The Management of Ruptured Mycotic Suprarenal Aortic Aneurysm: A Report of Successful Surgical Repair

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Abstract

Ruptured suprarenal aortic aneurysms represent a huge challenge for surgeons. So far, developing endovascular procedures have failed to totally replace open repair when debranching is to be performed. The authors report their experience in the management of a ruptured mycotic aneurysm of the suprarenal aorta in a 36-year-old female patient diagnosed with active tuberculosis.

Keywords: Mycotic aneurysm, open surgical repair, suprarenal aorta

Introduction

Suprarenal aortic aneurysms (SRAAs) represent a huge challenge for surgeons.[1] When they are ruptured, endovascular procedures have their limitations.[2] Open surgery remains an option for both aorta and branch repair. We report our experience in the management of a ruptured aneurysm of the aorta segment 4 (suprarenal).

Case Report

Ms. AA was a 36-year-old homemaker diagnosed with miliary tuberculosis (TB) and is been taking specific treatment for 2 months. No other pathology was reported in the previous medical history. She consulted for acute abdominal pain that was severe, sharp and located in the low-back and flank. It was associated with vomiting, constipation, and coughing. The general condition was good and there was no sign of anemia. Blood pressure was 160/100 mmHg; pulse rate was 90/min, respiratory rate was 16/min, and O2 saturation was 99. Physical examination revealed general abdominal rebound tenderness.

Chest X-rays showed military TB. Angio computed tomography [CT] scan [Figure 1] revealed a saccular aortic aneurysm of 36 mm × 35 mm located on the anterolateral wall of segment 4; the neck was 14 mm. It was ruptured in the retroperitoneal space. In addition, there were features of bowel dilatation characterized by multiple dilated loops of gas.

Hemoglobin was 8.8 g/dl. Creatinine was 103 μmol/L. Serological tests for HIV and syphilis were negative. Sputum test did not find acid-fast bacillus.

Ms. AA underwent urgent surgery under general anesthesia and hemodynamic monitoring with venous central line and radial arterial line. The patient was installed on dorsal decubitus, a thoracoabdominal roller on the left side to make anticlockwise rotation of 30°. The first step consisted of a median xipho-pubic laparotomy. On incision of the lesser omentum and exposure of retroperitoneum, we found a large hematoma around the suprarenal aorta with extension toward the thorax. We decided to open the thorax to better control the descending aorta. The second step consisted of left anterolateral thoracotomy at the 5th intercostal space that showed the top of the retroperitoneal hematoma. 5000 IU of heparin was given through the venous central line. We did not see the artery of Adamkiewicz. Then, we clamped thoracic aorta and abdominal aorta above the origin of renal arteries. We flattened the hematoma and we discovered the neck of the aneurysm. It was located laterally and sized 14 mm × 10 mm. We removed the hematoma and then performed running suture of the collar with pledgeted 3.0 Prolene®. Aortic clamping time was 20 min.

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How to cite this article: Dieng PA, Doumbia M, Sawadogo A, Ndiaye M. The Management of Ruptured Mycotic Suprarenal Aortic Aneurysm: A Report of Successful Surgical Repair. Indian J Vasc Endovasc Surg 2017;4:124-6.

Received: June, 2017. Accepted: June, 2017.
The immediate postoperative course was uneventful. On postoperative day 14, she was transferred to the department of internal medicine to continue TB treatment. On postoperative day 45, the patient had a good physical appearance with normal physical parameters. The control angio CT scan did not show any significant difference in aortic size or vascular leak [Figure 2]. Histology of the aneurysm wall showed fibrin coagulum without associated lesion.

**DISCUSSION**

All surgical approaches of the suprarenal abdominal aorta are associated with more morbidity than that of infrarenal aorta.[3] In our case, the aneurysm did not involve the visceral arteries, so we did not perform debranching which is potentially morbid. Although postoperative course of our patient was uneventful, 30-day mortality was reported to be 23% in the series of Martin et al.[4] The average age (71.61 years old) and male sex predominance (77.18%) found in the English study on 793 patients[2] are also different from our patient who was a 36-year-old female. Histology of the aneurysmal wall did not detect evidence of TB. However, given the clinical context, this was considered to be a mycotic aneurysm associated with TB. Other infectious causes that have been traditionally incriminated in the occurrence and rupture of aneurysms such as syphilis, mycoses, and HIV[5] were negative.

A dual-cavity approach (thoracic and abdominal) was performed to surgically manage the aneurysm in keeping with the suggestions of Black[1] as it allows a good exposure of the surgical field. Hybrid technique including endovascular graft associated with visceral debranching has become the first-line approach in the management of most of the SRAAs involving visceral arteries.[6] The goal of this approach is to maintain visceral and renal arterial patency while avoiding the morbidity associated with suprarenal or supraceliac cross-clamping. Our case did not require debranching as the visceral arteries were not caught in the aneurysm.[7]

In our case, the aneurysm was smaller (3.6 cm × 3.5 cm) and saccular and the collar was sizing 14 mm. It is known that, while fusiform aneurysms of the aorta often arise in the setting of wall degeneration secondary to atherosclerotic disease, saccular aneurysms have a more varied etiology, including aortic infection, degeneration of a penetrating atherosclerotic ulcer, trauma, and previous aortic surgery.[8] In our case, the etiology was probably aortic infection because of the active TB. Saccular aneurysms have historically been perceived by vascular surgeons as possessing a greater rupture risk than their fusiform counterparts. In a report from the Joint Council of the Society for Vascular Surgery and International Society of Cardiovascular Surgery, aneurysm repair was recommended for all saccular aneurysms of the abdominal aorta regardless of size or symptomatic status.[9] In our context, it was not possible to perform an endovascular approach in a situation of emergency because of lacking equipment and inability for the patient to pay for this procedure. So, we decided to go for open repair approach.

The duration of the clamping is subject to variations. It was short in our case (20 min) as there were no other associated lesions; in the case of multiple lesions, the clamping time should be more extended: 67 min for Kim et al.’s case.[3] Elective suprarenal aneurysm repair was associated with considerable mortality and morbidity in the series of Karthikesalingam et al.[2] The early postoperative (30 days) mortality rate was 11% and spinal cord ischemia occurred in 6% of cases (4% paraplegia, 2% paraparesis).

The duration of hospital stay largely depends on the associated pathologies, the surgical technique itself, and the immediate postoperative course.[2] It was only 14 days in our department, but the hospitalization continued in internal medicine department.

**CONCLUSION**

Open surgery is an established method for the management of the ruptured aneurysm of suprarenal aorta. A good indication combined with a meticulous technique and good peri-operative
Care improves the prognosis. Endovascular techniques appear to be the future of treatment.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

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