

Case Report: EVAR for Abdominal Descending Aorta Pseudo Aneurysm Secondary to Pott's Spine

Yassine Eddich, M.D^{1*}, Tarik Bakkali³, Imane Halaouate, M.D¹, Nizar Taoussi, M.D¹, Hicham Ziani, M.D⁵, Mohamed Zoulati², Hassan Taoufiq Chtata⁴

¹CHU Mohamed V HMIMV Rabat, Morocco

²Assistant Professor, CHU Mohamed V HMIMV Rabat, Morocco

³Assistant Professor, CHU Mohamed V HMIMV Rabat, Morocco

⁴Professor, Head of the Unit of Vascular Surgery CHU Mohamed V HMIMV Rabat, Morocco

⁵CHU Ibn Sina Rabat, Morocco

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*Corresponding author: Yassine Eddich, M.D

CHU Mohamed V HMIMV Rabat, Morocco

Abstract

Case Report

Introduction: Tuberculous pseudoaneurysm of the descending thoracic aorta is quite rare, life-threatening, and fatal if not diagnosed in time. This lesion exposes patients to a very high risk of unpredictable rupture. **Case Presentation:** We describe a case of an infectious pseudoaneurysm of the abdominal aorta associated with infectious tuberculous spondylitis, a 48-year-old man with a medical history of high blood pressure, and an active tobacco abuse, was admitted with the complaints of abdominal and back pain, he was diagnosed by sputum culture and GeneXpert. Abdominal injected CT-scan, medullar RMI and aortography: showed a descending thoracic aortic pseudoaneurysm with spondylodiscitis from D9 to L3. The patient had a bad heart function, and could not survive to the aortic clamp time, so he was eventually treated by endovascular aortic graft associated to antitubercular drugs, and his condition has been good. **Clinical Discussion:** Classically TB pseudoaneurysms have been always treated with open surgical therapy. They are associated to high morbidity and mortality with increased lengths of hospital stay however, especially in our case the patient had a bad heart function. Due to advancements of endovascular technology, it became a good and successful alternative as a treatment even on a mycotic background, associated of medical treatment. **Conclusion:** EVAR is an alternative way for mycotic aneurysm, especially if the patient could not have an open surgery, associated with antitubercular drugs, the results are satisfying.

Keywords: Case report, tuberculosis, Spondylodiscitis, Pott's disease, pseudoaneurysm, aortic stenting, antitubercular treatment.

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1. INTRODUCTION

Tuberculous mycotic pseudoaneurysm is a rare pathology with high mortality rates. [18, 19] The most affected location is the descending thoracic aorta in patients with disseminated tuberculosis.

A case of 48-year-old man with an infectious pseudoaneurysm of the abdominal aorta associated with infectious tuberculous spondylitis is presented. The patient was diagnosed by sputum culture and GeneXpert, abdominal injected CT-scan, medullar RMI and aortography.

Our goal in our case was to manage the exclusion of the aneurysm and avoid the infection of the endograft, even if the patient had a bad heart overall function the patient was eventually treated by endovascular aortic graft and his condition has been good.

2. CASE DESCRIPTION

We report the case of a 48-year-old man with a medical history of high blood pressure, and an active tobacco abuse, was admitted with the complaints of abdominal and back pain associated to a chronic cough on a background of a 5 weeks history of dull back pain with impaired general condition: asthenia, weight loss, night fever and sweating.

2.1 Clinical exam: weakness palor and dizziness, epigastric pain, back pain

2.2 Biological:

Sputum: polymerase chain reaction for Mycobacterium tuberculosis deoxyribonucleic acid (DNA) positive

Blood: -Xpert MBT positive

Manuscript (without author details with track changes)

- Hb: 11,3
- VS: 80
- Blood culture: positive for mycobacterium tuberculosis

2.3 Transthoracic Echocardiography:

Aspect of ischemic heart disease in LV dysfunction: dilated left ventricle kinetic disorders:

akinesia of the apex and segments adjacent and hypokinesia of AS, IS and lower walls, LVEF (SBP): 30%. On Doppler: Low filling pressure of the LV

2.4 Computed tomographic scanning (CT) of the abdomen (Fig 1):

- Spondylodiscitis D9-L3
- Extended bilateral pre and latero-vertebral collection from D9 to L3, measuring 79× 72 mm in an axial plane and 143 mm in height.
- This collection pushes the aorta forward. Extravasation of contrast by an aortic fissure at D12, feeding a pseudoaneurysm, extended pre and left latero-vertebral from D12 to L2, measuring 87 x 52 mm in an axial plane and 62 mm in height.

* Multiple latero-aortic adenopathies.



Figure 1: injected CT SCAN: -aortic fissure at D12, -Collection pushes the aorta forward

2.5-MRI

Spondylodiscitis and epiduritis of the thoracolumbar hinge probably of infectious origin, comprising large extended antero-lateral collections with

a terminal cone compression. In conclusion: infectious pseudoaneurysm of the abdominal aorta associated with infectious tuberculous spondylitis (Fig 2).

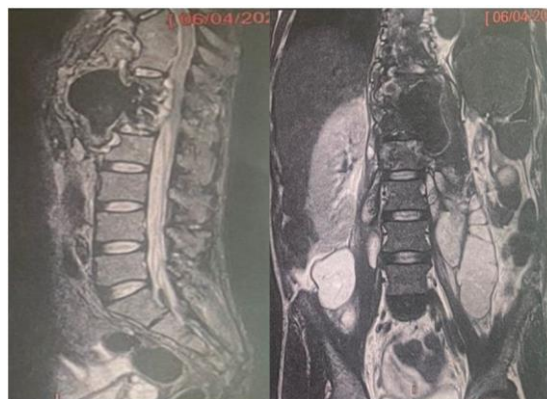


Figure 2: MRI -spondylodiscitis D12 L1-large bilateral antero-lateral paravertebral collections

The patient underwent endovascular repair of the pseudo-aneurysm using an endoprosthesis (Medtronic 26 mm × 150 mm) performed by the head of vascular department in Rabat Professor T.H. CHTATA. Under general anesthesia percutaneous puncture of the femoral artery on the scarpa, setting up an intro 6f, and changing it with a long introducer 12F over an Advantage™ terumo guidewire. After a first aortography was obtained using a 5F Pigtail catheter, the landing zones were marked, the endoprosthesis was tracked and centered over the pseudoaneurysm, under fluoroscopic guidance, deployed and subsequently ballooned with a reliant balloon catheter. The final angiogram showed a complete and successful exclusion of the pseudoaneurysm (Fig 3). the procedure ended without any complication, the patient spent one night in intensive care before being transferred to our department, and was discharged after

4 days the patient had to finish his 3 months antiagregant treatment and 9 months of anti-tuberculosis medication.

After one month, the patient was asymptomatic and the computed tomography confirmed a total exclusion of the pseudoaneurysm s a smooth blood flow in the aorta, a firmly fixed stent on the aortic wall without distortion and displacement; no peripheral endoleakes of the contrast agent was observed (Fig 4).

The long term follow up consisted on an annual computed tomography. Our work has been reported in line with the SCARE criteria. The patient had good stability of the spine; thus, spinal stability reconstruction was not considered. At his 3-month follow-up, the patient was asymptomatic. The patient was very satisfied by the results and did not show any other symptoms.



Figure 3: Aortogram demonstrates satisfactory endoluminal occlusion of the aneurysm with the EVAR stent-graft covering aortic fissure at D12



Figure 4: Control CT scan month after EVAR demonstrates the occlusion of the aortic fissure without peripheral leakage

3. DISCUSSION

Tuberculosis (TB) is endemic in sub-Saharan Africa and Asia [1]. It is caused by the *Mycobacterium tuberculosis* and most commonly affects the lungs. Diagnosis and treatment of Pott's disease are often delayed because initial signs and symptoms are nonspecific in nature [3]. Tuberculous pseudoaneurysms of the aorta are rare and have a poor prognosis. Only 44 cases have been reported since 1945 [20], only 32 patients with tuberculous aortic pseudoaneurysm have been successfully operated. The aortic involvement of tuberculosis often leads to pseudoaneurysms. Tubercular pseudoaneurysm of the descending thoracic aorta is a rare and potentially fatal complication of tuberculosis (TB) it is developed from a perforation of the aortic wall [4], the risk of rupture is high and unpredictable without medical or surgical management, catastrophic hemorrhage or uncontrolled sepsis may occur and leads to 50% mortality. However, symptomatology is frequently nonspecific during the early stages, so a high index of suspicion is required to make the diagnosis.

Common surgical methods include the following: vascular lesion removal and synthetic vascular replacement; extra-anatomic reconstruction; direct suture closure or patch repair; and endovascular stent-graft exclusion or endovascular aneurysm repair (EVAR) [17] the choice of surgical approaches should depend on the patients specific conditions.

However, In the recent years with the expanding use of endovascular aortic aneurysm repair (EVAR), the indications of the procedure have been extended to include infected aneurysms.

Endovascular treatment with stent-grafts has been introduced as an alternative with the anticipation that lesser surgical trauma, especially in the septic patient with considerable comorbidity, It is becoming a real alternative to open surgery for the treatment of mycotic aneurysm involving the descending thoracic and abdominal aorta [12, 13].

The potential benefits of endovascular repair include small incisions, minimal aortic cross-clamping time with reduction in end-organ ischemia, avoidance of general anesthesia, full heparinisation Endoluminal repair should reduce the length of stay in intensive care units, the risk of cardiopulmonary, neurological and renal complications, and recommended to avoid life-threatening pseudoaneurysm rupture, also makes an earlier return to activities of daily living [9, 10].

This could be a temporising treatment prior to definitive open surgical repair, or a therapeutic alternative in critically ill patients who may not survive open surgery. We should note in our case that we had no formal proof of the tuberculosis infection, but all arguments were oriented to it. Since 1990s, EVAR has been used to treat tuberculous pseudoaneurysm because

it is less invasive and offers good results [14-16]. However, EVAR also has drawbacks, such as transplant site infection, later-stage prosthesis rupture, and embolism [11].

4. CONCLUSION

In our case, due to his impaired heart condition the patient was treated by a stent graft, an antituberculosis treatment was systematically undertaken according to the traditional protocol (isoniazid, rifampin, pyrazinamide, and ethambutol) (National Program of Combat against Tuberculosis) for 9 months, the patient had no need to stay in high intensive care, and there was no peripheral leakage on the CT scan 1 month after the procedure Tuberculous pseudoaneurysms of the aorta necessitate an early intervention before the rupture. Surgical treatment remains the preferred option but endovascular repair with a stent graft is a therapeutic alternative, to be considered in high-risk surgical patients.

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