Multiple vascular anomalies in a paediatric kidney transplant recipient

Salvatore Gruttadauria¹,², Jacopo Vigano¹,³, Settimo Caruso¹, Marcello Spampinato¹, Sergio Li Petri¹, Kristine Henderson¹, Paola Salis¹ and Bruno Gridelli¹,²

¹Istituto Mediterraneo Trapianti e Terapie ad Alta Specializzazione—University of Pittsburgh Medical Center in Italy, Palermo, Italy, ²Thomas Starzl Transplantation Institute, University of Pittsburgh Medical Center, Pittsburgh, PA, USA and ³Scuola di Specializzazione in Chirurgia Generale II, Università degli Studi di Pavia, Pavia, Italy

Keywords: abdominal aorta laterally deviated; paediatric kidney transplantation; persistent left superior vena cava; volume rendering reconstruction; radiographic techniques; vascular anatomy

A 9-year-old girl with end-stage kidney disease secondary to right renal agenesis, and left hydronephrosis due to severe vesicoureteral reflux complicated by recurrent urinary tract infections, was referred to our hospital, to be considered for renal transplantation. Significant past surgical history included surgical correction of oesophageal atresia, imperforate anus and bladder augmentation.

Pre-operative work-up included renal ultrasonography and renal scintigraphy, as well as echocardiography, which were reported normal. Because of worsening of kidney function, the patient was considered for haemodialysis treatment and then underwent permanent dialysis catheter placement. The apparent left-sided position of the right atrium, on the post-procedure chest X-ray, was noted to be unusual. Following the X-ray, a chest and an abdominal CT scan were performed to evaluate vascular anatomy.

Vascular reconstruction obtained with endovenous contrast CT demonstrated:

(i) a missing fusion of left innominate vein (in yellow, comprised of left internal jugular vein and left subclavian vein) with superior vena cava (in red). The superior vena cava drains the right innominate vein and the left external jugular vein. A thin anastomotic branch between the left innominate vein and the superior vena cava can be seen (Figure 1). The left innominate vein trunk runs laterally to the left of the mediastinum and empties directly into the right atrium [1].

(ii) An abnormal aortic-iliac anatomy with abdominal aorta laterally deviated to the left side, and the left iliac artery deviating from the median line, running posterior to the rectum.

(iii) The left ureter passed far from the aorta, laterally to the left colon and entered anteriorly into the bladder.

After CT scan evaluation, patient began haemodialysis treatment without any problems. Nine months later, the patient underwent cadaveric paediatric
kidney transplantation with intra abdominal implantation of the graft [2]. The anatomy of the donor kidney was normal, with a single artery, a single vein and a single ureter. Arterial reconstruction was performed between renal artery and the laterally deviated intra abdominal aorta. Venous anastomosis was performed between renal vein and common right iliac vein; the donor ureter was implanted into the augmented bladder with interposition of a double J stent as a transanastomotic tutor (Figure 2).

Post-operative course has been uneventful; 10 days after surgery, permanent dialysis catheter was surgically removed.

Acknowledgements. The authors would like to thank Warren Blumberg for his help in editing this article.

Conflict of interest statement. None declared.

References


Received for publication: 26.6.07
Accepted in revised form: 28.6.07