Nephrol Dial Transplant (2002) 17: 2268–2269

Nephrology
Dialysis
Transplantation

Images in Nephrology
(Section Editor: G. H. Neild)

Acute pain over the kidney graft and Duplex-sonographic findings mimicking complete renal transplant vein thrombosis

Adina Voiculescu[1], Tomas Pfeiffer[2], Matthias Brause[1], Wilhelm Sandmann[2] and Bernd Grabensee[1]

[1]Department of Nephrology and Rheumatology, [2]Department of Vascular Surgery and Renal Transplantation, Heinrich-Heine-University, Düsseldorf, Germany

Keywords: Duplex-sonography; renal transplant vein thrombosis; renal vein kinking; renal vein obstruction

A 33-year-old male ESRD patient received a cadaveric left kidney allograft in May 2001. The vascular anatomy of the kidney was normal but the renal vein was quite long. On the first postoperative day, Duplex-ultrasound showed a well perfused graft, but the patient required further dialysis. On the fourth postoperative day the patient complained about tenderness and pain over the graft. Routine Duplex-sonography showed again normal flow spectra (Figure 1). Three hours later the patient developed severe pain over the graft region. Immediately repeated B-mode-ultrasound and Doppler-sonography could not detect bleeding, urinary leakage or other local changes but surprisingly the Doppler waveform showed oscillating flow resulting in a zero forward net flow (Figure 2).

Because of the typical Duplex-sonographic criteria of outflow occlusion, a complete renal vein thrombosis was anticipated and the patient was transferred within the next hour to the operating room for venous thrombectomy without any other imaging. The intraoperative aspect seemed to confirm the diagnosis of renal vein occlusion: the capsula of the kidney was completely ruptured from a perirenal haematoma, the graft revealed an enormous size and a bluish colour. After mobilizing the kidney, kinking of the renal vein due to shrinking of the surrounding soft tissue and unfavourable tilting of the graft became apparent as the cause of renal vein obstruction. Fortunately venous thrombosis was not present. The fibrotic tissue surrounding the renal vein was removed and the kidney

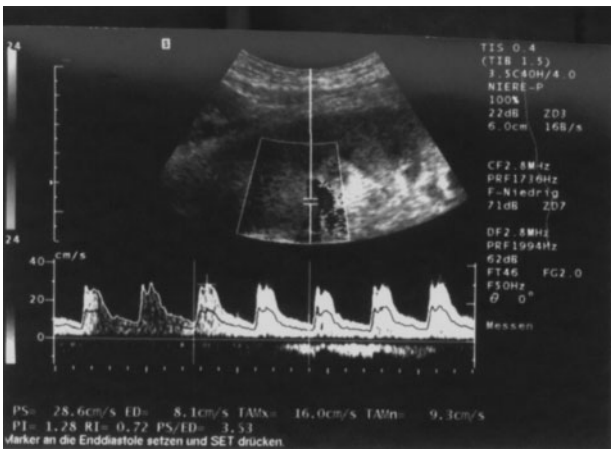

Fig. 1. Routine Doppler-sonographic findings on day 4 after transplantation.

was placed in an oblique anatomical position to avoid compression of the vein.

Postoperative Duplex-sonography revealed unrestricted renal perfusion with normal arterial and venous spectra (Figure 3). Diuresis started 2 weeks later and no further haemodialysis was necessary. Serum creatinine at dismission was 2.0 mg/dl. During follow-up over 12 months kidney function has remained stable.

Venous thrombosis early after kidney transplantation is an infrequent but devastating complication with consecutive graft loss. Main causes can be mechanical obstruction of renal artery and vein, thrombophilic disorders, severe rejection and immunosuppressive medication. Only in a few cases has successful treatment of renal allograft vein thrombosis either by surgery [1] or by thrombolysis [2] been reported. In all these patients the diagnosis was established very early after onset of symptoms, mainly by Duplex-sonography. Reversal of flow during diastole, loss of venous spectra and increase of transplant kidney size were reported to be signs of renal vein thrombosis [3].

Correspondence and offprint requests to: A. Voiculescu, MD, Department of Nephrology and Rheumatology, Heinrich-Heine-University, Moorenstrasse 5, D-40225 Düsseldorf, Germany. Email: voicules@uni-duesseldorf.de

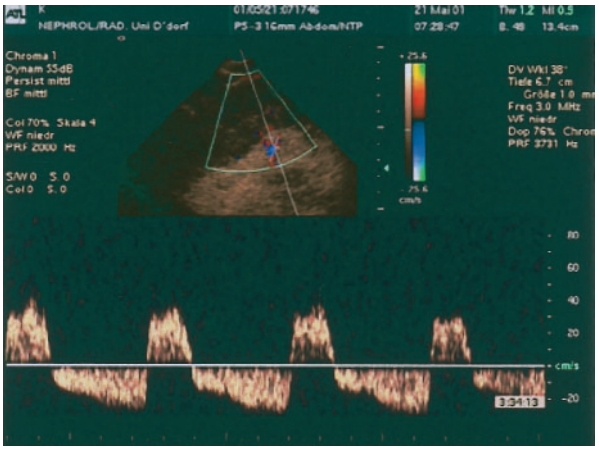

Fig. 2. Doppler-sonography during acute presentation with pain over the graft on day 4 after transplantation. Reversed diastolic flow was suspicious for renal vein thrombosis.

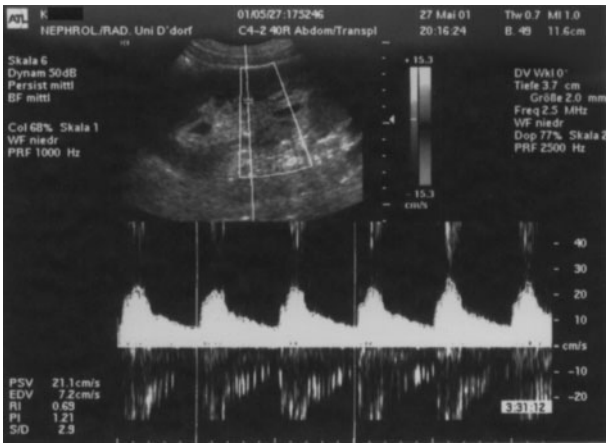

Fig. 3. Doppler sonographic findings after surgical revision for suspected transplant vein thrombosis.

In the case presented here typical Duplex-sonographic findings of complete obstruction of the graft vein were present. Early recognition and immediate surgical intervention without the application of other time consuming diagnostic steps as angiography or CT scan was essential for the outcome of graft function in this patient. The intraoperative finding was surprising as no thrombosis was found. Instead, mechanical obstruction due to acute venous kinking was responsible for the clinical symptoms and the Duplex-sonographic findings. Probably migration of the graft after postoperative mobilization was one possible cause for kinking of the transplant vein. Fortunately we did not decide on thrombolysis, because this would not have solved the mechanical cause of venous outflow obstruction.

This case emphasizes the importance of Duplex-sonography in the diagnosis of renal vein obstruction in kidney transplantation. As the method cannot differentiate between thrombosis and other causes of venous obstruction, surgical revision seems more effective, quicker and less risky.

References

1. Renoult E, Cormier L, Claudon M *et al*. Successful surgical thrombectomy of renal allograft vein thrombosis in the early postoperative period. *Am J Kidney Dis* 2000; 35: E21
2. Lee G, Watson CW, Mammen KJ, Phillips-Hughes J, Morris PJ. Successful selective thrombolysis of a spontaneous transplant renal vein thrombosis. *BJU Int* 1999; 83: 869–870
3. Grenier N, Douws C, Morel D *et al*. Detection of vascular complications in renal allografts with color Doppler flow imaging. *Radiology* 1991; 178: 217–223