Hematuria after percutaneous nephrolithotomy. Management with embolization

Published on 18.10.2000

DOI: 10.1594/EURORAD/CASE.660
ISSN: 1563-4086
Section: Interventional radiology
Case Type: Clinical Cases
Authors: E.N. Brountzos, A. Sisopoulos, A. Nikita, L. Thanos, D.A. Kelekis
Patient: 52 years, male

Clinical History:

A 52-year old male patient underwent PCNL for renal staghorn calculi. He developed hematuria due to renal vascular trauma. Renal DSA depicted pseudoaneurysms and AV fistula formation. Embolization was performed with stainless steel coils. The symptoms were eliminated.

Imaging Findings:

A 52-years old dentist underwent percutaneous nephrolithotomy (PCNL) for left renal staghorn calculi at another hospital. Prior to the operation an indwelling catheter was endoscopically placed into the left ureter. After successful lithotripsy, a 24-F nephrostomy catheter was left in place for two days. Although he had mild hematuria, the nephrostomy catheter did not drain and it was removed. The patient was discharged. During the following 21-days he experienced mild hematuria. He was readmitted and the ureteral catheter was removed. After catheter removal, he experienced significant hematuria with blood clots. The working diagnosis was iatrogenic renal vascular trauma. He was referred to our hospital for angiography and interventional radiological treatment. On admission he was pale and very anxious. On physical examination he had increased heart rate but his BP was normal. His laboratory tests were remarkable for hematocrite of 27%. Selective left renal DSA was performed from the right femoral approach using a 5-F Cobra catheter. A trilobate pseudoaneurysm at the lower pole was depicted with rapid opacification of the renal vein due to the presence of a traumatic AV fistula (Fig1,2). The culprit artery was superselectively catheterized with the use of an angled hydrophilic guidewire (Fig.3) and embolization was performed with three 3 X 3 mm 0.035-inch stainless steel coils. Post embolization DSA showed that the pseudoaneurysm and the AV fistula were occluded (Fig.4). The patient returned to the ward. He experienced very mild flank pain, but he did not require analgesics. His hematuria stopped immediately. During the follow-up he did not experience recurrent symptoms and his hematocrite returned to normal.

Discussion:

Renal vascular injuries have iatrogenic etiology in up to 50% of the cases. Renal biopsy with large-bore cutting needles without radiologic guidance account for the majority of cases. Percutaneous nephrostomy and other percutaneous interventions are also associated with vascular injuries. Serious hemorrhagic complications associated with percutaneous nephrolithotomy occur in 2.3-15% of the patients. Injuries include AV lacerations, false aneurysm formation, or AV fistula. Approximately 70% of the AV fistulas close spontaneously. Therefore in the absence of life-threatening symptoms a conservative attitude is adopted. Symptoms include hematuria, hypertension, decreased renal function, and congestive heart failure. Selective arterial embolization is a well established method for treating iatrogenic renal vascular injuries. Various embolic materials have been used like autologous clot, gelfoam, glue, and coils. Non-permanent agents are preferably used to minimize the risk of
hypertension caused by extensive ischemia. Our patient developed significant hematuria 20 days after the PCNL. Gremmo E et al in a series of 772 patients reported that the time to onset of hemorrhage can range from 0 to 48 days. It is possible that the indwelling catheter sealed the ureter; after its removal the hematuria was clinically dramatic. We used metallic coils to embolise the bleeding site because we were able to hyperselectively catheterize the damaged vessel. From the hyperselective DSA the perfused area was less than 1/5 of the total kidney perfusion; we thought that it was prudent to sacrifice this portion of kidney in order to obtain a permanent result. From the decreased hematocrite we knew that our patient had a serious hemorrhage.

**Differential Diagnosis List:** Renal vascular trauma

**Final Diagnosis:** Renal vascular trauma

**References:**


Figure 1

Description: Selective renal DSA depicts a trilobate pseudoaneurysm at the lower pole of the left kidney. Origin:
**Description:** Selective renal DSA shows early venous opacification due to the presence of AV fistula.

**Origin:**
Description: Superselective DSA clearly depicts the pseudoaneurysm and the fistulous communication.

Origin:
Description: Post embolization DSA depicts occlusion of the pseudoaneurysm and of the fistula.
Origin: