A rare case of solitary metastatic non-seminomatous malignant germ cell tumor to the prostate

Ryan W. Dobbs, BA,[1] Adeboye O. Osunkoya, MD,[1,2] Peter T. Nieh, MD,[1] Daniel J. Canter, MD[1]

[1]Department of Urology, Emory University School of Medicine, Atlanta, Georgia, USA
[2]Department of Pathology, Emory University School of Medicine, Atlanta, Georgia, USA

DOBBS RW, OSUNKOYA AO, NIEH PT, CANTER DJ. A rare case of solitary metastatic non-seminomatous malignant germ cell tumor to the prostate. *Can J Urol* 2012;19(5):6471-6473.

Testicular cancer is the most common solid malignancy of men aged 15-40 years and metastasizes in a predictable manner via lymphatic spread. Involvement of metastatic testicular cancer to the prostate is an exceedingly rare event which has only been previously described in patients with seminomatous germ cell tumors. In this report, we present a case of a 42-year-old man who presented with metastatic testicular cancer to the prostate 8 years after his original diagnosis of a mixed germ cell left testicular tumor.

Key Words: cancer, metastasis, prostatic cancer, prostatic neoplasm, testicular cancer

Introduction

Testicular cancer typically metastasizes and relapses in a predictable order, preferentially seeding the retroperitoneal lymph nodes, lung, liver, brain, bone, kidney, adrenal gland and the gastrointestinal tract.[1] The occurrence of metastatic testicular cancer to the prostate is an exceedingly rare event (only five cases in the literature), and these events have been described exclusively in patients with a history of seminomatous germ cell tumors.[2-6] Previous reports of prostatic metastases have usually involved concomitant additional metastatic sites involving the para-aortic lymph nodes,[2,3] pelvic lymph nodes,[2,4,6] and the lungs.[4] There has been a single prior published instance of a solitary prostatic metastasis in a patient who recurred with seminoma in the prostate 3 years after receiving four cycles of systemic chemotherapy for stage I seminomatous testicular cancer.[5] In this report, we present a case of a 42-year-old man who presented with a prostatic recurrence of metastatic malignant teratoma 8 years after initial treatment of a mixed germ cell testicular tumor. To our knowledge, this is the first report of a non-seminomatous germ cell tumor (NSGCT) that has metastasized to the prostate.

Case report

A 42-year-old man was evaluated at an outside hospital for a several month history of pelvic pressure and discomfort. The patient had a prior history of a left testicular cancer treated 8 years ago with radical orchiectomy. Pathology from the patient's orchiectomy specimen revealed a 2.5 cm mixed germ cell tumor (80% yolk sac tumor and 20% malignant teratoma) without lymphovascular invasion, involvement of the spermatic cord or extratesticular extension (stage I NSGCT). After his orchiectomy, the patient's serum markers normalized appropriately, and he elected a course of surveillance for his stage I NSGCT.

Accepted for publication July 2012

Address correspondence to Dr. Daniel Canter, Department of Urology, Emory University, 1365 Clifton Road, Clinic B Suite 1400, Atlanta, GA 30322 USA

At the time of his new pelvic complaints, the patient had tumor markers drawn and was re-evaluated with cross-sectional imaging. His serum tumor markers were elevated (AFP = 1862, b-HCG = 354, and LDH = 208). A CT scan of the abdomen and pelvis revealed mild left hydronephrosis as well as a mass in the left pelvis intimately associated with the prostate, Figure 1. The mass measured 4.5 cm x 4.6 cm x 7.2 cm and extended superiorly to the left external iliac vessels. There was no evidence of concomitant retroperitoneal lymphadenopathy or other sites of metastatic disease. The mass was palpable on digital rectal exam. An ultrasound-guided biopsy of the mass was performed, revealing a recurrent non-seminomatous germ cell tumor. The patient underwent three cycles of systemic chemotherapy consisting of bleomycin, etoposide and cisplatin. A fourth cycle consisting of etoposide and cisplatin was given due to bleomycin-related lung toxicity. The patient's tumor markers normalized after chemotherapy and his pelvic mass decreased in size. He was then taken to the operating room for a post-chemotherapy mass excision.

A radical retropubic prostatectomy, Figure 2a and distal left ureterectomy were performed. Intraoperative cystoscopy was unremarkable. The left ureter was intimately associated with the mass and had to be excised to ensure a negative surgical margin. The distal left ureter was reimplanted via an extravesical ureteroneocystostomy. Final pathology revealed a metastatic malignant teratoma involving the prostate and periprostatic tissues. A histological section from the radical prostatectomy is shown in Figure 2b. The necrotic mass was present within the right and left seminal vesicles and was determined to be potentially invading into the left vas deferens and the prostate

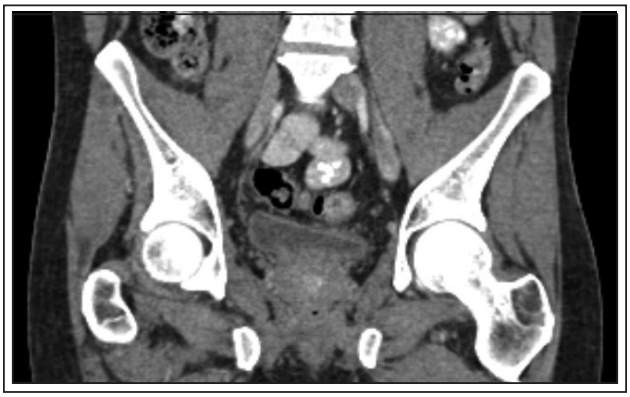

Figure 1. Preoperative coronal CT scan of abdomen and pelvis revealing a left pelvic mass intimately associated with the prostate and extending toward the iliac vessels.

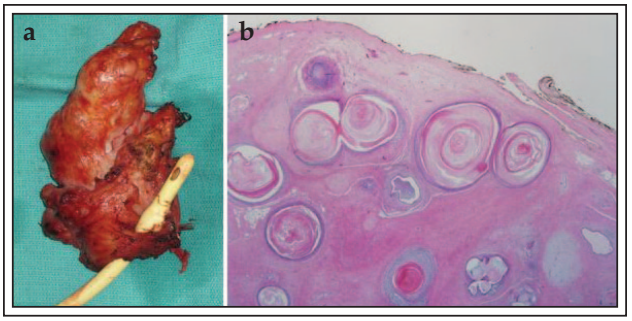

Figure 2a. Gross photo of radical prostatectomy specimen with mass adjacent to left prostatic lobe representing a metastatic malignant teratoma.
Figure 2b. Histologic section from radical prostatectomy specimen with metastatic malignant teratoma within prostatic stroma. (2X magnification).

itself at the left base. Surgical margins were negative. The patient had an uncomplicated postoperative course, and in short term follow up (6 months), he is free of disease with excellent functional outcomes.

Discussion

Testicular germ cell tumors are the most common solid malignancy of young men aged 15-40 years, representing approximately 1% of all malignancies in men. In the United States in 2012, there were an estimated 8590 cases of testicular cancer resulting in 360 deaths.[7] The majority of stage I NSGCTs are treated with radical orchiectomy followed by surveillance, a platinum-based chemotherapy, and/or retroperitoneal lymph node dissection. Stage I patients are divided into low risk (20% relapse rate) or high risk (40%-50% relapse rate) depending on the presence of vascular or lymphatic invasion.[8] Low risk stage I NSGCT patients can be offered treatment with a radical orchiectomy followed by surveillance with excellent rates of cancer-specific survival. In the case we present, our patient had low risk NSGCT, implying an excellent prognosis.

In NSGCTs, 89% of relapses occur within the first 2 years after treatment.[9] The most common sites of recurrence are the retroperitoneal lymph nodes and the lungs,[10] but other sites of recurrence may also occur, including the liver, brain, bone, kidney, adrenal gland and the gastrointestinal tract.[1] Recurrences of primary testicular cancer to the prostate are extremely rare, with only five previous reports of metastatic seminomas to the prostate.[2-6] In these previous reports, patients with prostatic metastases have presented for evaluation following the onset of obstructive voiding symptoms[3,5] or with abdominal/back pain.[2,4,6] Prostatic metastases

were identified at the time of initial diagnosis for one patient's primary testicular seminoma,[3] but they have also occurred as late as 16 years after the primary diagnosis.[6] In these five patients, pathologic diagnosis was confirmed by transurethral resection,[3] prostate biopsy,[2,4-6] or urine cytology.[3,6] Similar to our patient, these prior cases were initially managed with platinum-based chemotherapy[2,4-6] and/or radiation therapy.[2,3] One patient ultimately required a cystoprostatectomy for CT-confirmed residual disease in the prostate.[5]

In these published reports, no patients have had recurrent disease after treatment of their prostatic metastases.[2-6] While these previous cases have reported prostatic recurrences from primary testicular seminomas, our report to the best of our knowledge represents the first case of a non-seminomatous germ cell tumor metastasizing to the prostate. □

References

1. Bosco P, Bihrle W 3rd, Malone MJ, Silverman ML. Primary skeletal metastasis of a nonseminomatous germ cell tumor. *Urology* 1994; 43(4):564-566..
2. Sagalowsky AI, McConnell JD, Admire R. Uncommon sites of recurrent seminoma and implications for therapy. *Cancer* 1986; 57(5):1060-1065.
3. Motley RC, Utz DC, Farrow GM, Earle JD. Testicular seminoma metastatic to the prostate. *J Urol* 1986;135(4):801-802.
4. Plummer ER, Greene DR, Roberts JT. Seminoma metastatic to the prostate resulting in a rectovesical fistula. *Clin Oncol (R Coll Radiol)* 2000;12(4):229-230.
5. Farnham SB, Mason SE, Smith JA Jr. Metastatic testicular seminoma to the prostate. *Urology* 2005;66(1):195.
6. Alsharif M, Aslan DL, Jessurun J, Gulbahce HE, Pambuccian SE. Cytologic diagnosis of metastatic seminoma to the prostate and urinary bladder: a case report. *Diagn Cytopathol* 2008;36(10):734-738.
7. Siegel R, Naishadham D, Jemal A. Cancer statistics, 2012. *CA Cancer J Clin* 2012;62(1):10-29.
8. Schmoll HJ, Jordan K, Huddart R et al. Testicular non-seminoma: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up. *Ann Oncol* 2010;21(Suppl 5):v147-154.
9. Daugaard G, Petersen PM, Rorth M. Surveillance in stage I testicular cancer. *APMIS* 2003;111(1):76-83; discussion 83-75.
10. Nicolai N, Miceli R, Necchi A et al. Retroperitoneal lymph node dissection with no adjuvant chemotherapy in clinical stage I nonseminomatous germ cell tumours: long-term outcome and analysis of risk factors of recurrence. *Eur Urol* 2010;58(6):912-918.