

Percutaneous treatment of an arteriovenous fistula and pseudoaneurysm after a transplanted kidney biopsy

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To the Editor:

Percutaneous biopsy is an essential tool for assessing and managing transplant patients with renal graft dysfunction. However, it is an invasive procedure and, therefore, is not without risk.

Arteriovenous fistula (AVF), associated or not with pseudoaneurysm, following a percutaneous renal biopsy, is an uncommon complication, occurring in between 0.34% and 6.3% of cases.¹ Most of these vascular lesions have little clinical relevance and simply require observation and monitoring. However, sometimes they can cause kidney graft dysfunction, high blood pressure or serious bleeding,^{2,14} requiring urgent treatment.

We report a case of post-renal biopsy AVF and pseudoaneurysm in a transplant patient who presented with haematuria. The vascular lesion was identified by angiography and renal Doppler ultrasound and treated endovascularly by embolisation using micro coils.³

CASE STUDY

Our patient is a 48-year-old female with high blood pressure, diabetes, dyslipidaemia and chronic kidney disease who received a deceased donor kidney transplant. Fifty-seven days after transplantation, she had normal renal function with creatinine of 1mg/dl and without proteinuria. Twenty-six months after transplantation, she sought consultation due to general malaise, decreased appetite, epigastric pain, vomiting and diarrhoea for 3-4 weeks. She had blood pressure (BP) of 156/80mmHg, a heart rate of 82bpm and oliguria. Acute renal failure was demonstrated with creati-

nine of 12mg/dl, metabolic acidosis and hyperkalaemia (6.75 mmol/l).

We initially suspected acute renal failure secondary to acute graft rejection due to oral intolerance to immunosuppressive drugs, since we observed suboptimal plasma tacrolimus levels. Given this suspicion, we started the patient on corticosteroids and a renal biopsy was performed for histological diagnosis, which displayed lesions compatible with Banff classification type I acute cellular rejection. At biopsy, she had creatinine of 3.51mg/dl and a glomerular filtration rate (GFR) of 15%.

After the biopsy, the patient developed marked haematuria with clots, although it was not occlusive. A renal Doppler ultrasound displayed a haematoma in the middle lobe with inner blood flow, entry and exit arches, suggestive of AVF.

Selective catheterisation was performed on the renal artery by femoral route using a Van Schie catheter. The angiography revealed a segmental renal branch AVF with high-flow and another two smaller AVF dependent on the latter, all in the middle third of the kidney (Figure 1). We proceeded to catheterise the affected renal branch, releasing two 0.5cm (Cook) micro coils to treat the high-flow fistula. The two remaining fistulas thrombosed spontaneously after catheterisation of the affected branch with a multipurpose catheter, prior to a further release of micro coils.

The corroborative angiography showed normal permeability in the remaining renal branches and perfusion of the parenchyma (Figure 2). At this time, the patient had creatinine of 5.23mg/dl and a GFR of 9%. She showed good BP control, between 120-139/70-85mmHg and higher diuresis of 1800ml/day. Post-procedure progression was satisfactory without recurrence of haematuria and a progressive improvement in renal function (after two months, she had creatinine of 2.84mg/dl and a GFR of 20%), as well as resolution of the AVF and pseudoaneurysm.

DISCUSSION

Percutaneous renal biopsy is the method most widely used to obtain renal tissue for diagnosis of renal diseases. The possibility of ultrasound guidance and automated devices have resulted in the more frequent and safer use of this procedure.

Associated complications of this procedure include: perirenal haematoma, haematuria, AVF, pseudoaneurysm and arterio-calyceal fistula. An AVF is formed by a simultaneous lesion to the wall of arteries and adjacent veins, resulting in a communication between the two vessels.

It has been shown that 70% of all AVF are resolved spontaneously within the first 1-2 years and that 30% persist or become symptomatic.⁸ A persistent AVF can cause haematuria, renal failure



Figure 1. Selective renal angiography displaying an arteriovenous fistula in the segmental renal branch.



Figure 2. Corroborative renal angiography following embolisation of the arteriovenous fistula with micro coils.

and high blood pressure. Haematuria is the most common complication¹⁰ and may cause obstructive renal dysfunction.

It is generally accepted that an AVF can be reliably diagnosed by Doppler ultrasound.⁴ In our case, renal angiography confirmed the AVF and pseudoaneurysm.

Treatment options for symptomatic AVF range from total or partial nephrectomy to selective embolisation of the affected vessels. Nephrectomy may be the only option in a case of severe and uncontrollable acute haemorrhage. Arterial embolisation by catheter has been carried out successfully in recent years and the success rates are around 88%.^{5,6}

Selective embolisation is an effective treatment for post-biopsy AVF.¹¹⁻¹³ Its interference with the renal parenchyma is limited and it is less aggressive than open surgery. As such, in our view, it should be considered as the first choice of treatment whenever the urgency of these cases permits.

Conflicts of interest

The authors declare that they have no conflicts of interest related to the contents of this article.

1. Bilge I, Rozanes I, Acunas B, Minareci O, Nayir A, Oktem F, et al. Endovascular treatment of arteriovenous fistulas complicating percutaneous renal biopsy in three paediatric cases. *Nephrol Dial Transplant* 1999;14:2726-30.
2. Wenzel U, Helmchen U, Stahl RA, Nolte-Ernsting C. Massive bleeding after biopsy of a renal allograft. *Kidney Int* 2006;69:1101.
3. Kopečna L, Mach V, Procházka J. Arteriovenous fistula as a complication of renal biopsy. *Bratisl Lek Listy* 2005;106:218-20.
4. Yang CY, Lai MY, Lu CL, Tseng HS, Chiou HJ, Yang WC, et al. Timing of Doppler examination for the detection of arteriovenous fistula after percutaneous renal biopsy. *J Clin Ultrasound* 2008;36:377-80.
5. Maleux G, Messiaen T, Stockx L, Vanrenterghem Y, Wilms G. Transcatheter embolization of biopsy-related vascular injuries in renal allografts. Long-term technical, clinical and biochemical results. *Acta Radiol* 2003;44:13-7.
6. He HW, Jiang CH, Wu ZX, Li YX, Lu XL, Wang ZC. Transvenous embolization with a combination of detachable coils and Onyx for a complicated cavernous dural arteriovenous fistula. *Chin Med J* 2008;121:1651-5.
7. Ruth EM, Dittrich K, Jungert J, Uder M, Rascher W, Dotsch J. Successful interventional treatment of arteriovenous fistula after kidney biopsy in pediatric patients — a report of three cases. *Nephrol Dial Transplant* 2008;23:3215-8.
8. Martínez T, Palomares M, Bravo JA, Alvarez G, Galindo P, Entrena AG, et al. Biopsy-induced arteriovenous fistula and venous aneurysm in a renal transplant. *Nephrol Dial Transplant* 1998;13:2937-9.
9. Omoloja AA, Racadio JM, McEnery PT. Post-biopsy renal arteriovenous fistula. *Pediatr Transplant* 2002;6:82-5.
10. Lawen JG, Buren CT van, Lewis RM, Kahan BD. Arteriovenous fistulas after renal allograft biopsy: a serious complication in patients beyond one year. *Clin Transplantation* 1990;4:357-69.
11. Loffroy R, Guiu B, Lambert A, Mousson C, Tanter Y, Martin L, et al. Management of post-biopsy renal allograft arteriovenous fistulas with selective arterial embolization: immediate and long-term outcomes. *Clin Radiol* 2008;63:657-65.
12. Jiang WX, Wang HF, Ma J, Han HJ. Arteriovenous fistula and pseudoaneurysm as complications of renal biopsy treated with percutaneous intervention. *Chin Med J (Engl)* 2010;123(19):2736-8.
13. Lorenzen J, Schneider A, Körner K, Regier M, Adam G, Nolte-Ernsting C. Post-biopsy arteriovenous fistula in transplant kidney: treatment with superselective transcatheter embolisation. *Eur J Radiol* 2012;81(5):e721-6.
14. Breza J Jr, Javorka V Jr, Mizickova M, Goncalves FM, Breza J Sr. Arterio-venous fistula with pseudoaneurysm of renal artery. *Bratisl Lek Listy* 2012;113(5):289-92.

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Membranous glomerulonephritis in a patient with Hodgkin's lymphoma in remission

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To the Editor:

The association between membranous nephropathy and solid organ tumours is well known. In the case of Hodgkin's lymphoma (HL), the most common histological type of renal involvement is minimal change glomerulonephritis followed by focal segmental glomerulosclerosis.¹ We report the case of a patient with membranous glomerulonephritis (MG) who had been diagnosed five years earlier with HL and was in complete remission.

Our patient is a 50-year-old male with no relevant medical history, who was diagnosed, by biopsy of retroperitoneal adenopathy, with stage IV lymphocyte predominance HL with bone marrow involvement in October 2005. He was treated with polychemotherapy, eight ABVD cycles with increased partial response and consolidation ra-