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LETTER TO THE EDITOR

Kidney transplantation in a patient with congenital vena cava and right vena iliaca communis hypoplasia

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Renal transplantation is an established treatment for end-stage renal disease. The standard surgical technique is extraperitoneal transplantation into the iliac fossa by anastomosis of the renal vessels to the iliac vessels [1]. Technical problems occur in patients suffering from malformations of the arterial or venous vessels [2]. Often, arterial reconstructions are necessary because of the presence of arterial lesions [3]. Reported cases of successful renal transplantation in patients with inferior vena cava (IVC) dysplasia are rare [4]. Alternative surgical procedures for venous anastomosis are anastomosis of the renal vein to the superior or inferior mesenteric vein, reconstruction of the IVC with an interposition graft or venous anastomosis to the portal vein [5–7]. We report a successful allogenous renal retransplantation in a 58-year-old Caucasian female patient. She developed end-stage renal disease resulting from chronic glomerulonephritis. In addition to IVC dysplasia, subsequent thrombosis of the right common iliac vein was described. Before transplantation, a cavography revealed complete thrombosis of the infrarenal IVC and all iliac veins except for the left common iliac vein. Venous draining was assured by azygos and hemiazygos veins. The left common iliac vein appeared suitable for renal allograft anastomosis. In June 2007, a living-related renal transplant was performed into the left iliac fossa at another transplantation center. As a result of arterial thrombosis, the graft had to be removed 1 day after implantation. The patient's medical condition worsened rapidly after transplant failure and required an urgent retransplantation. Because of the IVC hypoplasia and the expected pronounced adhesions in the left iliac fossa, an alternative surgical technique was preferred.

After allocation of a suitable organ by EUROTRANSPLANT, an intraperitoneal transplantation was performed by a midline laparotomy. The renal artery was anastomosed with the right iliac artery by an arteria iliaca interposition graft of the donor. The interposition graft was necessary because of the insufficient length of the renal artery. The renal vein was anastomosed via a venous iliac interposition graft to the portal vein (Fig. 1). All anastomosis of the vessels were performed as continuous suture with Prolene 6.0 CC (Ethicon, Norderstedt, Germany). The ureteroneocystostomy was performed using a modified Gregoire-Lich technique. During the same surgery, for lack of space, the native kidney was explanted. Furthermore, the futile kidney could only be a reason for recurrent infections. Immunosuppression consisted of tacrolimus, steroids, mycophenolate mofetil and induction with rabbit antithymocyte-globulin. The postoperative magnetic resonance angiogram revealed proper arterial and venous graft perfusion.

The initial postoperative course was unremarkable; graft function was good, with continuously declining serum creatinine down to 1.3 mg/dl. However, on 13th postoperative day (POD), creatinine increased to 2 mg/dl.

The clinical suspicion of rejection was confirmed by renal biopsy. The pathologic report specified an acute rejection graded BANF IA. The rejection was treated by a pulsed dose of prednisolone (500 mg daily over 3 days). Despite this treatment, renal function did not improve. A control biopsy showed a recurring acute rejection with a humoral component (C4d positive). The rejection treatment was escalated with plasmapheresis and immunoglobulin treatment (20 g immunoglobulin daily over 3 days). On POD 43, a repeated cross match was positive. Antibodies against HLA-DQ4 and DR8 could be detected in a luminex-positive control ELISA test. Plasmapheresis and immunoglobulin medication were repeated. In addition, as a rescue treatment, the patient received rituximab. As a result of extended immunosuppressive therapy, graft function improved. The following ELISA tests could no longer detect antibodies.

The patient was discharged on POD 50 in a good clinical condition and with stable renal function. Serum creatinine was 1.5 mg/dl. Three months after retransplantation, the patient experienced severe pneumonia and sepsis requiring artificial ventilation and acute renal failure requiring dialyses. After successful treatment of the pneumonia, the patient was weaned from the ventilator, and the renal function recovered. The patient was discharged from the hospital with stable graft function and a creatinine level of 1.5 mg/dl.

One year after transplantation, the patient is doing well, with a stable renal function. There have been only a few reported cases of renal transplantation in patients with IVC

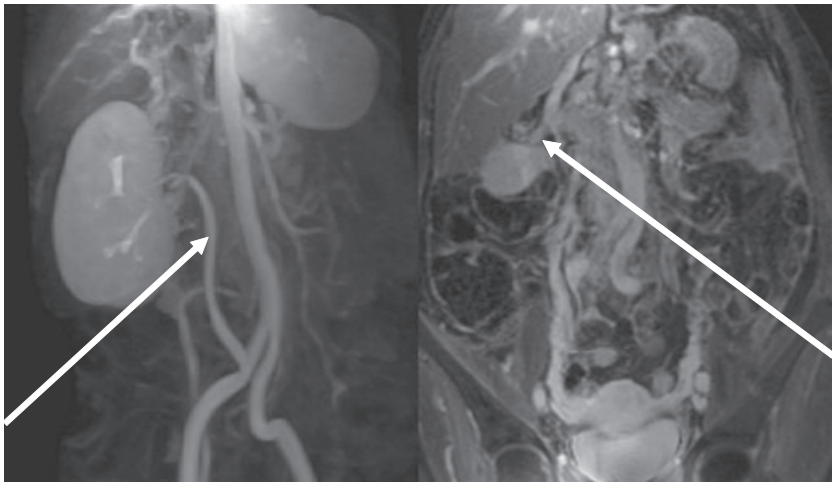

Figure 1 Arterial angiography: arterial inflow, and angio MRI: Venous outflow. The angio MRI indicated proper arterial flow into the transplanted kidney graft and a good venous outflow into the portal vein.

anomalies. Recently, this technique was only described for children [5,7,8]. Our case indicates that adult patients with IVC anomalies should not be denied renal transplantation. In the presented case, the reconstruction of the inferior cava would have been more difficult. On one hand, a suitable interposition graft would have been required and on the other hand, the surgical complexity would have been much higher. For the same reason, we decided against the preparation of the upper mesenteric vein. Venous drainage by the portal vein is feasible and secure as described previously in a report of a successful transplantation in a child with vena cava thrombosis [9]. The clinical course was complicated by a severe rejection episode, which might have been a result of the previous transplantation. The powerful rejection treatment caused severe pneumonia. Since the beginning of combined pancreas and renal transplantation, an immunologic benefit of portal drainage has been discussed [10]. Some studies suppose that the antigen presentation by hepatic macrophages based on portal venous drainage can lead to systemic hyporesponsiveness against MHC I antigens of solid grafts [11]. Moreover, it seems to be difficult to differentiate whether these advantages are consequences of immunologic progress or variation of the venous outflow [12]. No study was able to prove that there is a real benefit and the reported case does not allow any conclusion [12].

In summary, venous drainage through the portal vein in renal transplantation in cases of cava inferior anomalies is technically feasible.

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