CASE REPORT

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Muscle–invasive bladder cancer in a young adult: a case report and a review of the literature

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The peak incidence of bladder cancer (BC) is in the sixth decade of life. Muscle–invasive bladder cancer (MIBC) in young adults is extremely rare. We report a case of MIBC in a 28–year–old smoking male patient. The patient presented with hematuria and flank pain for which he underwent a computerized tomography (CT) scan of the abdomen and pelvis with and without contrast. The CT scan showed a 6 cm mass on the left side of the trigone extending to the left urteric orifice and left hydronephrosis, but no lymphadenopathy was noted. The patient then underwent a left nephrostomy tube placement followed by trans–urethral resection of bladder tumor (TURBT). The tumor involved both ureteric orifices and extended to the prostatic urethra. Complete resection was not feasible. Pathology showed high–grade T1 urothelial carcinoma. CT scan of the chest showed no distant lung metastasis. The patient then elected to undergo radical cystectomy with ileal conduit urinary diversion. Final pathology revealed T2a N0 urothelial carcinoma of the bladder. Our aim is to present our experience and review the literature for the natural history and oncological and quality of life outcomes of urothelial carcinoma of the bladder in young patients.

Key Words: bladder cancer ‹› muscle–invasive ‹› natural history ‹› prognosis ‹› young adult

INTRODUCTION

Bladder cancer (BCa) is the fifth most common cancer in the United States. In 2012, it is projected that 73,510 people will be diagnosed with BCa and 14,880 will die from the disease [1]. Although the majority of newly diagnosed BCa patients present with non–muscle invasive BC (NMIBC), about 30% of patients will either initially present or later progress to muscle invasive bladder cancer (MIBC) [2]. MIBC is a life–changing event. Radical cystectomy (RC) with urinary diversion (UD) is the ultimate curative treatment.
The peak incidence of BCa is in the sixth decade of life [2]. Diagnosis of BCa in patients aged <40 years is rare and is extremely rare in patients <30 years of age [3]. However, cases of BCa have been previously reported in pediatric and young adult patients [4, 5]. Our aim is to report our experience with a young adult patient with MIBC and review the literature for the natural history and outcome.

CASE REPORT

A 28–year–old Caucasian male patient with 10 pack–year smoking history with no family history of BCa presented to the emergency department with gross hematuria and left flank pain. The patient underwent computerized tomography (CT) of the abdomen and pelvis without contrast due to an elevated creatinine. CT showed a 6 cm fungating mass at the left posterior wall of the bladder extending to the left ureteral orifice and left hydronephrosis. No lymphadenopathy was identified (Figure 1). No abnormal laboratory findings were noted except for a serum creatinine of 1.73 mg/dl. The patient was initially managed by left nephrostomy tube placement and subsequent transurethral resection of bladder tumor (TURBT). During cystoscopy, multiple large masses originating from the left side of the trigone extending to the prostatic urethra and the right ure-

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teric orifice were noted (Figure 2). The left ureteric orifice could not be identified. A complete resection of the tumor was not feasible. No attempt was made to obtain muscle bites secondary to the large volume of disease. The pathology showed high–grade T1 urothelial carcinoma. CT scan of the chest showed no pulmonary metastasis. Serum creatinine was 1.6 mg/dl following nephrostomy tube placement. The patient was counseled about the possibility for re-staging TURBT, RC, and urinary diversion by either ileal neobladder or ileal conduit. The patient then elected to undergo RC and ileal conduit urinary diversion as the patient had elevated serum creatinine and was reluctant to perform CIC. The final pathology showed multifocal high–grade T2a N0 urothelial carcinoma 7.5 cm in the greatest dimension. All margins were free from tumor. Twenty lymph nodes were negative for urothelial carcinoma. The patient was followed for six months postoperatively with no evidence of recurrence.

DISCUSSION

Urothelial carcinoma of the bladder in the first three decades of life is extremely rare. This is more true in the case of MIBC. Previous studies reported superficial BCa in pediatric and young adult patients [6]. Paner et al. in a comprehensive review of BCa in patients younger than 30 years of age, only 3.0% had muscle–invasive disease and only 1.7% had high–grade tumor [7]. Since the vast majority of young patients with BCa present with non–muscle invasive low–grade disease, these patients have lower progression and recurrence rates compared to older patients. This further suggested that the nature of BCa in the younger population is different compared to elderly patients. On the other-hand, Yossepowitch and Dalbagni found no difference in grade or stage upon comparing 74 patients <40 years of age to 75 patients >65 years of age [4]. However, when focusing on only BCa patients diagnosed in the first two decades of life, it is evident that these patients had a relatively indolent behaving BCa [7]. Nevertheless, aggressive BCa has been reported in children – a 31 month old [8] and a 14 year old [9].

Cigarette smoking is by far the most prevalent risk factor for BCa. Exposure to polycyclic aromatic hydrocarbons (PAHs) is responsible for 10% to 15% of cases as a result of bladder carcinogenesis. Genetic predisposition to BCa has been suggested by reports of multiple–case families with BCa. However, it is unclear whether it resulted from a genetic predisposition or common environmental exposure among family members [10].

As in elderly patients, radical cystectomy is the curative intervention for patients with MIBC, recurrent high grade superficial BCa, and high–grade T1 disease. However, certain aspects of treatment are of significant importance in young BCa patients. Young male patients undergoing RC may suffer from post–operative infertility and impotence. Prostate and seminal vesicles sparing RC in addition to nerve sparing procedure can be a valuable option for those patients. Preservation of urinary continence by performing a nerve sparing procedure and orthotopic neobladder urinary diversion is preferred to attain a proper quality of life and body image. In our patient, ileal neobladder urinary diversion was not performed due to the patient's unwillingness to perform CIC and the fear of chronic renal insufficiency considering the elevated baseline creatinine, (1.73)

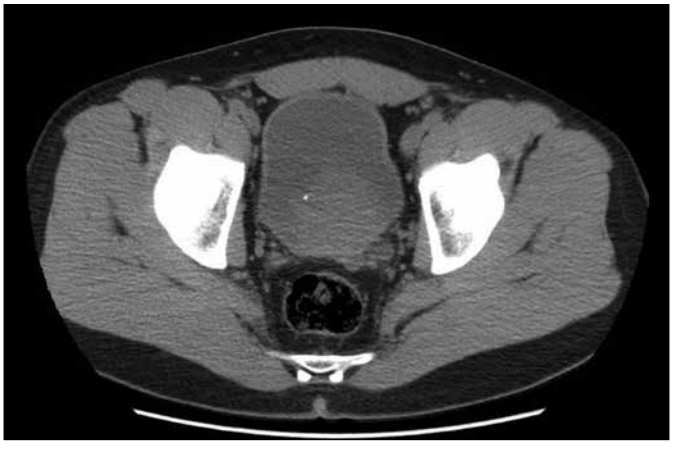

Figure 1. *CT image showing a large bladder tumor on the posterior bladder wall.*

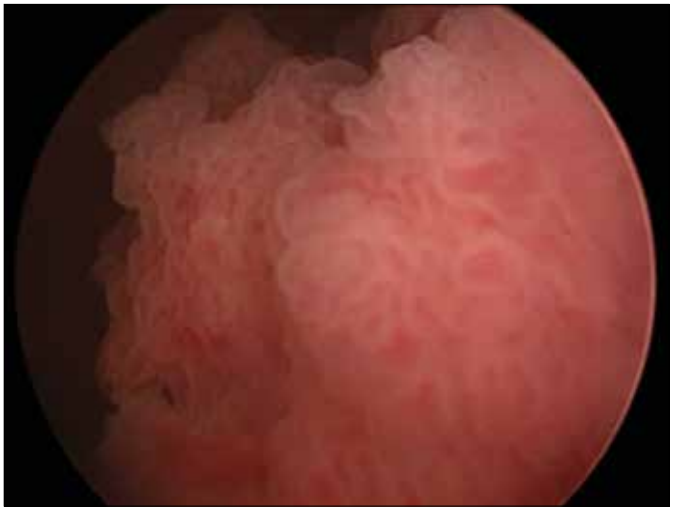

Figure 2. *Cystoscopy image showing large and multiple bladder tumors.*

which remained elevated (1.6) following nephrostomy tube placement.

CONCLUSIONS

In general, young patients with BCa tend to have a favorable outcome. This tendency is more pronounced in patients presenting in the first three decades of life and is likely to decrease with age. Quality of life and fertility preservation is particularly significant in young patients undergoing radical cystectomy and urinary diversion. Our case demonstrates a rare example of a high–grade T2 transitional cell carcinoma in a 28 year male.

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