

Functional medicine

Idiopathic renal arteriovenous fistula, a rare cause of severe hematuria: Case report

Angel David Valdez Vargas*, Víctor Manuel Pérez Abarca, Rafael Edgardo Maldonado Valadez, Marco Antonio Badillo Santoyo, Héctor Manuel Sánchez López, Braulio Omar Manzo Pérez

Department of Urology, Hospital Regional de Alta Especialidad del Bajío, Blvd. Milenio #130, San Carlos la Roncha, CP. 37660, León, Guanajuato, Mexico

Introduction

Renal arteriovenous malformations are uncommon. It is classified according to its cellular characteristics (hemangiomas or vascular malformations), according to vascular flow (high or low flow), according to arterial, venous, arteriovenous, lymphatic or combined predominance and according to its clinical behavior.^{1,2} Renal arteriovenous fistulas can be of congenital origin (22–25%), idiopathic (3–5%) or acquired (70–75%).^{2,3} High-flow vascular malformations (congenital) are called cirroid aneurysms when they acquire a nest disposition.² Acquired aneurysms are more frequent and may be secondary to renal traumas, tumors or iatrogenic causes such as: renal biopsy, percutaneous renal surgery, percutaneous nephrostomy, open surgery and extracorporeal shock wave lithotripsy.^{1,2,4}

Clinical case

A 17-years-old male patient with a history of smoking from the age of 12, one pack a day, smoking index 5 packets/year, alcoholism since he was 15 years-old, denies history of trauma, allergies, chronic degenerative diseases and previous surgical procedures.

His condition began 12 months ago with the presence of total gross hematuria, absence of clots, pain and stinging micturition. Went to hospital of origin, where anemia is detected and it is decided to transfuse a globular package. Subsequently, a contrasted abdominal tomography was performed, there were no tumor lesions, no kidney stones and no other urinary anomalies were observed, so cystoscopy was performed without finding lesions in the bladder, only hematic jet was observed at left ureteral meatus. Left semirigid ureteroscopy was performed, there were no lesions found, but blood dye from the left kidney was observed, nephroscopy was indicated, so it was referred to our hospital. At this moment the patient continues without changes in the description of the clinical picture previously described.

Physical examination is conscious, vital signs are normal, generalized pallor, soft non-painful abdomen, no masses were felt, no pain at ureteral points, bilateral negative Giordano sign, normal-looking genitalia, rest of the physical examination without alterations.

Laboratories hemoglobin 6.9 g/dL, hematocrit 26.1%, platelets $368 \times 10^3/\mu\text{L}$, leukocytes $5.19 \times 10^3/\mu\text{L}$, creatinine 0.7 mg/dL, urea 278 mg/dL, prothrombin time 16 seconds, partial thromboplastin time 28.7 seconds, INR 1.22, general urine examination with macroscopic hematuria.

During hospital stay, three globular packages were transfused, cystoscopy and ureteroscopy were performed without any lesions, but hematic jet was observed at left ureteral meatus and left ureter, there was stained blood output from the kidney. Nephroscopy is performed by observing a clot in the pelvis and a hemorrhagic fistula in the upper calyx (Fig. 1). Selective renal arteriography was performed observing arteriovenous fistula in the upper pole of the left kidney with contrast outlet to the pelvis, so that subsegmental embolization with n-butyl 2 cyanoacrylate with ethiodized oil was performed, without complications (Fig. 2A and B). In postoperative period without pain and other symptomatology, the hematuria is resolved in three days after the embolization. The patient continuous asymptomatic six months after the surgical procedure, without macroscopic or microscopic hematuria.

Discussion

The different types of renal aneurysms are congenital, idiopathic or acquired. Our patient can be classified as idiopathic since he does not have chronic degenerative diseases, traumas or renal procedures, his only important antecedent is smoking. Idiopathic renal aneurysm is rare, constitutes 3%–5% of all these fistulas. It is considered that these fistulas develop as a consequence of the erosion of a pre-existing arterial aneurysm on the wall of an adjacent vein. By a similar mechanism, the origin of these fistulas has also been associated with the existence of fibromuscular dysplasia renal arterial.¹ Different studies support that tobacco causes especially abdominal aneurysms and smaller amounts in other parts of the body.^{1,3}

Vascular lesions, in the form of bleeding or the appearance of arteriovenous fistulas, are a relatively frequent complication of percutaneous renal nephrolithotomy. The recent use of micropercutaneous techniques minimizes this risk.⁵

Renal arteriography is the key to diagnosis, being the conservative

* Corresponding author. Hospital Regional de Alta Especialidad del Bajío, Blvd. Milenio #130, Colonia San Carlos la Roncha, León, Guanajuato, P.C. 37660, Mexico.
E-mail addresses: advaldezv94@gmail.com, a_d_valdez@hotmail.com (A.D. Valdez Vargas).

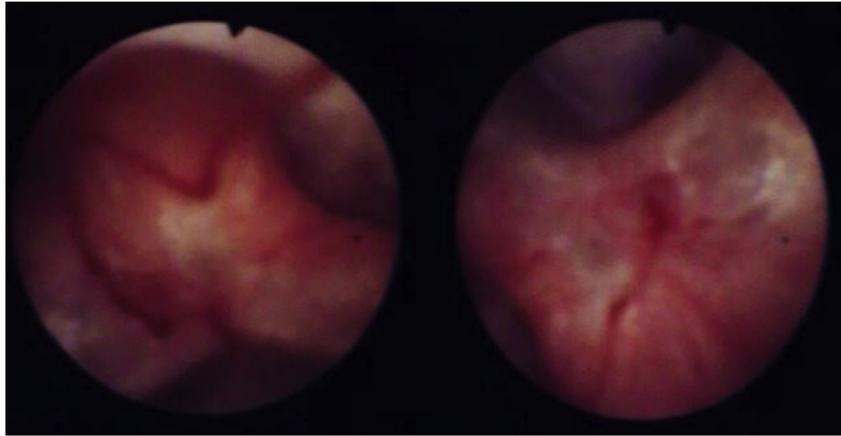


Fig. 1. Nephroscopy showing fistula with active bleeding.

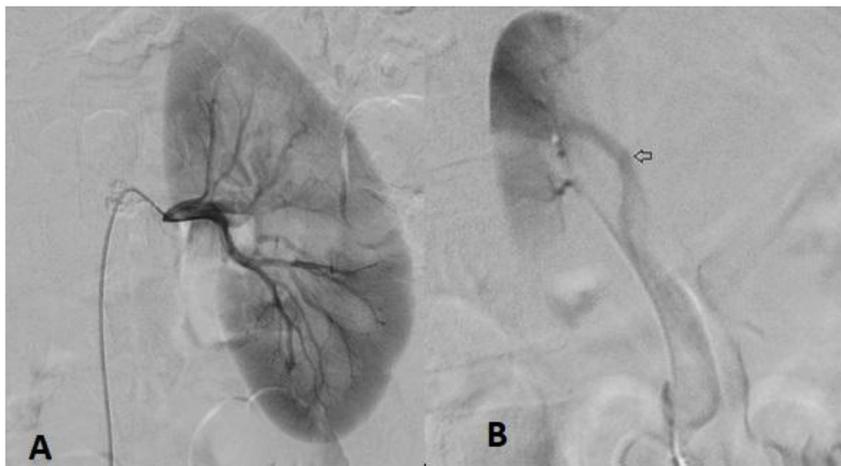


Fig. 2. A) Renal arteriography prior to segmental embolization. B) Passage of contrast medium from calyx to renal pelvis is observed.

treatment of choice by means of selective arterial embolization, it allows complete resolutions without significant renal parenchymal damage.^{2,5} Most reports include follow-up of patients during a year, in which no recurrences have been observed. Conventional surgery such as partial nephrectomy is performed when conservative treatment fails.

Despite the high success rate of embolization, only 40% have a cure, 28% partially remit; complications have been reported in 52% of cases, such as: renal loss, tissue necrosis, venous thrombosis, pulmonary embolism, tachycardia, fever and recanalization.^{1,2}

Conclusion

Renal arteriovenous fistulas are infrequent and should be suspected in the presence of uncertain origin haematuria, in persistent haematuria after trauma, renal biopsy, renal percutaneous surgery or in the presence of congestive heart failure and arterial hypertension. The objective should be to preserve renal parenchyma by embolization, partial nephrectomy or vascular surgery. In situations of hemodynamic instability with voluminous arteriovenous fistulas or postembolization

repermeabilization and the nephrectomy continues being fully valid.

References

1. Nagpal P, Bathla G, Saboo SS, et al. Giant idiopathic renal arteriovenous fistula managed by coils and amplatzer device: case report and literature review. *World J Clin Cases*. 2016;4(11):364–368. Available from: <http://www.wjgnet.com/2307-8960/full/v4/i11/364.htm>.
2. Arias JGP, Jaime VU, Martínez EP, et al. Aneurisma cirsoide renal: una rara causa de hematuria severa. *Arch Esp Urol*. 2007;60(5):589–593. Available from: <http://scielo.isciii.es/pdf/urol/v60n5/caso7.pdf>.
3. Naranje S, Mittal R. Cirsoid aneurysm of the synovium of knee: a very rare pathology. *Arch Orthop Trauma Surg*. 2009;129(8):1081–1083. Available from: <https://doi.org/10.1007/s00402-008-0759-7>.
4. Montoya-m G, Vega-e J, Moreno-a O, Huerta JC. Fístula arteriovenosa renal espontánea como causa de hematuria e insuficiencia cardiaca a gasto alto. Presentación de un caso. *Int J Urol*. 2006;140:85–87. Available from: <https://revistas.ucm.es/index.php/CLUR/article/viewFile/CLUR9292110577A/1568>.
5. Tejedor SD. Trabajo de fin de grado Embolización Renal. Universidad e Valladolid *Técnica y Resultado*. 2016. Available from: <https://uvadoc.uva.es/bitstream/10324/18963/1/TFG-M-M593.pdf>.