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De Novo Native Kidney RCC after Renal Transplantation

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Abstract: De novo cancer is the most common cause of death in renal transplant recipients. The immunosuppression for renal transplantation is the reason for de novo carcinogenesis and most of the immunosuppressant agents used for renal transplantation was shown to produce similar risks for carcinogenicity after kidney transplantation. The most common de novo cancer is skin cancer in the follow up of renal transplant recipients and the de novo solid organ cancers are relatively rare. Renal cancers were reported to be present up to 9-17% in the follow up of renal transplant recipients. It is the native kidney to have the de novo cancer mostly (85-100%). In this case report we present a male renal transplant recipient who developed native kidney RCC after 5 years of transplantation with radiological, macroscopic and microscopic images.
Keywords: De novo cancer, immunosuppression, renal transplantation.

INTRODUCTION

De novo cancer is the most common cause of death in renal transplant recipients [1, 2]. The immunosuppression for renal transplantation is the reason for de novo carcinogenesis and most of the immunosuppressant agents used for renal transplantation was shown to produce similar risks for carcinogenicity after kidney transplantation [3-5]. The most common de novo cancer is skin cancer in the follow up of renal transplant recipients and the de novo solid organ cancers are relatively rare[1-5]. Renal cancers were reported to be present up to 9-17% in the follow up of renal transplant recipients[5,6]. It is the native kidney to have the de novo cancer mostly (85-100%) [5,6].

In this case report we present a male renal transplant recipient who developed native kidney RCC after 5 years of transplantation with radiological, macroscopic and microscopic images.

CASE PRESENTATION

A 41 year-old male living donor renal transplant recipient was admitted to the urology clinics for recently detected renal mass in the right native kidney. The patient, who had been performed hemodialysis for five years because chronic renal failure related to renal parenchymal disease, received ABO incompatible kidney transplant from his wife 5.5 years ago. In the early postoperative follow-up he was treated for humoral allograft rejection/ acute cellular rejection type IIB. He has been receiving tacrolimus, mycophenolic acid and prednisolone for proper immunosuppression needed for allograft renal transplant. The radiological pre-transplantation diagnostic ultrasonography revealed 107x45 mm right and 104x56 mm kidneys with bilateral grade III renal parenchymal echogenicity indicating renal parenchymal disease and bilateral small sized (maximal diameter 15 mm) simple renal cysts. One month ago during follow up diagnostic work up with ultrasonography he was diagnosed to have asymptomatic incidentaloma in the right native atrophic kidney. Contrast enhanced MRI study performed to rule out malignancy revealed 24.4 mm x 23.8 mm nodular solid mass lesion located laterally in the upper pole of right native kidney showing minimal contrast enhancement, indicating suspicious malignant renal mass (Figure 1). FDG PET/CT study detected 25 mm hypermetabolic lesion in the upper pole of right native kidney, indicating potentially malignant renal mass. Open radical nephrectomy was performed via flank incision. Macroscopic view of the renal mass is seen in the Figure 2. After pathological examination of the renal mass, it was diagnosed as papillary renal cell carcinoma (RCC) (Figure 3). Written informed consent was obtained from the patient for the publication of the case report.

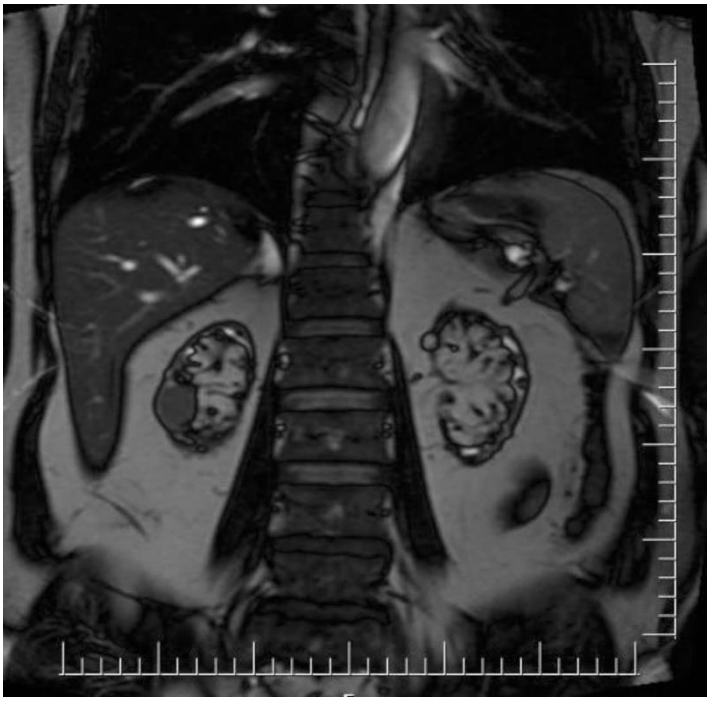

Fig-1: MRI study: 24.4 mm x 23.8 mm nodular solid mass lesion located laterally in the upper pole of right native kidney

Fig-2: Macroscopic view of the renal mass

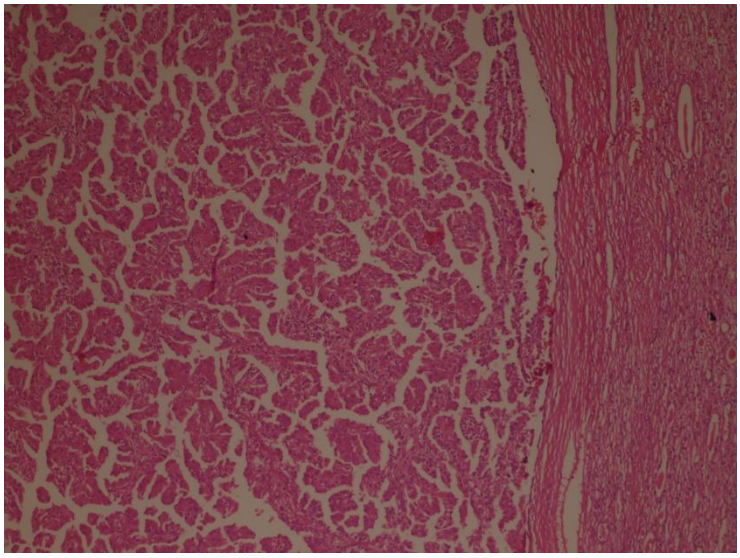

Fig-3: **Microscopic view of the renal mass : Tumoral tissue (RCC) in papillary pattern (on left side) in close proximity to renal tissue (on the right side) which shows histological evidence of chronic pyelonephritis (H&E x100)**

DISCUSSION

De novo cancer was attributed to be most common cause of death in renal transplant recipients [1, 2]. In a recently published series of renal transplant recipients with two-decade functioning transplant kidney (n=177) new cancer was reported to develop in 37% of recipients during the follow-up period , most of them (72%) were non-melanoma squamous cell carcinoma (NMSC) [1]. In rather larger series including more than two thousand renal recipients with more than 10 year functioning renal transplant also confirmed de novo cancer as a common cause of death in renal transplant recipients[2].

Immunosuppression for renal transplantation is associated with de novo carcinogenesis and most of the immunosuppressant agents used for renal transplantation were shown to have similar risks for carcinogenicity after kidney transplantation[3]. In a study comparing immunosuppressant agents, approximately 500 patients has been allocated in three groups for azathioprine and prednisolone, cyclosporine monotherapy or cyclosporine monotherapy followed by a switch to azathioprine and prednisolone after 3 months. Their median follow-up of surviving patients was 20.6 years and were found have de novo cancer in 46% (76% of these were NMSC) [3] similar to the studies above mentioned. However, use of mTOR inhibitors for immunosuppression has been suggested to have potential to decrease rate of some types of de novo cancers in renal transplants [4,5].

Excluding skin cancers, incidence of de novo kidney cancers in renal transplant recipients in another study was reported to be 9% (standardized incidence rate (SIR) of 4.9) with 85% of them occurring in the native kidney[5]. In another series of renal transplant recipients, de novo kidney cancer incidence was found relatively higher as 17%, all in native kidney [6].

The risk factors for de novo cancer development in the native kidney have been suggested as presence of native kidney renal cyst and duration of the hemodialysis [7]. This was the case for our patient who has pre-transplantation native kidney cysts and moderate period of pre-transplantation period of hemodialysis In a retrospective analysis of approximately 180 thousand solid organ transplant recipients, renal cancer risk was highest in renal recipients (SIR:6.66), but also was high in others (liver recipients SIR: 1.80 and heart recipients SIR: 2.90) [8]. Among all solid organ recipients, renal cancer incidence showed bimodal pattern over time with the first peak during the first year (SIR: 7.28-10.28) and the second peak during years 4-15 after renal transplantation[8]. Increased incidence in the first year was suggested to reflect undetected cancer in the cysts before transplant [8].

Regardless of any risk factors, EAU suggests annual screening for cancer and co-morbidity as mandatory in renal transplant patients and recommends annual ultrasonography of both native kidneys and graft [9].

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