A Strange Case of Renal Graft Lithiasis

Lithiasis following renal transplantation is a rare complication with an incidence less than 1%.[1]

We present a 43-year-old Caucasian female with a history of chronic kidney disease secondary to ischemic nephropathy, arterial hypertension, and secondary hyperparathyroidism on peritoneal dialysis since February 2018. She was admitted for a deceased donor kidney transplant in June 2019. Induction immunosuppression included basiliximab, prednisone, mycophenolic acid, and tacrolimus. The surgery occurred without complications and a double-J ureteral stent was placed as part of the transplantation protocol.

The patient was discharged at day 7 with a serum creatinine 1.01 mg/dL and with three graft ultrasounds without changes. Two-weeks later started cinacalcet 30 mg daily to control hyperparathyroidism with hypercalcemia. According to the protocol of our unit, the stent is removed 1 month after transplantation. Due to a delay in the schedule, this procedure was performed on the 45th day after the transplant. The patient always had preserved diuresis and no urinary symptoms. Stent removal was attempted by cystoscopy, but the procedure was unsuccessful. An abdominal X-ray [Figure 1] showed a well-placed double-J stent, with hyperdense images in the extremities suggesting lithiasis. Two months later, extracorporeal shock wave lithotripsy was performed, and small calculi were excreted. Another attempt for stent removal failed and 3 weeks later, the stent was removed by open surgery.

Renal lithiasis investigation showed: normal serum calcium (9.7 mg/dL), phosphorus (2.2 mg/dL), magnesium (1.21 mg/dL), and bicarbonate (25.3 mmol/L, 22-26 mmol/L); increased PTH (541 pg/mL); sterile urine culture; diminished urinary uric acid excretion (28 mg/24 h, 250–750 mg/24 h); and normal urinary excretion of phosphorus (0.9 g/24 h, 0.4-1.3 g/24 h), calcium (126 mg/24 h, 100–300 mg/24 h), magnesium (75.9 mg/dL, 73–1229 mg/dL), citrate (276 mg/24 h, 250–1153 mg/24 h), and oxalate (20.1 mg/24 h, 4–31 mg/24 h). The chemical analysis of a kidney stone revealed a mixed calcium and phosphorus composition (brushite). A CT was not performed on the donor's kidney to exclude lithiasis, however, there was no history of the previous lithiasis, and the recipient of the other organ did not develop any changes.

Figure 1: Double-J stent, with hyperdense images in the extremities suggesting lithiasis

Urolithiasis in the context of transplant is a quite rare event.[2] Typical renal colic or pain is usually absent because of denervation of the transplant kidney and ureter. Rarely, the presentation resembles acute rejection or acute tubular necrosis.[1] Factors predisposing to stone formation are hyperparathyroidism, hypercalciuria, recurrent urinary tract infection, and hypocitraturia due to renal tubular acidosis. Less common risk factors include outflow obstruction, foreign bodies such as stents, nephrostomy tubes, suture materials, and donor lithiasis.[1]

After the investigation, we assume that the cause was secondary hyperparathyroidism, with the contribution of some calciuric effect of cinacalcet. It has been reported that cinacalcet treatment for Post-transplantation persistent hyperparathyroidism is a contributing factor for graft calculus formation due to hypercalciuria. Even transient, hypercalciuria has the potential to promote renal calcium deposition.[3] However, this is a rare situation since most patients undergoing renal transplantation have this complication and do not develop lithiasis.

Keeping in mind the absence of typical symptoms, we must have a high index of suspicion, to make the diagnosis in time. Thus, the treatment will be quick, and we will avoid the consequences for the renal graft.

Informed consent

Informed consent to publish was obtained from the patient.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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