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Oncology

A case of metastatic lung adenocarcinoma of the bladder in a patient with no documented history of lung cancer

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A B S T R A C T

Metastatic lesions of non-urological malignancies to the bladder are rare and often secondary to spread from a contiguous site. Distant metastasis to the bladder is even more uncommon. There are less than 10 previously described cases of metastatic pulmonary adenocarcinoma to the bladder in the literature over the past 20 years. In this report, we describe a 73-year-old African American gentleman with a history of prostate cancer who presented to the urology department with gross hematuria. Follow up imaging suggested possible neoplastic changes to the bladder. Biopsy and histochemical staining revealed poorly differentiated adenocarcinoma of pulmonary origin.

1. Introduction

While bladder cancer is the ninth most common cancer in the world, metastatic spread to the bladder from an extravesical source is exceedingly rare. Secondary metastasis to the bladder from a distant source accounts for only about 2% of bladder cancers. In the past 20 years, there have been fewer than 10 reported cases of metastatic pulmonary adenocarcinoma. We report a case of a 73-year-old African American male with no previous history of pulmonary malignancy, presenting with gross hematuria and ultimately found to have a bladder mass confirmed to be adenocarcinoma of pulmonary origin.

2. Case report

A 73-year-old African American male with a previous history of prostate cancer treated with radiation and androgen deprivation therapy presents to the Urology clinic with chief complaint of gross hematuria, worsened voiding symptoms and dysuria. He previously underwent transurethral resection of the prostate (TURP) and subsequently developed urethral stricture disease managed with clean intermittent catheterization. This patient's other medical history includes chronic kidney disease, hypertension, atrial fibrillation, and aortic stenosis. His social history is significant for 50-year smoking history and has a negative family history of malignancies. He denied fevers, chills, and bone pain and reported that his weight and appetite had been stable.

Physical exam was unremarkable. Digital rectal exam revealed a

small prostate without any fixation. Urinalysis showed >100 RBC per high power field, >100 urine WBC, and positive for nitrites and large amount of leukocyte esterase. PSA was at 0.156 ng/mL, which was at his nadir baseline. His hemoglobin and serum creatinine were at his baseline and alkaline phosphatase was within normal limits.

Non-contrast enhanced computed tomography (CT) of the patient's abdomen and pelvis was obtained given his urinary tract infection and hematuria. This demonstrated asymmetric thickening of the posteroinferior left wall of the bladder. Flexible cystourethroscopy was then performed which demonstrated bullous edema with erythema overlying the posterolateral left bladder wall. This was biopsied and consistent with GATA3 reactive nested carcinoma, suspicious for a metastatic lesion. He was then taken to the operating room for transurethral resection of bladder tumor with bilateral retrograde pyelogram and stent insertion. Pathological review of the specimen was reported to be diffuse, deeply infiltrating, poorly differentiated adenocarcinoma. Histochemical analysis included negative for PSA, PSAP, CK20, GATA3, Uroplakin, ERG, PAX-8, weakly positive for p63, CDX2, and positive for CK7 and TTF-1. This was determined to be consistent with pulmonary origin. This prompted CT imaging of the chest which demonstrated no dominant lung mass but stable chronic pleural thickening/scarring at the lateral left lung base. In comparison to a previous CT of the chest in 2013, there was no significant changes to this area of suspected scarring. An enlarged mediastinal lymph node was found; therefore, metastatic disease could not be excluded.

The patient was referred to Hematology/Oncology for further

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evaluation. Unfortunately, prior to beginning palliative chemotherapy, the patient died during hospitalization for urosepsis. An autopsy was not performed.

3. Discussion

Bladder cancer is the most common malignancy of the genitourinary system and is the ninth most common cancer worldwide. Each year in the US, about 17,000 deaths are attributable to bladder cancer. Urothelial bladder cancer accounts for about 90% of bladder cancers. Secondary metastasis of neoplasms to the bladder are rare and most commonly comes from a contiguous source such as prostate or colorectal carcinomas. Secondary bladder cancer from a distant source is even more uncommon and is responsible for only about 2% of bladder cancers.¹ While lung cancer has a high prevalence in the population, bladder metastasis was only seen in 0.16% of all cases of metastatic pulmonary malignancies.² Over the past 20 years, only 10 cases of lung adenocarcinoma metastasis to the bladder have been reported in the literature, making this condition difficult to diagnose and treat.

Most often bladder cancer initially presents with hematuria, pelvic pain, and voiding symptoms. Metastatic lesions to the bladder can also be found incidentally, as in a case report from 2012 in which pulmonary metastasis to the bladder was found prior to clinical symptoms.³ While our patient presented with typical symptoms seen in those with bladder tumors, this is the first case in which the patient had no previous diagnosis of lung cancer prior to identification of a metastatic bladder mass of pulmonary origin. Diagnosis and suspicion for lung cancer was more difficult given the patient's previous history of prostate cancer and pelvic radiation. Although the patient had many risk factors that would direct the diagnostician to primary bladder cancer, these risks factors also mirror those of lung cancer. Therefore, histochemical analysis was critical for a conclusive diagnosis.

A case report from 2014, found adenocarcinoma metastasis to the bladder described having an endoscopic appearance consistent with primary bladder cancer rather than secondary bladder cancer which has previously been described to have an intact epithelium overlying the bladder tumor.⁴ In our patient's case, the gross cystoscopic findings demonstrated bullous edema with erythema overlying the posterolateral left bladder wall. This can be seen in a variety of diseases including malignancies or hemorrhagic cystitis. The diagnostician cannot verify the origin of a bladder lesion based on cystoscopic findings alone, highlighting the importance of histochemical staining.

In conclusion, secondary bladder cancers are uncommon but important to keep on the differential as they share similar risk factor profiles. It may be difficult to diagnose and tend to have a more unfavorable outcome than primary bladder cancers.^{3,5} Our patient unfortunately only lived for roughly 3 months following his diagnosis. A history of lung adenocarcinoma is not always necessary in order to find metastasis to the bladder. There must be a high index of suspicion when a bladder mass is identified with atypical features.

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