

A Rare Cause of Hypertension and Acute Renal Failure in Kidney Transplant Recipients

Böbrek Nakli Hastalarında Hipertansiyon ve Akut Böbrek Yetmezliğinin Nadir bir Nedeni

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ABSTRACT

One of the postoperative vascular complications in renal transplantation is stenosis of the transplant renal artery. Stenosis of the iliac segment proximal to the transplant renal artery (Prox-TRAS) is an uncommon cause of graft dysfunction and hypertension. Impaired arterial perfusion of the transplant may be the leading cause of graft dysfunction or refractory hypertension. Selective treatment with percutaneous transluminal angioplasty (PTA) improves kidney function and hypertension.

We report two cases with prox-TRAS and renovascular hypertension after renal transplantation. The stenosis was in the iliac segment of anastomosis in these two cases.

KEY WORDS: Renal Transplantation, Hypertension, Graft dysfunction

ÖZ

Böbrek naklinde, ameliyat sonrası komplikasyonlardan birisi de nakil renal arter stenozudur. Nakil renal arter proksimalindeki iliak arter darlığı ise, hipertansiyon ve greft işlev bozukluğunun nadir bir nedenidir. Bozulmuş arteriyel kan akımı, greft işlev bozukluğu ve hipertansiyona yol açan ana nedendir. Perkütanöz translüminal anjioplasti (PTA) ile yapılan seçici tedavi, böbrek işlevi ve kan basıncı yüksekliğini düzeltmektedir. Burada, renal arter proksimalindeki iliak arterinde darlık ile buna ikincil renovasküler hipertansiyon ve akut böbrek yetmezliği nedeniyle başvuran, PTA ile başarılı bir şekilde tedavi edilen iki böbrek nakli hastası sunulmaktadır.

ANAHTAR SÖZCÜKLER: Böbrek nakli, Hipertansiyon, Greft işlev bozukluğu

INTRODUCTION

Transplant renal artery stenosis (TRAS) is a cause of severe post transplant hypertension with a widely variable reported incidence from 1 to 25% (1). It is thought to be more common in recipients of living kidneys where an end-to-side anastomosis of donor renal artery to iliac is made, compared to recipients of cadaveric grafts where an aortic cuff protecting the orifice of the renal artery can be harvested (2). Despite these observations, stenosis of the iliac segment proximal to the transplant renal artery (Prox-TRAS) is uncommon. In this report we present two patients with prox-TRAS and renovascular hypertension after renal transplantation, treated successfully with percutaneous transluminal angioplasty (PTA) with stenting.

Case 1:

A 53-year old female patient underwent a cadaveric transplantation for her end stage renal failure (ESRD) due to autosomal dominant polycystic kidney disease. She had been on CAPD treatment for 13 months. She was on metoprolol 100 mg/d and atorvastatin 10 mg/d treatment for her hypertension and hyperlipidemia coexisting during the pretransplantation period. The donor was a 66-year-old hypertensive patient on antihypertensive treatment with subarachnoid hemorrhage. The transplant surgery was uneventful after a 16 hour cold ischemia period. The recipient was discharged from the hospital on day 13 with a serum creatinine of 1 mg/dl and no antihypertensive treatment.

She presented 3 months after transplantation with an increase in serum creatinine to 2.0 mg/dl. Her blood pressure (BP) was 160/90 mmHg and she was on carvedilol (2 x 12.5 mg/d, orally) treatment for her hypertension for 1 month. She underwent a transplant kidney Doppler ultrasonography (USG) which revealed transplant renal artery stenosis proximal to the anastomosis. Renal artery angiography was performed, and a 70% stenosis of the 1.5 cm iliac segment proximal to the transplant renal artery was demonstrated (Figure 1). After a PTA and stent placement, there was no residual stenosis in the follow-up angiography (Figure 2). She is still on follow-up after 1-yr of transplantation with a creatinine level of 1.8 mg/dl. She is still on carvedilol treatment and her BP is 130/80 mmHg.

Case 2:

The 41-year-old male patient with ESRD secondary to hypertensive nephrosclerosis underwent a cadaveric kidney transplantation. He was on hemodialysis for 38 months and was not on any antihypertensive treatment during the pretransplantation period. The donor was a 23-year-old male who died in a traffic accident. The transplant surgery was uneventful after an 18 hour cold ischemia period. The patient was discharged on day 12 with a serum creatinine of 1.5 mg/dl and normal BP without any antihypertensive drug. He developed acute renal failure with oliguria and malign hypertension after an episode of diarrhea 1 year after transplantation when he was on Olmesartan treatment for 20 days for his



Figure 2: After a PTA and stent placement.

refractory hypertension. His serum creatinine was 7.5 mg/dl. Olmesartan and cyclosporine was discontinued, and two sessions of hemodialysis were required. Transplant renal Doppler USG showed renal artery stenosis proximal to the anastomosis and thereafter an angiography was performed which revealed a high grade stenosis of the iliac segment proximal to the transplant renal artery (Figure 3). Angioplasty obtained a 100% opening, however an 8 mm x 3 cm stent was also placed since



Figure 1: A 70% stenosis of the 1.5 cm iliac segment proximal to the transplant renal artery, first patient.



Figure 3: High grade stenosis of the iliac segment proximal to the transplant renal artery, second patient.

there was restenosis after recoil (Figure 4). Immediate improvement in renal function and hypertension was obtained after establishing the PTA. Two days later, the serum creatinine dropped to 1.2 mg/dl. He is still on follow-up with a serum creatinine of 1.3 mg/dl, two years after transplantation.



Figure 4: After a PTA and stent placement.

DISCUSSION

One of the postoperative vascular complications in renal transplantation is stenosis of the transplant renal artery. Prox-TRAS is an uncommon cause of graft dysfunction and hypertension. Impaired arterial perfusion of the transplant may be the leading cause of graft dysfunction or refractory hypertension (3).

Doppler USG is an accepted screening method for the detection of diminished graft perfusion. It seems to be

sensitive in detecting renal artery as well as iliac artery stenosis. Magnetic resonance imaging (MRI) is used for an accurate diagnosis of vascular complications and to decide for surgical or interventional treatment. Minimal invasive procedures like percutaneous transluminal angioplasty (PTA) and stent placement are safe and provide high technical success. They can be an alternative to surgical treatment of transplant renal artery stenosis (TRAS) (4). In our two cases, the stenosis was in the iliac segment of anastomosis. Resistant hypertension, decrease of diuresis and increase of serum creatinine concentration were observed in both presented patients. Prox-TRAS was diagnosed by Doppler ultrasonography and confirmed by angiography in both cases. Selective treatment with PTA and stent replacing improved kidney function and hypertension in both.

In conclusion; stenosis of the iliac segment proximal to the transplant renal artery (Prox-TRAS) should be kept in mind in kidney recipients with the presence of resistant hypertension and graft dysfunction. PTA of iliac arteries with stenting is an effective method of treatment in kidney recipients with prox-TRAS.

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