the 17th month after diagnosis. PSA levels continued to rise to 14.53 ng/mL in the 20th month. The patient had another episode of cerebral infarct during the 23rd month and died of pneumonia in the 25th month.

Discussion

Metastatic routes of prostate cancer to the corpus cavernosum or the anterior urethra have been postulated, including direct extension, implantation by instrumentation, lymphatic spread, and dissemination through the blood stream.[3] It is not uncommon for advanced prostate cancer patients to receive transurethral surgery to maintain urinary tract patency.[4] Malignant implantation by instrumentation may develop after the procedure. There have been 12 cases of metastatic prostate cancer to the anterior urethra have been previously reported.[2,5] Of these cases, 11 had a history of previous instrumentation and prostate resection. All the tumors of these cases were solitary and did not involve the corpus cavernosa.

Direct extension of a tumor to the corpus cavernosum or the spongiosum may cause stiffness of the penis or urethral stricture. Intraluminal tumor seeding is seldom seen in this type of metastasis. In this situation, the tumor burden is usually large.

Another possible mechanism, retrograde venous spread, has been reported as the most frequent mechanism accounting for metastasis to the penile corpora cavernosa caused by extensive intercommunications between the deep dorsal vein of the penis and the pudendal, pelvic, and prostatic venous plexuses.[6]

In our patient report, we had a unique finding in which the tumor had extended to the corpus cavernosum and corpus spongiosum, and sprouted. As shown by magnetic resonance imaging, the tumor burden was not large and the prostate capsule margin did not show locally extensive behavior. The mechanisms of metastasis are likely to be venous spreading and intraurethral growth.

The treatment options for this type of tumor include local resection, radiation therapy and hormone therapy. Green et al reported good control using combined radiation and hormone therapy for a patient with recurrence of ductal carcinoma.[2] In their case, only urethral mucosa was involved and the follow-up period was short. We performed hormone therapy instead of local radiotherapy because the patient had systemic metastatic disease. We performed local resection of the urethral tumor combined with anti-androgen treatment for the patient. Biochemical control was achieved in the initial 15 months but the disease rapidly progressed to a hormone-refractory status and was out of control even after we replaced the therapy with a luteinizing hormone-releasing hormone agonist and docetaxel.

Prognosis of patients with metastatic prostatic cancer to the penis is very poor. An evaluation of 25 patients with penile metastasis from prostatic cancer in Japan found that 11 patients (41%) died of cancer

within 6 months of the diagnosis.[7] The 25-month survival of our patient was also shorter than that in the Taiwanese series reported by Chen et al with metastatic prostate cancer (survival range of 33–45 months).[8]

We have presented a rare case of prostate cancer with metastases to the corpus cavernosum and the corpus spongiosum with urethral tumor sprouting. Elderly men should be aware of the danger of silent prostate cancer and seek medical advice or treatment before the disease advances.

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