

Management of Bladder Cancer After Renal Transplantation

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ABSTRACT

Objectives. In renal transplant recipients, the risk of developing bladder cancer and rate of diagnosis of advanced staged bladder cancer are generally higher than the general population. Also, it is more challenging to treat renal transplant recipients than the regular patient population. We aimed to evaluate the efficacy and safety of radical cystectomy (RC) and urinary diversion with ileal conduit in renal transplant recipients.

Methods. We identified 2 patients with prior history of renal transplantation who underwent RC and ileal conduit urinary diversion for bladder cancer. Preoperative clinical and demographic data were presented and outcomes were assessed.

Results. The RC and ileal conduit urinary diversion were performed in the first patient 56 months after renal transplantation and in the second patient 64 months after renal transplantation. Clinical staging was high-grade T2 transitional cell cancer of the bladder for patient 1 and T2 with pure squamous cell cancer of the bladder for patient 2. No perioperative or postoperative complication and no graft dysfunction occurred in either patient.

Conclusion. Our experience demonstrated that RC with ileal conduit reconstruction in renal transplant recipients is safe and feasible.

RENAL transplantation remains the treatment option of choice for patients with end-stage renal disease. The combination of effective immunosuppressive agents and improved organ rejection treatment has significantly extended allograft survival. However, long-term immunosuppression and infections with oncogenic viruses are well-known risk factors along with de novo malignancies or recurrent tumors for organ transplant recipients [1]. It has been shown recently that bladder cancers are associated with worse outcomes and apparent increase in biologic aggressiveness in the renal transplant population [2,3].

In the present study, we performed radical cystectomy (RC) in 2 patients who developed bladder carcinoma after renal transplantation. We aimed to evaluate the efficacy and safety of RC and ileal conduit operation for bladder cancer in renal transplant recipients. We further followed the prognoses and outcomes of the 2 patients, and we review the literature.

METHODS

Study Design

A total of 2 renal transplant recipients were diagnosed with bladder cancer at Cerrahpasa School of Medicine. These patients

underwent RC with pelvic lymphadenectomy and ileal conduit for treatment. The patients were followed, and outcomes were assessed after the surgeries.

Patient 1 was a 67-year-old man who presented with gross hematuria. The patient underwent renal transplantation 56 months before the presentation. He was on hemodialysis prior to renal transplantation. Hypertension was the reason for his end-stage renal disease. Cystoscopy was performed and revealed a solid lesion on the right bladder wall. Transurethral resection was performed and pathologic examination showed high-grade transitional cell cancer of the bladder with pT2 stage. The preoperative and postoperative radiologic evaluation did not show any metastasis (Fig 1). Patient 2 was a 41-year-old man and he also presented with gross hematuria. This patient underwent renal transplantation 64 months before the presentation, and diabetes mellitus was the reason of his end-stage renal disease. Ultrasonographic examination detected a solid mass at the bladder. Cystoscopy was performed and revealed a 4 × 4 × 6-cm solid lesion on the anterior bladder wall. Transurethral resection was performed, and pathologic

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Fig 1. Computed tomography showing the bladder tumor of the renal transplant recipient.

examination showed invasive squamous cell cancer of the bladder with pT2 stage. The preoperative and postoperative radiologic evaluation did not show any metastasis.

Patients 1 and 2 underwent living donor renal transplantation at different institutions. The arteria iliaca interna vessels were anastomosed to the transplanted kidney in the operations they had. The patients were prescribed immunosuppression drugs (prednisone, azathioprine, cyclosporine) since the renal transplantations. The patients had no risk factors for the development of bladder cancer (such as smoking).

RESULTS

Surgical Technique

The first step was to prepare the renal system and ureter to be anastomosed to the ileal segment. Administration of intravenous methylene blue made it easy for us to find the ureter. The ureter was widely dissected from surrounding tissue to protect the vascularization of the ureter. The renal pedicle was also found with gentle dissection. After that step, left-sided pelvic lymph node dissection was performed because the graft had been placed in the right iliac fossa. We performed lymph node dissection only in the obturator region on the right side, but extended lymph node dissection on the left side because of the location of the transplanted kidney. After lymph node dissection, cystectomy was performed. At the last step, an ileal conduit was constructed. The transplant ureter was anastomosed to the ileal segment with separate sutures. A single J stent was also used. The stoma was placed between the spina iliaca anterior superior and umbilicus.

Clinical characteristics, treatment, and outcomes of the 2 patients are shown in Table 1. Patient 1 underwent RC and ileal conduit. The operation was performed without any operation. Twenty-four lymph nodes were removed from this patient, and none was metastatic. Final pathology was pT2N0M0 in this patient. The operation time was 280 minutes. The blood loss during the surgery was 250 mL. The patient did not require blood transfusion. The length of

Table 1. Preoperative and Postoperative Data

	Patient 1	Patient 2
Characteristics		
Sex	Male	Male
Age (y)		
At transplantation	62	35
At radical cystectomy	67	41
Tumor pathology		
TURBT	pT2N0M0, transitional cell carcinoma	pT2N0M0, squamous cell carcinoma
Radical cystectomy	PT3N0M0, transitional cell carcinoma	PT3N0M0, squamous cell carcinoma
Treatment and outcome		
Follow-up (mo)	6	18
Hydronephrosis	None	None
Pre-/postoperative creatinine levels (mg/dL)	0.87/0.95	1.32/1.34
Recurrence	None	None
Survival status	Dead	Alive

Abbreviation: TURBT, transurethral resection of bladder tumor.

hospital stay was 7 days. The patient had no recurrence or complication after surgery. He died of pneumonia 6 months after the surgery, during the follow-up period.

Patient 2 was also underwent RC and ileal conduit. Thirty-two lymph nodes were removed from this patient, and none was metastatic. Final pathology report was pT3N0M0 and pure squamous cell cancer of the bladder. The operation time was 360 minutes. The blood loss during the surgery was 600 mL. The patient did not require blood transfusion. The length of hospital stay was 9 days. The patient had no recurrence or complication within an 18-month follow-up period.

A low dose of cyclosporine was pumped intravenously daily and monitored during postoperative periods. Also, other immunosuppressive drugs such as prednisone were administered through a gastric tube. The patients started to intake food 3 days after the operation. The renal graft functions were not affected, and serum creatinine levels were stable. There was no rejection or graft dysfunction in the 2 patients because of the reduced dosage of immunosuppressive drugs.

DISCUSSION

Current improved immunosuppressive drugs and regimens allow longer allograft and patient survival in renal transplant recipients. Secondary diseases may exert a stronger influence on overall morbidity and mortality with the prolonged natural history of these patients. In addition, it is recognized that transplant recipients are at increased risk for developing malignancies [4,5]. Bladder cancer and other urologic malignancies have been shown to have higher incidences in patients on immunosuppression [5]. In fact, bladder cancer patients with transplants are likely to have multiple and relapsing tumors, which are more aggressive

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