Case Report

Renal BCGosis managed conservatively with antituberculous medications

Amr Elmekresh, Yazan Al Shaikh, Rafe Alhayek, Yaser Saeedi

Department of Urology, Dubai Health Authority, Dubai Hospital, Dubai, United Arab Emirates

Abstract

Intravesical *Bacillus* Calmette–Guérin (BCG) therapy for nonmuscle-invasive bladder cancer rarely leads to the development of granulomatous renal masses (renal BCGosis). The management includes nephroureterectomy, antitubercular therapy (ATT), or both. Here, we present a case of a 62-year-old male who was treated with ATT alone for renal masses. Six months after intravesical BCG therapy for transitional cell carcinoma, he developed high-grade fever and night sweat and had multiple renal parenchymal hypodensities on computed tomography (CT) scan. Repeat CT scan 6 months after ATT revealed full resolution of renal hypodensities. This case report highlights the importance of follow-up for early detection of adverse effects of BCG treatment.

Keywords: Antitubercular therapy, *Bacillus* Calmette–Guérin, nonmuscle-invasive bladder cancer, renal tuberculosis, transurethral resection

Address for correspondence: Dr. Amr Elmekresh, Department of Urology, Dubai Hospital, 222 Al Khaleej Road, Deira, Dubai, United Arab Emirates.
E-mail: amelmekresh@dha.gov.ae

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INTRODUCTION

Worldwide, bladder carcinoma is one of the most common cancers and it has three to four times higher incidence in males than in females. Most of the bladder cancers originate from the urothelial and, do not invade the muscle tissue.[1] *Bacillus* Calmette–Guérin (BCG) is a live attenuated strain of *Mycobacterium bovis*. The gold standard management option for intermediate and high-risk nonmuscle-invasive bladder cancers (NMIBC) includes intravesical instillation of BCG after transurethral resection of bladder cancer.[2] However, intravesical BCG therapy may have some side effects such as low-grade fever and flu-like symptoms seen in up to 30% of cases, or even a BCG-induced cystitis, with a similar clinical picture of acute cystitis (frequency, urgency, and dysuria) but with a negative urine culture.[3] Less than 5% of patients develop potentially life-threatening systemic complications such as sepsis, hepatitis, pneumonitis, or persistent high-grade fever alone.[4]

CASE REPORT

A 62-year-old male patient was admitted with complaints of gross hematuria. He was known hypertensive and had angiography and stenting done for ischemic heart disease. Ultrasound revealed mild diffused thickness in urinary bladder walls while a triphasic computed tomography (CT) scan of the pelvis, abdomen, and chest showed a confined bladder mass with no local invasion or distant metastasis [Figure 1].

Transurethral resection of bladder mass was performed on the left lateral wall with involvement of the left ureteric

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orifice (2 cm in size). The left ureteric orifice was also resected on the same occasion and left double J stenting was done. A single dose of intravesical mitomycin was given in the postoperative period. Histopathological examination of the specimen showed grade 1 pT1 transitional cell bladder cancer, for which once weekly intravesical BCG therapy was started for 6 weeks. Four months after surgery, a check cystoscopy was done and showed no recurrence of the bladder tumor. Moreover, a biopsy was taken from the bladder close to the previous resection area around the left ureteric orifice. A left double J stent was then inserted, and maintenance BCG therapy was advised.

Two months later, the patient developed high-grade fever, chills, and night sweat which did not respond to fluoroquinolones therapy. Blood investigation showed that reactive T-spot tuberculosis (TB) test, negative TB-polymerase chain reaction, and no acid-fast bacilli were isolated in blood smear and culture. Urine culture also showed no growth. CT scan of the abdomen and pelvis was carried out that showed multiple areas of unilateral renal parenchymal hypodensities [Figure 2].

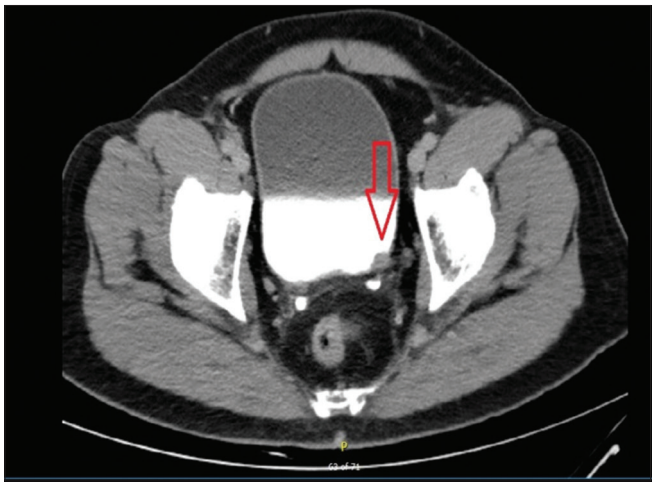

Figure 1: Triphasic CT scan of the urinary tract showing a confined bladder mass. CT: Computed tomography. The red arrows indicate areas of hypodensity in the renal parenchyma

Based on the clinical and imaging findings, antitubercular therapy (ATT), based on a 3-drug regimen, namely, ethambutol and rifampicin-isoniazid, was initiated for 6 months. A repeat CT scan was done after completion of ATT that showed the full resolution of the kidney hypodensities.

DISCUSSION

The probability of recurrence and progression rates of NMIBC necessitates adjunctive therapy. In the past four decades, intravesical BCG therapy has been established as one of the standard treatment options for NMIBC as it reduces its progression to invasive disease.[4,5] BCG is associated with adverse effects despite its effectiveness in the prevention of tumor recurrence and progression.[4,5] Still, the intravesical adjuvant BCG immunotherapy appears safe with less side effects. Renal complications of BCG therapy include pyelonephritis renal abscess which can be detected as enhancing lesions on CECT scan of the abdomen. These appear usually as hypodense lesions and might raise the suspicion of a renal cell carcinoma, especially in the presence of a positive urine cytology. Moreover, these should be differentiated from the primary tumor of the kidney or other malignancies such as leukemia or lymphoma infiltrating the kidney. As renal BCGosis is extremely rare, imaging studies are usually inconclusive in the majority of these, as happened in the index case.[6] Therefore, a percutaneous biopsy followed by histological confirmation is necessary, especially if there is no improvement. Once granulomas are confirmed, rifampin and isoniazid should be given for 3–6 months. In the present case, we preferred to start ATT immediately considering our clinical suspicion for renal TB to treat the symptoms and to save the patient from further complications.

CONCLUSION

This case report highlights the importance of follow-up of bladder cancer patients to detect the adverse effects of BCG treatment at an early stage. In order to minimize these adverse effects, an individualized approach is sought. ATT is a reasonable option considering the serious complication

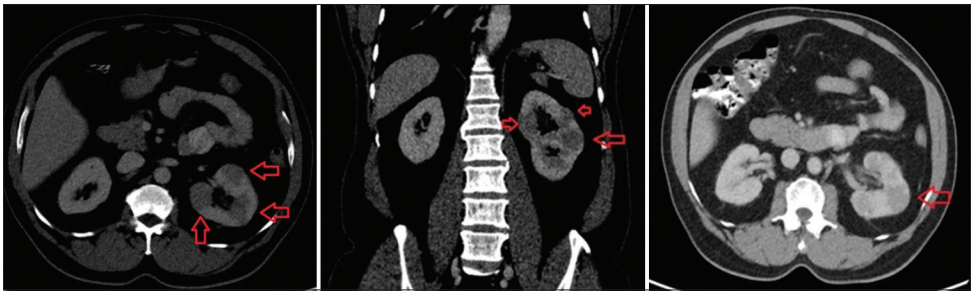

Figure 2: Triphasic CT scans revealing granulomatosis of the left kidney and the regression changes after anti-tuberculosis therapy and granulomatous change of the left kidney. CT: Computed tomography. The red arrows indicate areas of hypodensity in the renal parenchyma

that may develop without treatment. The ATT helps in resolving the symptoms with the disappearance of abnormal imaging findings.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initials will not be published and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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