Successful Treatment of Resistant Hypertension Associated Ascıtes in a Renal Transplant Patient

Böbrek Nakli Olgusunda Assitle Birlikte Dirençli Hipertansiyonun Endovasküler Balon Dilatasyonu ile Tedavisi

The Treatment of Hypertension with Endovascular Balloon Dilatation in a Renal Transplant Patient

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Özet

Transplante renal arter stenozu (TRAS) renal arter lümen çapında % 50'den fazla daralma, böbrek parankiminde hipoperfüzyon, glomerüler filtrasyonda azalma ve plazma kreatinin konsantrasyonlarında yükselmeye olarak tanımlanmaktadır. Güncel tedavisinde endovasküler-balon-anjiyoplasti ve stent yerleştirilmesi gibi işlemler daha çok uygulanmaktadır. Bu yazıda renovasküler hipertansiyonla birlikte assiti olan ve başarılı endovasküler balon dilatasyonu ile düzelen olgu ilginç bulunduğu için sunuldu. Böbrek naklinden beş ay sonra kan basıncı180/110 mmHg, karında assit, kreatinin: 1.69 mg / dL, ayrıca akciğer grafisinde pulmoner ödem bulgusu olmayan ve diğer laboratuvar testleri normal olan 52 yaşındaki kadın hastada renal arter anostmoz hattında % 80 darlık tesbit edildi. Darlık endovasküler-balon dilatasyon ile % 10'a düşürüldü. İşlemi takiben, arteriyel kan basıncı normal sınırlara döndü ve ultrasonda assitin tamamen kaybolduğu görüldü. Transplante renal arter stenozu (TRAS) gelişen olgularda minimal invaziv bir girişim olan endovasküler-balon-dilatasyonu güncel, başarılı ve kolay uygulanabilmesi bakımından geçerli bir tedavi yöntemidir.

Anahtar Kelimeler

Renovasküler Hipertansiyon; Renal Arter Darlığı; Balon Dilatasyonu

Abstract

Transplante renal artery stenosis (TRAS) is defined as renal artery diameter reduction of more than 50%, which causes a reduction in glomerular filtration rate and a rise in plasma creatinine concentration. Current treatments are endovascular-balloon-angioplasty and stent implantation. We present the case with renal artery stenosis and ascites was treated with endovascular-balloon-dilatation. A 52-year-old female patient who was admitted to the nephrology clinic five months after the transplantation with blood pressure: 180/110 mmHg, ascites , and the chest radiograph did not show a pulmonary oedema, creatinine: 1.69 mg/dL other laboratory tests were normal. An occlusion of 80 % in a segment and the stenosis was reduced to 10 % by endovascular-balloon dilation. Following endovascular-balloon dilation, arterial blood pressure were normal and no ascites. Endovascular balloon dilation is minimally invasive method that is also successful, contemporary and valid procedures with easy applicability for the management of TRAS.

Keywords

Renovascular Hypertension; Renal Artery Stenosis; Balloon Dilation

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Introduction

Renal artery stenosis (RAS) is defined as renal artery diameter reduction of more than 50%, and accounts for 10% of all cases of hypertension [6]. RAS leads to a critical decline in renal perfusion pressure and results in hypoperfusion in renal parenchyma, and activation of the renin-angiotensin-aldosterone system (RAAS). It causes a reduction in glomerular filtration rate (GFR) and a rise in plasma creatinine concentration (>1.5 g/dl) [1].

The prevalence of transplant renal artery stenosis (TRAS) currently increases along with the raise in rate of renal transplantations. TRAS is a vascular complication that most frequently occurs within the first 6 months after kidney transplantation. Stenoses most commonly occur at the anastomotic site, proximal or distal to the anastomosis, and may happen due to twisting. It is among the significant causes of graft dysfunction or loss in transplant recipients [2]. TRAS may also lead to hypervolemia (oedema, ascites), refractory hypertension, and Pickering syndrome known as flash pulmonary oedema [9]. Although conventional angiography is the gold standard, doppler ultrasound is a commonly preferred tool for early diagnosis [3, 4, 5]. Early diagnosis and treatment of TRAS is important for prevention of graft damage and the systemic effects of hypertension. As a consequence of the developments in interventional radiology, operations including endovascular-balloon-angioplasty and stent implantation are more commonly performed treatment modalities [4,5,6,7,8].

Herein, we report an interesting case with transplant renovascular hypertension and ascites, both problems of whom resolved with a successful intervention of renal angioplasty.

Case Report

A 52-year-old female patient receiving hemodialysis three times a week for 7 years due to polycystic kidney disease was performed a cadaveric renal transplantation on August 23, 2015. The patient was admitted to the nephrology clinic five months after the transplantation with complaints of headache and abdominal distention. Physical examination revealed blood pressure: 180/110 mmHg, heart rate: 92 /min, body temperature: 36.7oC, ascites in abdomen, and bilateral 1+ pretibial oedema. Pulmonary examination was normal, and the chest radiograph did not show signs of pulmonary oedema. Antihypertensive therapy was gradually regulated as carvedilol 2x12.5 mg/d, furosemide 80 mg/d, indapamide 2.5 mg/d and lercanidipine 20mg/d. Immunosupressive therapy included mycophenolate mofetil (2 gr/d), tacrolimus (8 mg/d), and prednisolone (5 mg/d). Laboratory results were as follows; total blood count: normal, BUN: 29.3 mg/dL, creatinine: 1.69 mg/dL, Na: 137 mmol/L, K: 3.7 mmol/L, urinalysis: urine density: 1.019, protein:- , leukocyte: 2, erythrocyte: 9, C-reactive protein: 25.2mg/dL, erythrocyte sedimentation rate: 8 mm/h. Other laboratory tests were within normal limits. Portal doppler ultrasound performed in order to enlighten ascites aetiology revealed cysts in the spleen and liver, and normal diameter (1.8 cm) and flow of the portal vein. Blood and urine cultures and the culture from peritoneal fluid were negative. The acid-fast stain of the ascites fluid with transudate features was negative, and the cytologic examination of the fluid was benign. PCR for BK virus was negative. Decoy cells were negative in urine cytology. The patient was anergic for PPD.

The ultrasound revealed multiple septated cysts of 15x18 mm in the right and 31x35mm in the left native kidneys. In the right iliac fossa, infero-anterior to the transplant kidney, an anechoic image of 96x45x40 mm in size with irregular margins was observed. There was no hydro nephrosis, a urine leak or renal rupture. Creatinine in ascites fluid was normaly. Also the ultrasound revealed free fluid with a maximum depth of about 7 cm (ascites ?) in the perihepatic region, around intestinal loops, the pelvic area and prominent stenosis in the anastomotic site of the renal artery. (Image1)

Contrast-enhanced MR angiography showed high degree narrowness at the anastomotic site of the iliac branch of renal artery. An occlusion of 80 % in a segment of 1 cm at the end to side anastomosis area of the right iliac artery was detected by renal angiography performed by interventional radiology. The stenosis was reduced to 10 % with endovascular-balloon dilation. (Image 2)

Following the balloon dilation arterial blood pressure turned to normal limits, and antihypertensive treatment was discontinued. In patient's follow up two weeks after the operation, complaint of abdominal distention had dissolved, blood pressure was within normal limits, and no ascites was observed on ultrasound.

Discussion

While RAS is defined as the narrowing of the renal artery of more than 50%, even stenosis greater than 50% may occasionally remain asymptomatic. However, the narrowing of more than 70% is generally symptomatic, and leads to refractory hypertension [7]. Our patient had resistant hypertension and asci-



Image 1. Renal artery stenosis before the procedure



Image 2. Renal artery after the procedure

tes, and arterial blood pressure remained above 140/90 mmHg despite quadruple antihypertensive therapy. Ascites may occur due to technical complications of the transplant surgery as well as hepatic causes, cardiac diseases and malignancies. However, none of these reasons were detected in our patient. The ascites related to renal transplantation is usually a massive transudative accumulation due to renal vein stenosis [8]. The difference of our patient was development of massive transudate due to renal artery stenosis five months after the renal transolantation. In the literature, it is reported that flash pulmonary oedema may ensue owing to renal artery stenosis, particularly in case of bilateral stenosis [8]. Nonetheless, we did not detect any signs of pulmonary oedema in clinical or radiological examination of the patient.

TRAS is a vascular complication following renal transplantation, current treatment of which includes approaches of endovascular-balloon-dilation and stent implantation [2,4,7]. Salsamendi et al. reported good outcome with endovascular balloon dilation on three patients with TRAS [1]. Braga et al. achieved a success of 93.7 % on 16 patients with TRAS using endovascular balloon dilation [2]. In a literature review of 32 studies by Ngo et al., success rate of 65.5 % to 94 % was remarked for treatments of endovascular balloon dilation and stent implantation in TRAS. However, they noted that no consensus existed for the appropriate intervention [3]. Biederman et al compared drug eluting stents and bare metal stents in endovascular balloon dilation on 45 patients, and indicated that long term outcomes of drug eluting stents were superior [7]. In our patient the stenotic segment was widened by 90%, and ascites and hypertension completely resolved.

How can we explain the existence of severe ascites without pulmonary oedema? We considered that ascites formation in the abdomen may have been facilitated by supervening RAS on grounds of pre-existing compansated portal hypertension due to liver cysts.

Consequently, endovascular balloon dilation and stent placement are minimally invasive methods that are also successful, contemporary and valid procedures with easy applicability for the management of TRAS.

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Competing interests

The authors declare that they have no competing interests.

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