

Urinary reflux to the non-functioning previous renal graft

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ABSTRACT

Nuclear medicine imaging is routinely used for evaluation of perfusion and function of the transplanted kidneys. At present, the radiopharmaceutical of choice for this study in our center is Tc 99m-Ec. Complications of the kidney graft are demonstrable in the early and delayed images. One of these complications is vesicoureteral reflux to the graft or to the native kidneys. We present a 27 year old patient with elevated BUN and Cr ten days after kidney transplantation. He previously had failed renal transplantation due to rejection. Tc-99m EC renal scan revealed decreased perfusion and function suggesting acute rejection. In the late functional images (at 24 minute), vesicoureteral reflux to the previous non-functioning graft was also noticed on the right side of the pelvis. We recommend considering vesicoureteral reflux while interpreting renal transplant imaging since this can be easily mistaken with other complications such as urine leakage.

Key words: Tc-99m EC; Transplanted kidney; Vesicoureteral reflux; Renal scintigraphy

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INTRODUCTION

Renal scintigraphy is the method of choice for evaluation of perfusion, function, and complications of the transplanted kidney [1]. Different radiopharmaceuticals are used for renal transplant evaluation such as Ga-67 citrate, fibrinogen labeled with I-125 or I-131, Tc-99m-sulfur colloid, Tc-99m DTPA and Tc-99m EC [1], among which Tc-99m EC is routinely used at our department.

Vesicoureteral reflux is common in renal transplant patients and can be misleading in some cases. In the current study, we report a case of VUR to the previous non-functioning renal graft during evaluation of recurrent transplant.

CASE REPORT

A 27 year old male with history of ESRD due to membranous glomerulonephritis since 13 years ago

was referred to our department for renal graft evaluation. He underwent kidney transplantation twice: first in 2000 from his uncle and the second graft from cadaver in 2012. His first graft was rejected after ten years. The patient was referred to our department for evaluation of perfusion and function of the transplanted kidney ten days after his second transplantation due to rising creatinine level. After intravenous injection of 10 mCi Tc-99m EC, posterior dynamic flow images from the abdomen and pelvis using a dual head gamma camera (ECAM Siemens) equipped with a parallel hole low energy high resolution collimator were acquired. Then dynamic functional images every one minute up to 30 minutes were obtained. Flow images showed decreased perfusion of the graft (Figure 1). Initial uptake and excretion of the transplanted kidney was also decreased. This pattern suggested acute rejection of the graft. In dynamic images, at 24 minute, reflux to the previous graft was clearly visualized (Figure 2, 3).

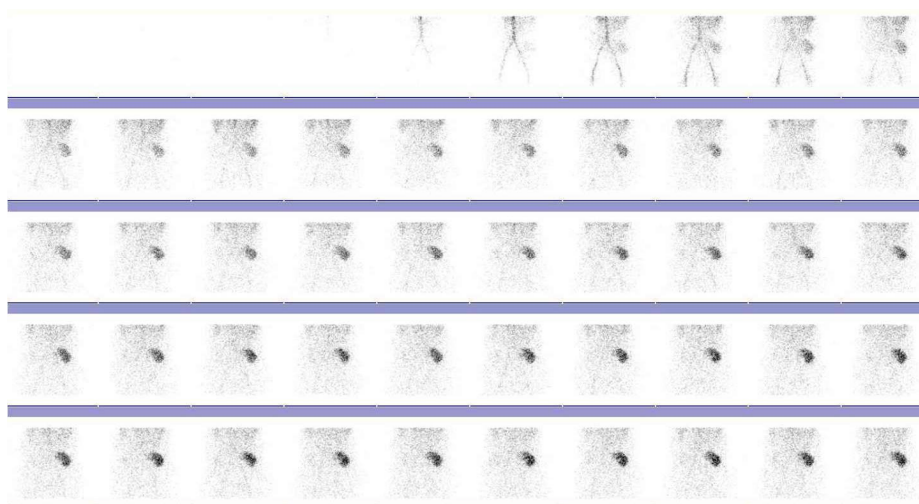


Fig 1. Flow images of the study. The perfusion of the graft is moderately decreased.

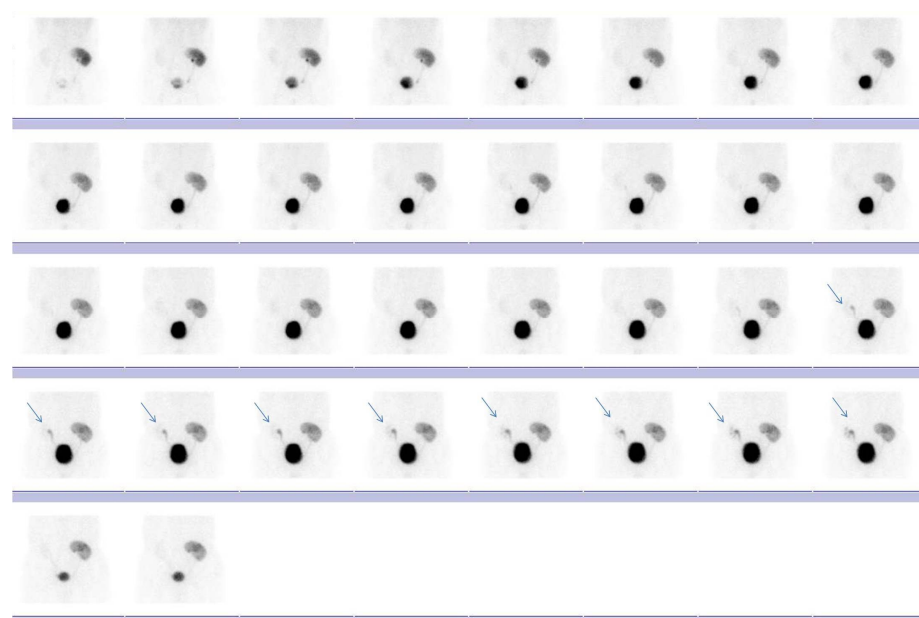


Fig 2. Dynamic functional imaging of the study. Note progressive accumulation of the tracer in the cortex of the transplanted kidney (cortical retention). There is also a clear VUR to the non-functioning graft on the right side of the pelvis (arrows).

Our patient did not have any symptoms such as UTI or pyelonephritis, so further work up and treatment were not necessary. We followed the patient for 6 weeks and the function of his graft improved gradually after appropriate management.

DISCUSSION

The rate of complications that involve a transplanted kidney is 2-20%. In one study by Praz and coworkers

the most frequent complications were urine leakage and ureteral stricture [2].

One of the complications after kidney transplantation is vesicoureteral reflux which can involve the native or transplanted kidney [3]. In a study by Vianello and coworkers, VUR was not hazardous for the transplanted kidney in long term follow up [4]. Their results were confirmed by another study by Mastro Simone and coworkers. They showed the risk

of rejection episodes and UTI did not have significant differences between kidney recipients with VUR and without VUR, however the risk of HTN was higher in patients with VUR [5].

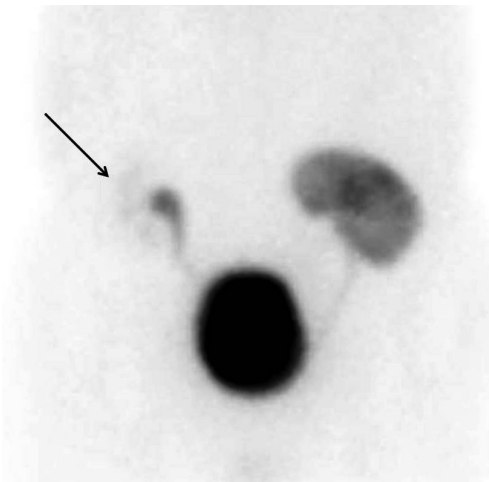


Fig 3. Enlarged view of the pelvis. Note clear VUR to the pyelocalyceal system of the non-functional graft on the right side of the pelvis (arrow).

VUR to the previous graft or native kidneys is a frequent occurrence which usually is without any symptoms or signs. We recommend considering VUR in interpreting renal transplant scans since this can be mistaken with urine leakage very easily [6].

REFERENCES

1. Dubovsky E, Malley J. Evaluation of renal transplants. In: Henkin RE. Nuclear medicine. 2nd ed. Philadelphia: Mosby Elsevier; 2006. p. 1063-69.
2. Praz V, Leisinger HJ, Pascual M, Jichlinski P. Urological complications in renal transplantation from cadaveric donor grafts: a retrospective analysis of 20 years. *Urol Int.* 2005;75(2):144-9.
3. Barrero R, Fijo J, Fernandez-Hurtado M, García-Merino F, León E, Torrubia F. Vesicoureteral reflux after kidney transplantation in children. *Pediatr Transplant.* 2007 Aug;11(5):498-503.
4. Vianello A, Pignata G, Caldato C, Di Falco G, Calconi G, Fandella A, Rabassini A, Maresca MC. Vesicoureteral reflux after kidney transplantation: clinical significance in the medium to long-term. *Clin Nephrol.* 1997 Jun;47(6):356-61.
5. Mastrosimone S, Pignata G, Maresca MC, Calconi G, Rabassini A, Butini R, Fandella A, Di Falco G, Chiara G, Caldato C, et al. Clinical significance of vesicoureteral reflux after kidney transplantation. *Clin Nephrol.* 1993 Jul;40(1):38-45.
6. Sadeghi R, Javad A, Zakavi R, Kakhki VR. Vesicoureteral reflux to the non-functional graft on a renal transplant imaging with ^{99m}Tc-DTPA. *Rev Esp Med Nucl.* 2009 Nov-Dec;28(6):305-6.