Case Report

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Recurrence of Renal Cell Carcinoma in a Renal Allograft after Partial Transplant Nephrectomy: A Case Report

M.R. Hoda A. Hamza S. Wagner F. Greco P. Fornara

Clinic for Urology and Kidney Transplantation Centre, University Medical School of Halle/Wittenberg, Halle, Germany

Key Words
Renal cell carcinoma · Nephron-sparing surgery · Renal transplantation

Abstract
Treatment options for renal cell carcinoma (RCC) in a renal allograft include radical nephrectomy or nephron-sparing surgery (NSS). We report the case of local recurrence of an RCC in kidney allograft. Five years after previously undergoing NSS, a recurrent lesion was diagnosed in the upper pole of the kidney graft in a 74-year-old patient during routine duplex ultrasonography. The computerized tomography image showed a spherical lesion of 24 mm in diameter. The patient was free of clinical symptoms and additional staging examinations showed no signs of metastatic spread. Considering the poor function of the kidney allograft with the need for dialysis, a removal of the graft was performed without peri- and postoperative adverse events. The final pathology revealed recurrence of a clear-cell adenocarcinoma of the kidney allograft (pT1a, G1). The patient had an uneventful recovery and was discharged from the hospital after 6 days. During the last follow-up, the patient remained stable on hemodialysis and reported good overall health condition. In conclusion, patients after NSS for small renal masses in kidney allograft should remain under careful observation in order to detect early local recurrence.

Introduction

An increased incidence of cancer among organ transplant recipients is well established. Immunosuppressive therapy increases the incidence of posttransplant cancer. Primary renal cell carcinoma (RCC) has been reported to account for 4.6% of all cancers in transplant recipients, compared with 3% of tumors in the general population [1–3]. With the use of organs from elderly donors becoming more frequent, there is an increased risk of transmitting tumor cells to a recipient. Surgical treatment options for RCC in renal allograft include transplantectomy for tumors larger than 4.5 cm and partial nephrectomy as nephron-sparing surgery (NSS). Recent reports demonstrate that localized RCC within a renal allograft can be safely and effectively treated by partial nephrectomy [4, 5]. However, NSS is associated with a potential risk of recurrence. The recurrence in nontransplant patients is es-

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M. Raschid Hoda, MD
Clinic for Urology and Kidney Transplantation Centre
University Medical School of Halle/Wittenberg, Ernst-Grube-Strasse 40
DE–06120 Halle/Saale (Germany)
Tel. +49 345 557 1351, Fax +49 345 557 4692, E-Mail rhoda@ucsd.edu

timated to be 1.2–5%, and the estimated survival rates free of local recurrence at 5 and 10 years have been reported to be 98.3 and 95.7%, respectively [6]. Here, we report a case of recurrence of RCC in a renal allograft 5 years after NSS in a 74-year-old male.

Case Report

A 69-year-old male patient, transplanted 15 years before (1988) with an allogenic kidney from a 42-year-old donor was incidentally diagnosed in 2003 with a hypovascularized lesion with a maximum diameter of 38 mm located in the upper pole of the kidney graft during routine duplex ultrasonography. The patient had experienced good long-term graft function with a serum creatinine level between 1.4 to 1.6 mg/dl. Since the kidney transplantation in 1988, the patient had experienced additional multiple surgical interventions such as aortocoronary bypass grafting for CAD, trans-rectal biopsy of prostate for adenocarcinoma of prostate (PCA; T1a G2b, no treatment required) and removal of multifocal skin basalioma on the face. In early 2003, the complementary MRI showed a round, well-defined mass of 38 mm located in the upper pole of kidney allograft without bulging into the renal parenchyma and without close contact with the calyceal system. Additional MRI scans showed no signs of distant tumor spread, and there were no mass lesions involving the native kidneys. Considering the long-lasting immunosuppressive treatment and the radiologic criteria, RCC was diagnosed. Maintenance immunosuppression therapy at this time comprised cyclosporine twice daily. The patient underwent surgical treatment of the RCC by NSS in February 2003. After the intervention, graft function remained unchanged. No postoperative morbidity occurred with no modification of immunosuppressant treatment. The final pathologic diagnosis indicated grade II, stage pT1, clear cell RCC with free parenchymal margins of resection. The patient was followed up every 6 months by ultrasonography and CT scan, which revealed no evidence of local or metastatic spread. In 2005, the maintenance immunosuppression therapy was switched to rapamycin once daily. In 2007, a loss of kidney graft function occurred requiring a restart of chronic hemodialysis three times a week. However, in summer 2008, a routine ultrasonography during the follow-up revealed a spherical mass of <30 mm in the upper region of the kidney allograft, highly suspicious of local recurrence of the first RCC, which was confirmed by an additional abdominal contrast-enhanced abdominal CT scan (fig. 1, 2). The patient was free of clinical symptoms and additional staging examinations showed no signs of metastatic spread. Considering the poor function of the kidney allograft with the need for dialysis, and after discussion of the situation with the patient, a removal of the graft was decided. In September 2008, we performed the transplant nephrectomy without peri- and postoperative adverse events. The final pathology revealed a recurrence of a clear-cell adenocarcinoma of the kidney allograft (pT1a, G1). No sign of

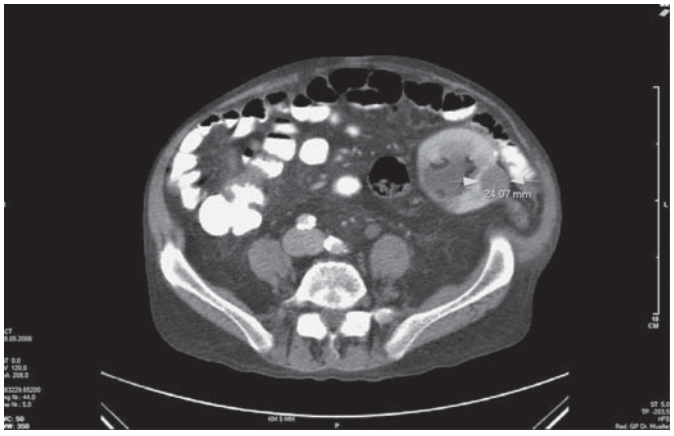

Fig. 1. Abdominal CT scan demonstrating a 24-mm rounded, solid upper pole kidney allograft tumor.

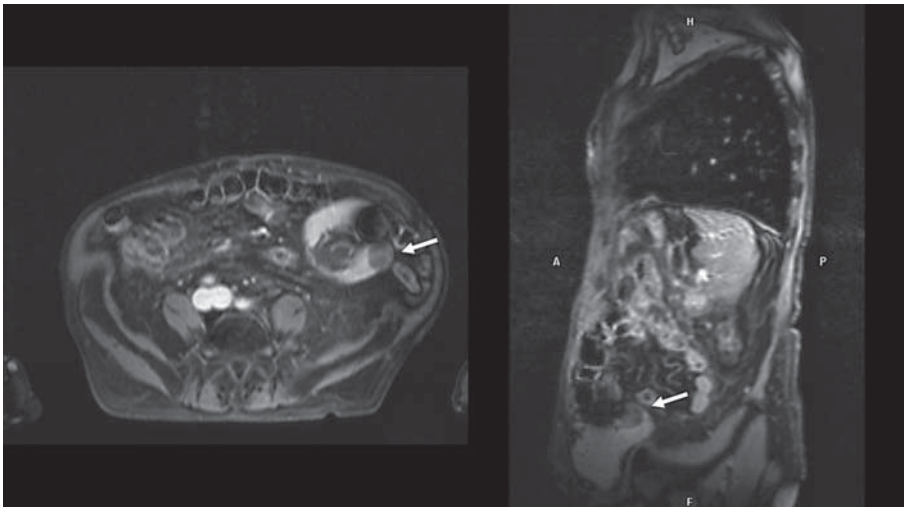

Fig. 2. Gadolinium-enhanced T_1-weighted MRIs showing a hypovascular upper pole lesion (arrow) in the renal allograft.

acute rejection was found in the transplanted kidney. The patient had an uneventful recovery and was discharged form the hospital after 6 days. During the last follow-up, the patient remained stable on hemodialysis and reported good overall health condition.

Discussion

Treatment options for de-novo RCC in renal transplant allograft include conservative or surgical interventions with or without discontinuation or modification of immunosuppressants [7]. Surgical options include transplantectomy for tumors larger than 4.5 cm and NSS for selected patients (smaller and well-demarcated lesions). Recent clinical experience with partial nephrectomy for RCC in non-transplant and transplant patients has demonstrated this technique to be a highly effective means of treating localized RCC with acceptable operative risk [4, 5, 8, 9]. Recurrence in nontransplant patients is estimated to be 1.2–5%, and the estimated survival rates free of local recurrence at 5 and 10 years have been reported to be 98.3 and 95.7%, respectively. In this paper, we present the second case of so far reported recurrent RCC in a kidney allograft after NSS. The first case was described by Goeman et al. [10] in 2006 as they reported on a patient with recurrent RCC in a transplanted kidney 2 years after NSS. The patient underwent percutaneous ultrasound-guided radiofrequency ablation.

The management of immunosuppression after discovery of the tumor in kidney allograft is not well established. The development of tumors among transplant patients may be related to the type and the duration of immunosuppression. There has been much speculation about immunosuppressive regimens and differences in the clinical stage of cancers. Pope et al. [11] reported a higher tumor grade in patients on cyclosporine than in those receiving azathioprine. In our case, the patient was on cyclosporin since this immunosuppressant was the only one used at that time. Later after the NSS, the immunosuppression was switched to sirolimus. More recently, interest has grown in the antitumor effect of rapamycin. Experimental data have shown that sirolimus may inhibit tumor cell growth and prevent RCC progression [12]. In other studies, patients who underwent partial nephrectomy and retained kidney function were administered minimal doses of immunosuppressants. In some other cases, the patients were switched to tacrolimus, targeting relatively low trough levels of <5 ng/ml.

In conclusion, patients after NSS for small renal masses in kidney allograft should remain under careful observation in order to detect early local recurrence. However, the risk of postoperative local tumor recurrence after NSS is presumably small and, if present, would likely be managed with complete removal of the allograft.

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