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Short communication

Delayed Pseudoaneurysm After Renal Artery Angiography in Kidney Transplant Recipient

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Abstract

Background. We aimed to report delayed pseudoaneurysm formation on femoral artery after percutaneous renal artery angiography in kidney transplant recipient and further deterioriation of the allograft function.
Methods. A 45-year-old man succumbed to left inguinal haematoma as complication after diagnostic renal angiography (RA) for his renal graft impairment (serum creatinine 439 μmol/l). The renal blood flow was shown not significantly diminished. However, there was an established chronic allograft nephropathy at 5 years after living donor kidney transplantation.
Results. Because of persistent thrombocytosis (>550x10^9/L) anticoagulant therapy with heparin was introduced, 10 days after the RA. He gave a history of left-sided severe inguinal pain and growing edema that started abruptly at 20 days after the angiography. The diagnostic digital subtraction angiogram documented pseudoaneurysm on the ruptured left femoral artery that required surgical reparation. The graft function remained poor and the patient returned to dialysis 3 months later.
Conclusion. We suggest that patients who have had renal angiography interventions complicated by inguinal hematoma and prolonged worsening of the graft function should have follow-up imaging to exclude pseudoaneurysm formation.

Key words: kidney transplantation; renal artery angiography complication; pseudoaneurysm on femoral artery; chronic allograft nephropathy

Introduction

As an invasive procedure, renal artery angiogram is commonly performed without any complication [1]. The distribution of all pseudo/aneurysm located in the thigh (inguinal region) is 80% in the common femoral, 15% in the superficial femoral, and 5% in the deep femoral arteries [2]. However, pseudoaneurysms may develop following an apparently uncomplicated renal artery angiography (RA), or it may form after a complicated and time consuming renal artery angioplasty. In this report, we illustrate pseudoaneurysm in kidney transplant recipient developed as a late complication after RA. Untill appearance of a large hematoma this occurs in the relatively silent manner, so, it should be specifically suspected and investigated.

Case report

A 45-year-old man with end-stage renal disease due to FSGS on dialysis for 6 months underwent successful kidney transplantation from his 67-year-old mother. He received 2x500 mg prednisolon and daclizumab (1 mg/kg) intraoperatively for induction immunosuppression. Post-transplant immunosuppression included oral cyclosporine, mycophenolate mofetil (2 g daily), and prednisone with tapering up to 0.1 mg/kg/BW after the first month. The postoperative graft function recovered immediately although maintaining significant proteinuria (1-2 g/D). In addition, there was a complication of steroid diabetes onset that required insulin therapy. The histology at 1-month protocol biopsy of the graft revealed mesangial sclerosis and ischemic mild acute tubular lesion. Serum creatinine (sCr) remained below 100 μmol/L. At 6-month graft protocol biopsy there were borderline changes and already established histology of mild chronic allograft nephropathy. A bilateral osteonecrosis of the hip developed after 1-year and bilateral surgical core decompression was performed. Nevertheless, after 6 and 9 months he received bilateral total hip replacement.
Over the course of the following 5-years there was a gradual increase in serum creatinine up to 240 μmol/L while proteinuria remained between 1-2 g/D. There were no other comorbidities, cyclosporinemia at 2 hours (C_2) was maintained slightly below the lower limit of referent range (450 - 600 ng/ml) and there was a satisfactorily controlled blood pressure of around 135/85 mmHg on monoantihypertensive treatment with diltiazem 60 mg BID. In June 2007 he was hospitalised because of profuse diarrhea, dehydration, hypotension (110/65 mmHg) and impaired graft function (sCr 380 μmol/L). Despite the improvement of the gastrointestinal symptoms and complete physical recovery in the following week of hospitalisation the graft function remained poor [sCr 439 μmol/L, diuresis (<1500ml)]. Since there was an insufficient blood flow registered by Doppler measurement in the absence of hypotension (BP - 130/80 mmHg), inflammation (CRP - 11 mg/L; WBC 4x10^9/L); hypoproteinemia (total protein/albumin - 63/34), or high C_2 level (383 ng/ml), diagnostic renal angiography was performed

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using a left femoral approach. The renal blood flow showed hemodynamically insignificant stenosis (≤ 50 percent) in the renal artery of the graft and no need for angioplasty. As a consequence of the procedure there was an ensuing hematoma in the left inguinal region. The ultrasound Doppler control did not reveal any further homodynamic disorder. Over the next few days there was further increase in serum creatinine and graft biopsy was performed. The histology revealed signs of chronic allograft nephropathy and cyclosporine arteriolopathy. Hence, cyclosporine was excluded with an increase in diuresis but without significant improvement in the graft function. Because of the persistent thrombocytosis (>550x10^9/L) anticoagulant therapy with heparin was introduced, 10 days after RA. He gave a history of left-sided severe inguinal pain and growing edema that started abruptly at 20 days after angiography. The diagnostic digital subtraction angiogram (Figure 1) documented pseudoaneurysm on the ruptured left femoral artery that required surgical reparation. Unfortunately, the extensive hematoma along the whole left limb with the slow regression of the leg edema were further complicated by local and urinary tract infections that required severe antibiotic treatment. He was discharged after 20 days but the graft function remained poor and the patient returned to dialysis 3 months later.

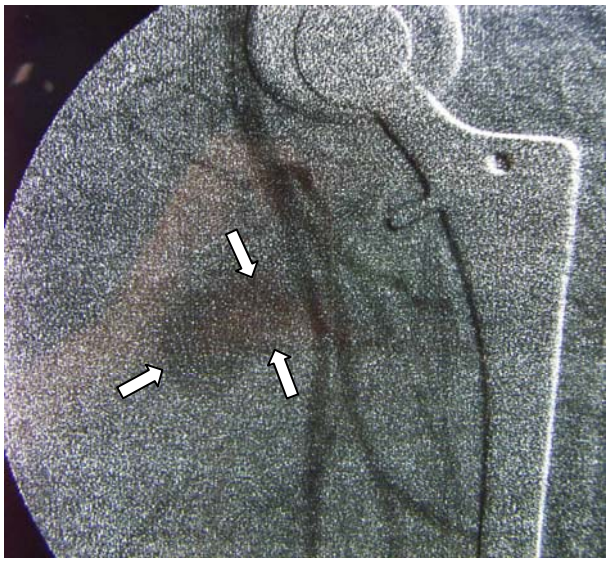

Fig. 1. Reconstructed intra-venous digital subtraction angiogram of the left femoral artery pseudoaneurysm (arrows).

Discussion

Renal artery angiogram is without complication in the majority of cases [1]. Femoral arterial pseudoaneurysm are rare, but their existence must be considered in cases of acute ischaemia of the leg or the occurrence of a pulsating swelling in the groin [2]. Femoral artery rupture during RA procedure can occur mainly at the lesion site as a consequence of laceration or perforation during the needle manipulation. It should be pointed out that patients with advanced atherosclerotic process and long history of corticoid treatment are even at greater risk during such an invasive procedure. The rupture and pseudoaneurysm development can be immediate or delayed. The diagnosis of femoral pseudoaneurysm may be made by ultrasound, intra-venous digital subtraction angiogram (IVDSA), computed tomography (CT), magnetic resonance angiograph, or contralateral catheter angiography. Both, the uremic milieu and superimposed anticoagulant treatment on top of the disordered platelet function might have been responsible for pseudoaneurysm development in our reported case.
Hence, it is advisable that patients with symptoms referable to the site of renal artery intervention and those who have had complicated intervention should have follow-up imaging to exclude pseudoaneurysm formation [3]. Since, it is possible that the postangioplasty ultrasound misses a developing pseudoaneurysm, either IVDSA or CT may be more appropriate for surveillance imaging.

Conclusions

Once diagnosed, surgical intervention is mandatory and the prognosis of the femoral aneurysm is favourable. However, literature data in transplanted patients are scarce. We reported for a femoral pseudoaneurism in kidney transplant recipient after RA complicated with an extensive hematoma, infections and further impairment of the graft function that required returning to dialysis 3 months latter.
In summary, we suggest that patients who have had renal angiography interventions complicated by inguinal hematoma and prolonged worsenining of the graft function should have follow-up imaging to exclude pseudoaneurysm formation and precautious anticoagulant treatment especially in cases of impaired graft function.

References

1. Geroulakos G, Missouris C, Mitchell A, et al. Endovascular treatment of renal artery stenosis. *J Endovasc Ther* 2001; 8: 177–185.
2. Ormstad K, Solheim K. Ruptured aneurysm of the superficial femoral artery. *Scand J Thorac Cardiovasc Surg* 1975; 9: 181-2.
3. McWilliams RG, Godfrey H, Bakran A, Kool LJ, van Bockel JH, van Oostayen JA. Delayed pseudoaneurysm after renal artery angioplasty. *J Endovasc Ther* 2002; 9(1): 48-53.