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Abdominal Aortic Sacciform Aneurysm: A Case Report and Literature Revue

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Abstract **Case Report**

Saccular-shaped aortic abdominal aneurysms (SaAAA) are a rare but serious condition, their major complication is the rupture or cracking of the aortic wall leading to hemorrhagic shock and most frequently resulting in a fatal outcome. Imaging and particularly Multidetecter Row CT (MDCT) plays a crucial role in the diagnosis and management of this condition. It is actually the imaging modality of choice in establishing a precise pre-operative evaluation of AAAs, by accurately visualizing the aneurysm, screening for signs of complications, secondary locations and anatomical variations. We present a rare case of a large saccular aneurysm of the infra renal abdominal aorta with a parietal thrombus complicated by extended vertebral lytic lesions and in which the progression was marked by a cracking of the aneurysm.

Keywords: Sacciform aneurysm, Rupture, Abdomino-pelvic CT angiography.

INTRODUCTION

Aortic abdominal aneurysm (AAA) is a localized segmental dilatation, with loss of parallelism of its edges. It is the most frequent pathology of the abdominal aorta and, more 90% of cases; it is of atheromatous origin [1]. In the infrarenal abdominal aorta, the preferred site of the disease, aneurysms are defined by a diameter of 30 mm or above in many epidemiological studies [2]. The aneurysm may be fusiform or saccular. Atheromatous aneurysms are most often fusiform and infectious aneurysms are frequently saccular.

AAAs slowly increases in size until they reach a critical diameter, at which point the size ascent becomes exponential. Aneurysmal disease often remains asymptomatic until rupture. This dreadful and fatal accident sums up the gravity of the condition and its prevention is therefore a major challenge.

Ultrasound remains the method of excellence for screening and monitoring [3].

The CT scan will allow an extremely fine analysis of the contents but also of the container and the peri-aortic tissues, its main indication is essentially abdominal pain syndrome or in case of suspicion of aortic ruptures [4].

The treatment of these aneurysms, whether endovascular or surgical, has one main objective: to eliminate the unpredictable risk of rupture [5].

CASE REPORT

A 46 years old male patient, chronic smoker, living in precarious conditions, with a history of undocumented heart disease and unbalanced hypertension.

He presented to the emergency department of the Mohammed VI University Hospital of Marrakech for pain with abdominal distension that had been evolving for more than 3 months.

The examination revealed a beating abdominal mass measuring approximately 2 x 2 cm, with a positive De Bakey sign.

An abdominal Doppler ultrasound was performed and revealed:

Voluminous saccular lesion measuring 27 x 17 cm with circumferential parietal thrombus, communicating with the aorta through a neck

measuring 40mm, with presence of flow on pulsed Doppler.

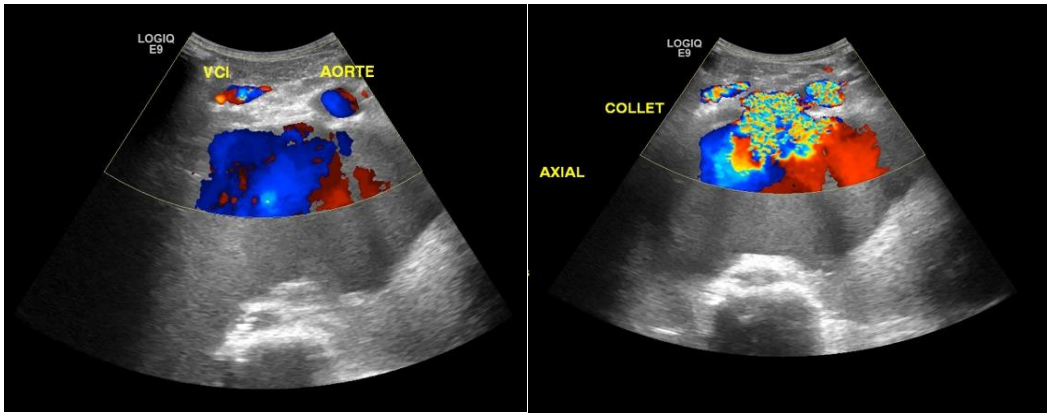

Figure 1: Doppler ultrasound of the abdominal aorta showing a voluminous saccular aneurysm arising from the posterior side of the abdominal aorta

An abdominal and pelvic MDCT extended to the arterial axes of the lower limbs, was performed for a better assessment of the aneurysm and showed:

Large saccular aneurysmal dilatation arising from the posterior side of the abdominal aorta immediately below the renal arteries through a wide neck measuring 43 mm and measuring 22 x 17 x 18 cm (T x AP x CC), with circumferential parietal thrombosis respecting the arterial lumen.

It also revealed corporal-pedicular vertebral lytic lesions staged from D12 to L3.

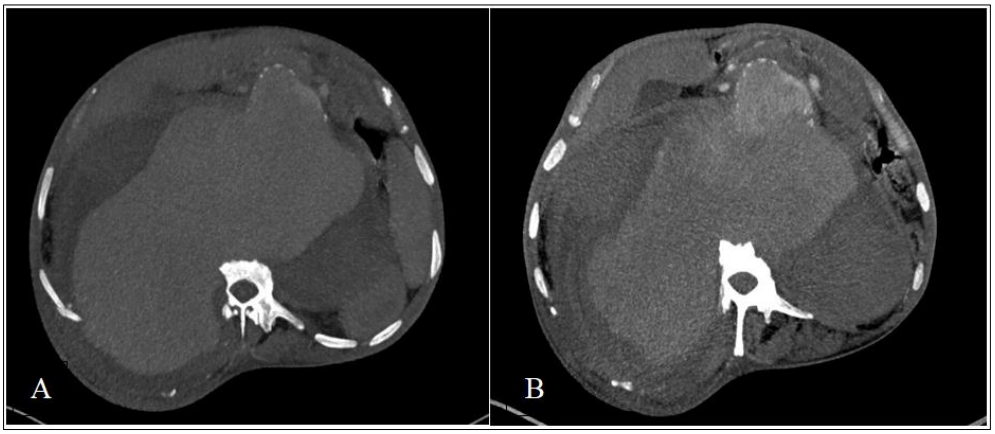

Figure 2: Axial images of abdominal CT, without (A) and with contrast (B arterial phase) showing a voluminous saccular aneurysm with circumferential calcifications visible in the pre-contrast images compatible with aneurysm thrombosis

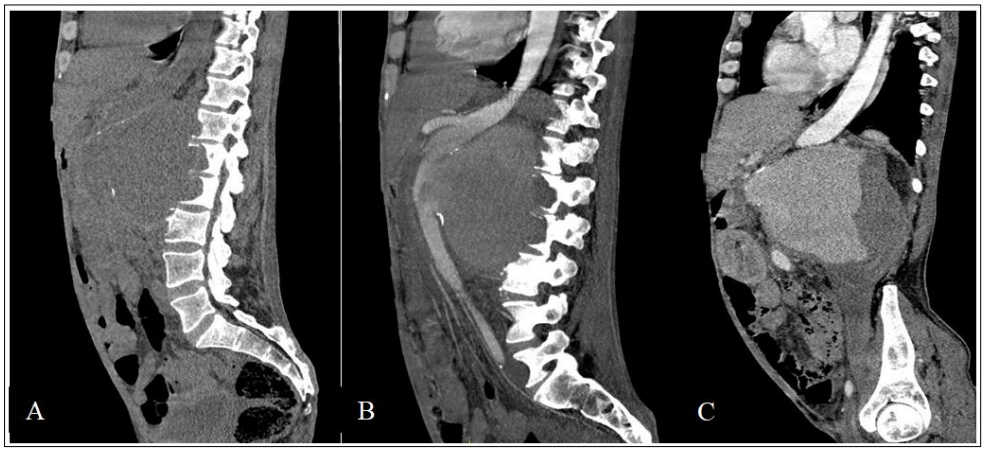

Figure 3: Sagittal reconstruction of abdominal CT without (A) and with contrast (B, C) showing a voluminous saccular aneurysm with circumferential thrombosis

Figure 4: Sagittal abdominal CT image, bone reconstruction showing marked corporeal vertebral lytic lesions extending from D12 to L3

The patient presented a few days later an accentuation of his abdominal pain, with hemodynamic instability.

An emergency abdominal-pelvic CT scan was performed and revealed an enlarged saccular aneurysmal dilatation of the infrarenal abdominal aorta, partially thrombosed with the development of peritoneal effusion, significant mesenteric infiltration, and parietal hyperdensity, raising suspicion of an aneurysm fissure.

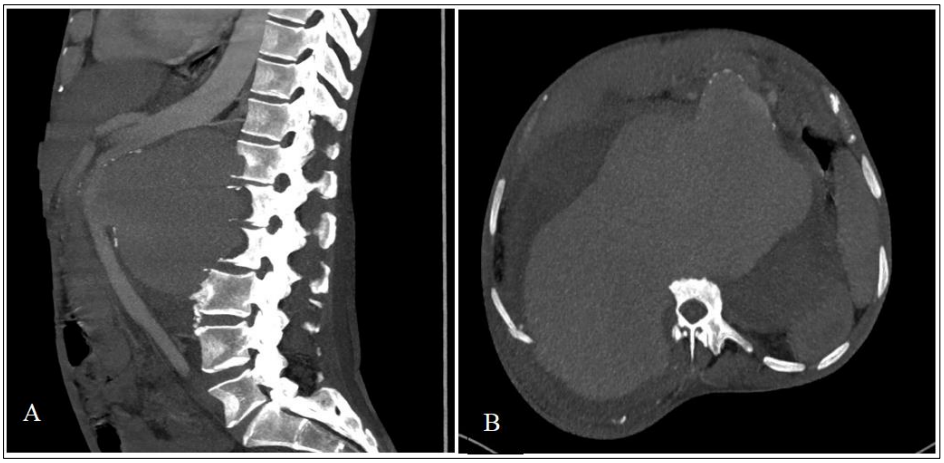

Figure 5: Sagittal (A) and axial (B) slices of the abdominal aorta during the arterial phase of contrast injection, who shows an increase of the saccular aneurysmal dilatation

DISCUSSION

Abdominal aortic aneurysm (AAA), defined as a localized dilatation of the abdominal aorta with an external anteroposterior diameter (APD) (adventitia-adventitia) >30 mm [1].

Most commonly, AAAs are located below the renal arteries. However, they may extend proximally above the coeliac trunk and distally beyond the aortic bifurcation [6].

Aortic aneurysm is the 13th leading cause of death in Western countries; the incidence of subrenal AAA is estimated between 20 and 45/100,000 [7, 8].

Apart from atheromatous aneurysms, other etiologies include [9]:

- Elastic tissue dystrophies (Marfan's disease, Ehlers- Danlos);
- Inflammatory arteritis (Takayasu disease)
- Behcet's disease;
- Infectious aneurysms;
- Post-traumatic aneurysms.

The circumstances of discovery are variable, most often asymptomatic at diagnosis [10]. They are often detected during a workup of atheromatous disease; or during an ultrasound or CT scan for pathology.

The most frequently presenting symptom is pain in the back, or abdomen, the patient may describe a pulse in his abdomen and may actually feel a pulsatile mass.

Many AAAs also can present with thromboembolic symptoms because aneurysms are lined by laminated thrombus.

Sudden, severe pain; symptoms of dizziness, nausea, or vomiting, and a rapid heart rate when standing up should raise concerns about the possibility of a rapidly expanding aneurysm and impending rupture [16].

The purpose of imaging is to evaluate the aneurysm and to provide the elements of the pre-surgical assessment [10-13]:

- Measure the size of the aneurysm.
- Determine the situation of the superior and inferior neck.
- Look for signs of complications: cracking, rupture, infection...
- Look for anatomical variants.
- Screening for an associated aneurysm of the thoracic aorta.

Therapeutic indications are based on the size of the aneurysm, the existence of pain or complications [14, 15]:

- An aneurysm with a diameter greater than 50 mm.
- A growth rate greater than 1 cm/year.
- A symptomatic aneurysm.

Aneurysms with a diameter less than 50 mm, must benefit from ultrasound or CT monitoring every six months to 2 years depending on their size. The indication for surgical treatment will only be retained if the aneurysm shows signs of progression [14].

Surgical treatment remains the only curative treatment and the only preventive treatment against rupture. The principle is to exclude the aneurysmal zone from the circulatory flow by interposition of a vascular prosthesis.

Conventional surgery is the reference technique. It gives excellent results. The aim of conventional treatment is to replace all the treatment is to replace all the arterial walls that are dilated by a prosthetic conduit. This prosthesis will be the new arterial wall.

Patients with a certain surgical risk due to associated cardiac or respiratory pathologies can benefit from an endovascular treatment. The implantation of an endoprosthesis, in this pathology, aims to exclude the aneurysmal pocket, to decrease the pressure of the circulating blood on the aneurysm and to maintain distal perfusion. However, the selection of patients requires clinical and anatomical criteria based on paraclinical examinations.

CONCLUSION

Saccular aneurysms of the abdominal aorta represent a rather rare but serious entity, with a higher risk of mortal complications. Imaging and particularly MDCT plays a pivotal role in the screening, positive diagnosis and in the institution of appropriate medical and surgical treatment, allowing for a faster and better management of the patients and consequently a decrease of the heavy mortality and morbidity related to the disease.

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