Radiology Case Reports 16 (2021) 1854–1856

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journal homepage: www.elsevier.com/locate/radcr

Case report

Eccentric saccular aneurysm formation of the infrarenal aorta from an arterial wall tear ☆,☆☆,★

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ARTICLE INFO

Article history:
Received 16 April 2021
Revised 20 April 2021
Accepted 21 April 2021

Keywords:
Saccular aneurysm
Infected aneurysm
Endovascular treatment

ABSTRACT

Eccentric saccular aneurysms result from a focal weakness of the arterial wall that may be due to a focal tear or a partial disruption of the arterial wall. Saccular morphology itself is often used as a factor for immediate intervention, because the risk of rupture is higher than that of the common fusiform aneurysms. We present a case of a 72-year-old female patient with a huge saccular aneurysm of the infrarenal aorta. In this case report, we discuss the algorithm that can be used for the differential diagnosis of any saccular shape aneurysm and that the main parameter that needs to be clarified before the endovascular treatment of any saccular aneurysm is the presence or absence of infection of the arterial wall.

Introduction

According to the published literature, fusiform and concentric aneurysms result from a generalized weakening of the arterial wall of the affected vessel, but saccular aneurysms are the result of a focal weakness that may be due to an intrinsic or an extrinsic condition that causes focal arterial damage. Intrinsic abnormalities associated with saccular aneurysms generally involve a focal tear or partial disruption of the arterial wall that might have started as a penetrating atherosclerotic ulcer or an intramural hematoma. Saccular aneurysms have become more easily diagnosed in the last years with respect to their presentation, prognosis, and treatment [1,2]· Due to their focal nature, endovascular treatment is safe and effective. The only major condition that needs to be excluded before the implantation of the endovascular device is the presence of a primary infected aneurysm.

☆ Acknowledgements: C.P. provided substantial contributions to conception and design, acquisition of data, analysis and interpretation of data. K.N. drafted the article and revised it critically for important intellectual content.
☆☆ No foundation
★ Competing Interest: None
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https://doi.org/10.1016/j.radcr.2021.04.046

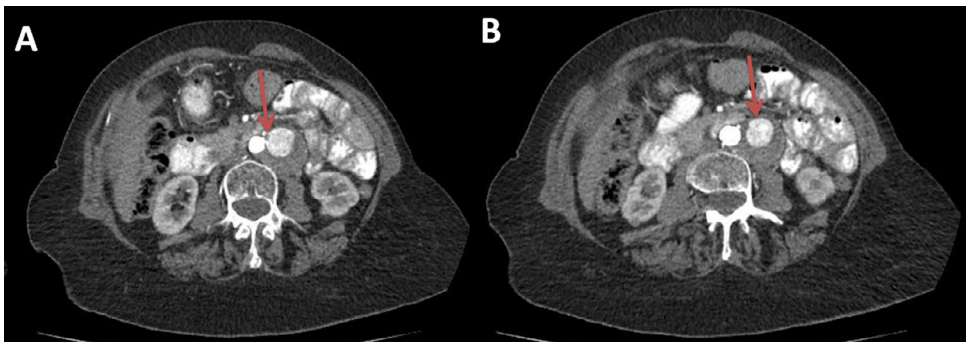

Fig. 1 – CTA revealed a focal tear on the calcified arterial wall (1 - A, arrow) that caused the eccentric saccular aneurysm (1 - B, arrow).

Fig. 2 – A coronal CT image that shows the relationship of the aorta and the aneurysm.

Case report

A 72 year-old female patient, with no medical history, visited the outpatient clinic of our department, due to the results of her abdominal ultrasound, which had revealed a calcified aorta and a saccular formation of the abdominal aorta. The patient reported no abdominal or back pain and no history of major trauma or surgery. After her urgent admission, complete laboratories tests shown no sign of infection and the computed tomography angiography (CTA) revealed an eccentric saccular abdominal aortic aneurysm of the infrarenal aorta [Fig. 1] with a maximum diameter of 6.5cm, possibly, due to a focal tear or partial disruption of the calcified arterial wall of the abdominal aorta [Fig. 2]. A positron emission tomography-computed tomography (PET-CT) was performed, as a second-step imaging modality for the differential diagnosis of this saccular morphology, and revealed no sign of infection of the arterial wall and no sign of mycotic abdominal aortic aneurysm [Fig. 3]. Due to the morphology, the higher risk of rupture and the confirmed absence of infection, a GORE® Excluder® Iliac extender endoprosthesis (PLL 161407) was placed on an urgent basis. The patient was discharged at the second postoperative day. At the six-month follow up [Fig. 4], no sign of complication or endoleak was reported.

Discussion

Eccentric saccular aneurysms result from a focal weakness of the arterial wall that may be due to a focal tear or a partial disruption of the arterial wall. These entities have become more recognized in the past decade with respect to their clinical presentation, prognosis, and treatment [1,2]. The risk of rupture is better known for fusiform or concentric saccular shapes but is less well understood for eccentric saccular aneurysms. Saccular morphology is often used as a factor in advising intervention at a diameter less than that for fusiform aneurysms, and due to their focal nature, endovascular treatment is safe and effective. However, the main parameter that needs to be clarified before the endovascular treatment is the presence or absence of infection of the arterial wall. Most primary infected arterial aneurysms have an eccentric saccular shape, and all such aneurysms should be evaluated for an infectious etiology. A wide variety of microorganisms, including bacteria and fungi have been documented to be the cause of infected aneurysms, which can occur in any vessel [3]. The repair of infected saccular aneurysms [3] is a real challenge to the vascular surgeon, because open repair with prosthetic material is usually contraindicated and open procedure with durable autogenous substitutes is very demanding. For the diagnosis of possible infectious etiology, positron emission tomography (PET) alone or in combination with CTA has been used effectively [4]. Magnetic resonance imaging (MRI) and

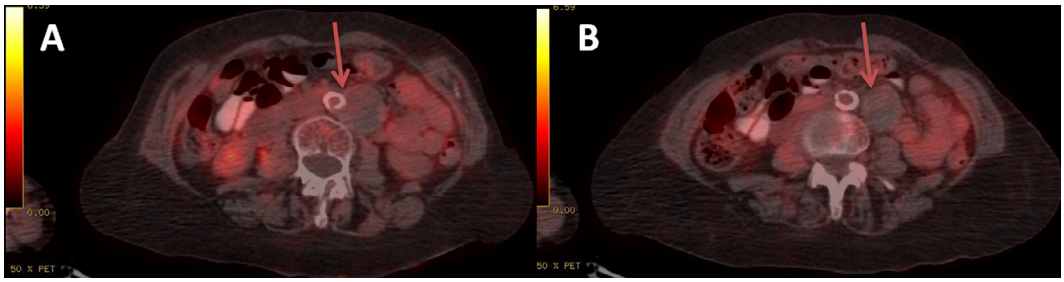

Fig. 3 – PET-CT revealed no sign of either infected arterial wall (3 - A, arrow) or mycotic abdominal aortic aneurysm (3 - B, arrow).

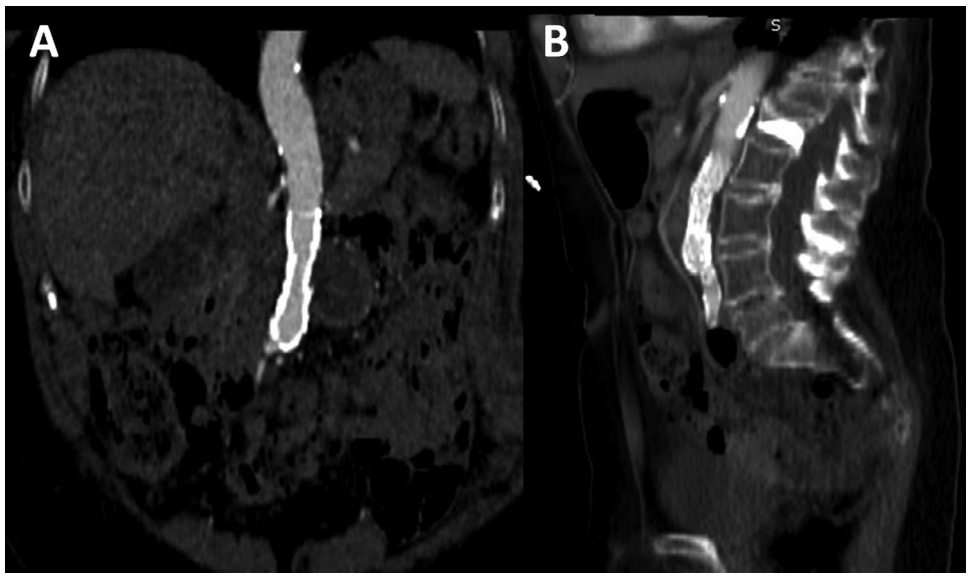

Fig. 4 – At the six-month follow up, no sign of complication (4 - B) or endoleak was reported (4 - A).

magnetic resonance angiography (MRA) are highly sensitive for inflammation and can be useful, especially for patients with contradictions to iodinate contrasts [5]. Finally, indium 111-labeled white blood cell scanning has been used, in the past decades, to identify graft infection, but it is not that accurate in infected native arterial wall [6]. Although none of the previously mentioned diagnostic modalities is highly specific for the infected aneurysm, they can be really helpful when they are combined with the physical examination of the patient, the CTA and the laboratory markers. With this interesting case, we present the algorithm that we use for the differential diagnosis of any saccular shape aneurysm.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.radcr.2021.04.046.

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