

Functional medicine

## Bilateral ureterohydronephrosis caused by a giant hypogastric aneurysm



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### 1. Introduction

Aneurism can occur as result as result of infection, trauma, or most commonly from an intrinsic abnormality in the elastin and collagen components of the artery wall.

Hypogastric artery aneurysm are very rare (20% of the total amount of iliac artery aneurysm), showing unspecific symptoms, making difficult their diagnostic.<sup>1</sup>

We present a case, the largest hypogastric artery aneurysm diagnosed as a cause of bilateral ureteral obstruction.

### 2. Case report

81-year-old male with no medical history of interest was admitted in our hospital due to anuria, anorexia and general impairment. At physical examination, it was remarkable an abdominal mass compatible with urinary retention. Genitals were normal. Digital rectal exam showed no painful prostate adenoma II/IV, with no signs of malignancy. A bilateral popliteal aneurysm was palpable. In view of these findings, it was decided to insert a urinary catheter obtaining 2000 cc of clear urine. The blood test showed a creatinine of 15.18 mg/dL with urea of 344 mg/dL and potassium 8.7 mEq/L, being the renal function normal two months before. Furosemide, insulinotherapy and calcium gluconate, for the

stabilization of the myocardium were initiated as urgent medical treatment.

An EKG was made without remarkable results, thorax radiography was normal and abdominal radiography showed a mass effect image in pelvis. Abdominal ultrasound reflected bilateral ureteral and pyelocalyceal dilatation grade III, and a hypochoic round image in pelvis next to the bladder catheter balloon. Ultrasound scanning of inferior limbs for impossibility to do angio-CT in this moment due renal impairment, showed a popliteal aneurysm in lower left limb of 3.5 cm of maximum diameter, with normal mural thrombus and central flow. In the lower right limb a popliteal aneurysm of 3.6 cm of diameter maximum was observed obstructed by thrombosis. With the suspicion of a polianeurysmatic disease, after renal function normalization was achieved with one session of haemodialysis, angio-CT was performed, showing a right ureterohydronephrosis grade III and left ureterohydronephrosis grade IV, secondary to ureteral compression due to a voluminous aneurysm dependent on internal left hypogastric artery which occupied the entire pelvis. It also produced anterior displacement of bladder (Figs. 1 and 2).

The hypogastric artery aneurysm was 16,85 cm in length per 11.5 cm transversal and 11 cm in anteroposterior. Its light was centric and it was found partly thrombosed.

Aneurysm urgent surgery was decided performing a ligation and repair of left internal iliac aneurysm. During surgery progressive bradycardia with ventricular fibrillation and cardiorespiratory arrest occurred. After 2 minutes of resuscitation maneuvers sinus rhythm was recovered. At this moment, the patient needed 8 hematic concentrates, 1 pool of platelets and 2 units of plasma due to extensive blood loss.

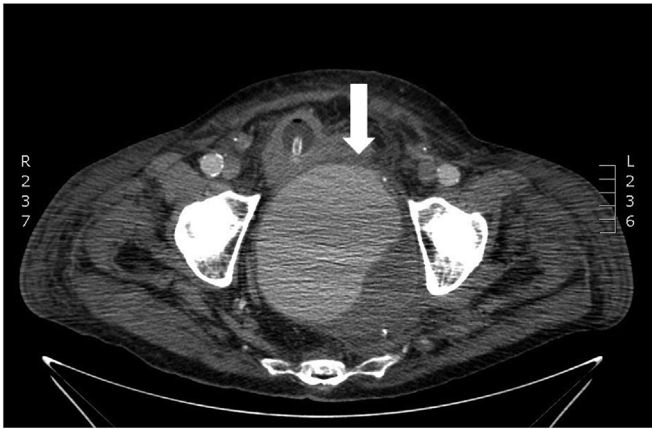
Patient evaluation after surgery was torpid with reoperation due to bleeding because of lacking of coagulation factors, requiring 5 hematic concentrates, 5 gr of fibrinogen, 2 extracts of plasma and 1 pool of platelets. Despite all medical and surgical measures, the patient died because of multi-organic failure as a result of hypovolemic shock.

### 3. Discussion

HAA are very rare and they usually present with a mean size of

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**Fig. 1.** This TC shows the hypogastric aneurysm and the bladder with the catheter's balloon inside it.

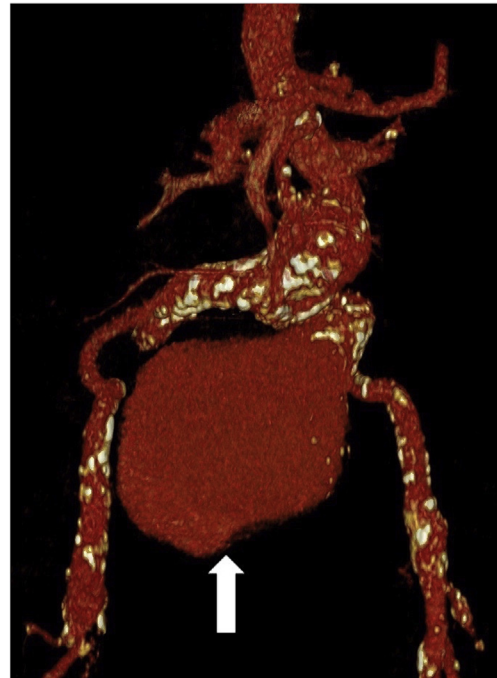


**Fig. 2.** This TC shows the right ureterohydronephrosis grade III and left ureterohydronephrosis grade IV.

7.7 cm (2–13 cm).<sup>1</sup> HAA use to coexist with popliteal aneurysms (P.A.) in a 40%, being even more frequent when P.A. are bilateral, as in our patient<sup>2</sup> (Fig. 3). This 16,9-cm hypogastric artery aneurysm is the biggest described in literature, in our knowledge.<sup>1</sup>

Its etiology can be multiple and it is due mainly to a loss of the mechanic integrity of blood vessels. Causes can vary from mechanic, inflammation, infections or genetic and immunological as in case of multiple aneurysms.<sup>3</sup> In our patient, age together with some other factor, as immunological or genetic, could have probably been the cause of the multiple aneurysms.

Hypogastric artery aneurysms are often diagnosed by the symptoms they produce —only 13.3% of them are completely asymptomatic—, being the urological symptoms common in the 54% of the cases.<sup>1</sup> Among them, the most remarkable are: Voiding symptoms, acute urine retention (AUR) as in our case together with renal function impairment, renal colic, renal ectasia and arterio-vesical fistula.<sup>4</sup> Ilioureteral fistula is rare, but it is a life threatening situation due to hypovolemic shock, being urgent surgery and the placing of a ureteral catheter mandatory. Other symptoms include neurological in 10–15% by spinal cord compression, pelvic mass in 55% (as in our case), gastrointestinal symptoms —such as



**Fig. 3.** A 3D reconstruction, it shows multiple aneurysm: aortic, left hypogastric and bilateral popliteal, with atheromatosis.

constipation or rectal bleeding—, or other symptoms, as heart failure, deep vein thrombosis and pulmonary embolism.<sup>5</sup>

In our case, regarding the treatment of renal impairment, we performed on haemodialysis as renal replacement therapy, due to its rapid effect in optimizing the serum potassium levels in order to complete diagnosis with angioCT. Regarding surgery, ligation of the aneurysm was performed, being this the most acceptable surgical attitude according to Dix et al.<sup>1</sup>

Open surgery approach was decided, due to the size of the aneurysm and the incapability of the endovascular surgery to solve the ureteral obstruction. Mortality by exclusion of aneurysm in an elective surgery is less than 10%, but increases to 30–50% in urgent surgeries, like in our case. However, if there is a break of the aneurysm, mortality rises up to 80%.<sup>5</sup> In our case, surgery was not successful due to coagulation failure, which could not be solved despite the 13 hematic concentrates, 2 pool of platelets, 4 units of plasma and 5 gr of fibrinogen. In conclusion, the assessment of a patient with oligoanuria, hyperkalemia and renal function impairment must be done in an exhaustive way, studying all causes of acute kidney insufficiency. Physical examination may be one of the keys in the diagnosis. In patients with popliteal aneurysms —mainly bilateral—, the presence of hypogastric artery aneurysm must be evaluated. This kind of aneurysm is a rare entity but with high mortality, so it is essential to include it in the differential diagnosis.

#### Conflicts of interest

There were no financial or commercial interests.

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