CASE REPORTS

ISOLATED COMMON ILIAC ARTERY ANEURYSM WITH SPECIFIC ANATOMICAL CONSIDERATIONS

Pedro Pinto Sousa[1], Pedro Sá Pinto[2]

[1] Hospital Sra. Da Oliveira - Guimarães
[2] Centro Hospitalar Universitário do Porto

* Corresponding author: pedro_psousa@hotmail.com

Abstract

Introduction: *Iliac artery aneurysms (IAA) are a rare entity with a prevalence lower than 2% in the general population involving typically the common iliac artery in 70-90%.*

Case-report: *This is the clinical case of an 88 years-old male patient with an isolated giant IAA, 84mm maximum diameter, diagnosed following a four-month period of lower abdominal discomfort and pelvic hyperemic mass. The IAA was successfully excluded with an endovascular approach with an aorto-uni-iliac endograft Endurant II (Medtronic Cardiovascular, Santa Rosa, CA, USA) followed by a femorofemoral right to left bypass.*

Discussion: *Asymptomatic IAA are difficult to identify due to their anatomical location deep within the pelvis but once symptomatic they are associated with a high rate of morbidity and mortality. Their management has evolved toward an endovascular first approach over the past decades, nevertheless, the type of operative repair depends on patient anatomy, clinical stability and the presence of other concomitant aneurysms.*

INTRODUCTION

Iliac artery aneurysms (IAA) account for less than 2% of all abdominal aneurysms and affect 0.3-0.6% of the general population[1,2]. Aneurismatic degeneration involves mainly the common iliac artery in 70-90% or the internal iliac artery in 10-30%. Nevertheless, both the segments may be involved or even more rarely the external iliac artery isolated or in combination[3,4]. In about 12-48% of cases, a contralateral iliac aneurysm is found5.

CLINICAL CASE

The authors present a clinical case of an 88-year-old male patient with personal history of coronary disease, chronic obstructive pulmonary disease and hypertension.

The patient was under study by his general practitioner, for four months, due to unspecific abdominal discomfort who then requested a sonography that suspected of an abdominal aorta aneurysm and the patient was sent to our vascular surgery department.

On physical examination, a pulsatile tender abdominal mass was palpable. Complementary computed tomographic (CT) angiography revealed a degenerative fusiform aneurysm limited to the right common iliac artery of 84mm of maximum diameter (Figure 1), comprehending a Class I Reber aneurysm classificiation6. In association, aortic bifurcation was very calcified, with a 14mm maximum diameter, but even lower

patent lumen; right internal iliac artery occlusion and severe atherosclerotic disease of the left iliac axis, especially at iliac bifurcation.

Considering patient morbidity and aneurysm characteristics, endovascular treatment was our first option. Initially, through a right common femoral artery open approach, an Endurant II Stent Graft System aorto-uni-iliac, Medtronic Æ was deployed, extending from the justa-renal aortic level up to right common iliac artery. The stent-graft limb was extended to the right external iliac artery and a 12mm Amplatzer™ Vascular Plug II Æ was deployed in the left common iliac artery through a left common femoral artery approach. Finally, a right to left femoral-femoral crossover bypass graft was performed to maintain perfusion of both lower limbs. The extra-abdominal approach with EVAR was considered the safest procedure to our patient due to his frailty and moderate anesthetic risk. The patient was discharged uneventfully, five days after the intervention, returning ambulatory medication.

He has now, eighteen months follow-up with no registered complications. First month control CT angiography revealed good stent graft apposition, total aneurysm exclusion and no endoleak. Our follow-up plan is for new CT angiography control at five years. Furthermore, ankle brachial index and duplex ultrasound evaluation was also performed at first month and again at three, six, twelve months and them, indication for yearly control for bypass patency and peripheral arterial disease evolution evaluation (Figure 2).

DISCUSSION

Isolated aneurysms of the iliac arteries comprehend less than 2% of abdominal aneurysms[3]. The majority of the IAA are asymptomatic, making diagnosis less likely[7]. Nevertheless, with the wider availability and greater sensitivity of imaging techniques early diagnosis of these aneurysms has increased, which makes, aneurysm with such a diameter, actually a rarity. Iliac artery aneurysms develop in the retroperitoneal or intraperitoneal spaces, compressing the rectum, ureter, or

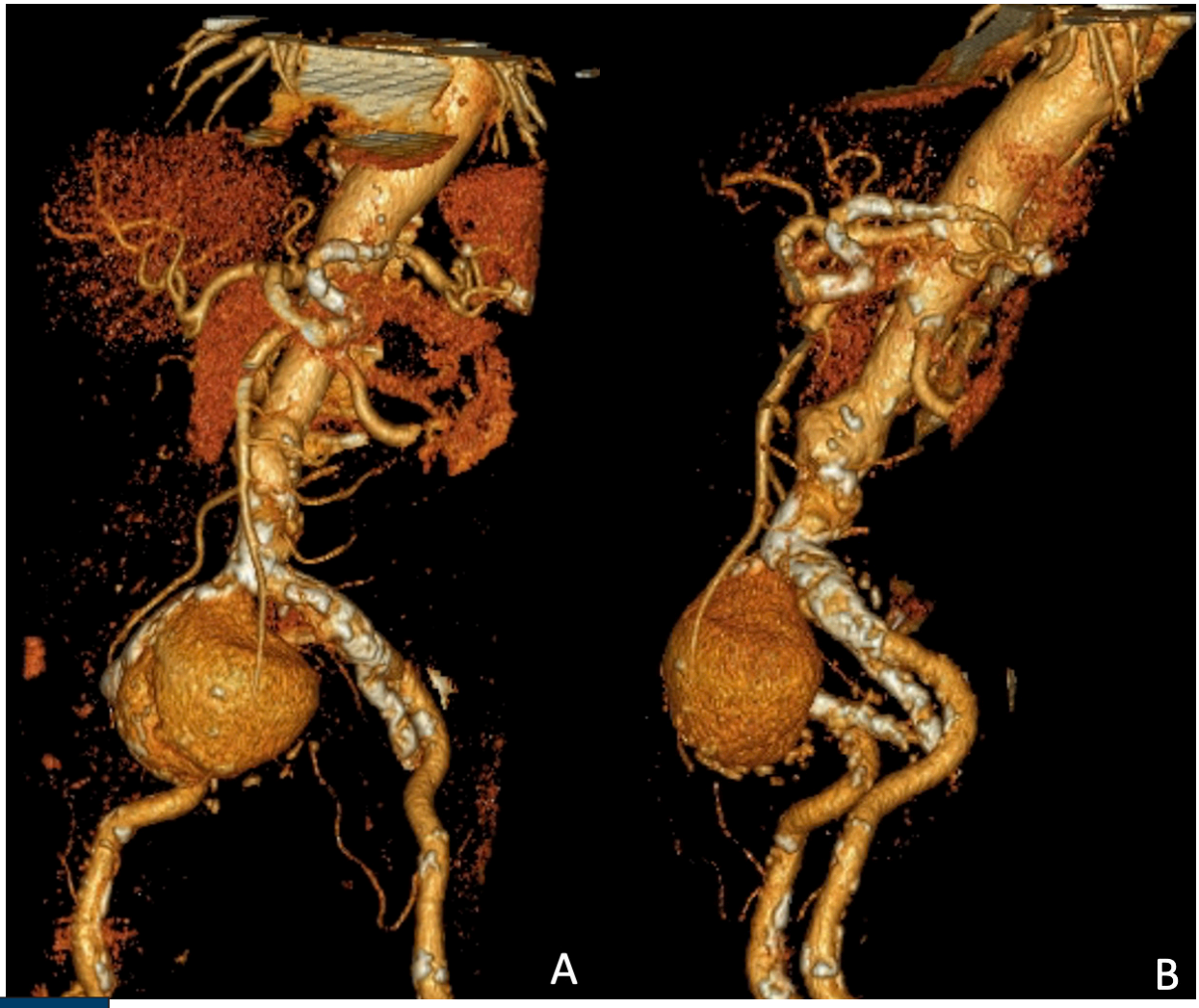

Figure 1 *Tomographic computed angiography reconstruction showing an iliac artery aneurysm in anterior (A) and lateral (B) views.*

bladder, presenting symptoms comparable to the clinical case presented[8]. Noninvasive imaging exams are often part of incidental diagnoses, but the gold standard is CT angiography[7-9].

The natural history of internal iliac artery aneurysms is still unclear. Several authors recommended repairing these aneurysms when diameter exceeds 3 cm, since the risk of rupture in such cases is 14-31%. However, recent European Society of Vascular Surgery Guidelines (ESVS) set the threshold for elective repair of isolated iliac artery aneurysm (common iliac artery, internal iliac artery and external iliac artery, or combination thereof) at a minimum of 3.5 cm diameter[10].

Mortality rate in cases treated electively with open procedures is 10%, but rises to 33-50% when the aneurysm ruptures[11]. The most appropriate treatment option for IAA should be based on the anatomical morphology and location of the aneurysm. Nevertheless, endovascular treatment should be the first treatment option, since it is less invasive, reduces the risk of intraoperative hemorrhages, renal failure and hospital stays, comparable to open procedures[7]. Morbi-mortality is also considerably lower[14-15].

Primary endovascular options should include iliac branch device with preservation of antegrade flow to the internal iliac artery (IIA). Nonetheless, in this particular clinical case the ipsilateral IIA was already occluded. Considering proximal landing zone, the IAA origin was less than 20mm from the IA ostium which forced a landing zone into the aorta. Preferably, an Aorto-Bi-Iliac endograft configuration should be used. However, the patient presented a very small (<15 mm), calcified and with a considerably reduced patent lumen of the terminal aorta. Also, the left iliac axis presented severe occlusive disease. Pondering the aspects above mentioned, the authors considered the selected surgical option as a last resort solution for the majority of infra-renal abdominal aortic aneurysms with or without iliac involvement, but the only available once there was no alternative in this particular patient. Bell bottom or sandwich techniques could eventually be other possible options, but attested published results are lacking, which made us not consider them[16-17].

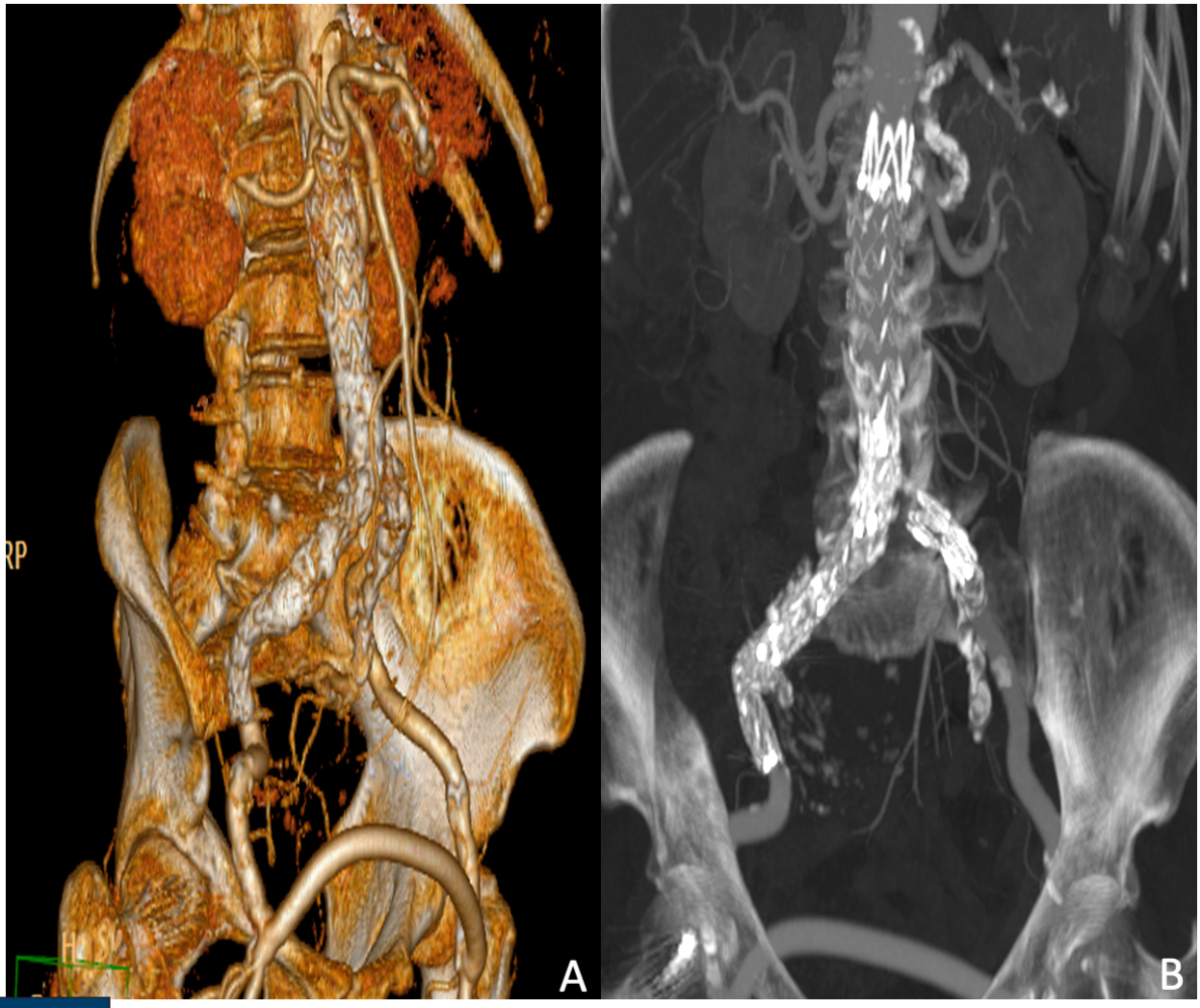

Figure 2 *Tomographic computed angiography reconstruction showing an iliac artery aneurysm in anterior (A) and lateral (B) views.*

Follow-up was done considering ESVS guidelines[10]. Once the patient presented a significative atherosclerotic burden, we complimented the first month control CT angiography with ankle brachial index and duplex ultrasound evaluation.

Once CT angiography revealed excellent stent graft apposition, aneurysm exclusion and no endoleak, indications were for new control at five years. Besides, ankle brachial index and duplex ultrasound evaluation was performed again at three, six, twelve months and then, indication for yearly control.

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