

Aorta after Stent Grafting for Mycotic Aneurysm

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Endovascular stent grafting is applied for the treatment of different aortic pathologies in the current medical era. It may be lifesaving in patients with comorbidities and virtually inoperable when adopting conventional techniques. This manuscript reports on a 40-year-old patient, who was previously treated for a mycotic saccular aneurysm at the aortic arch and who presented with a descending aortic rupture at the mid-term follow-up. The descending aortic rupture was also managed successfully by endovascular measures.

Introduction

Aneurysms at the arch and thoracic levels of the aorta are more frequently encountered in the current era. Despite advances in surgical techniques and in perioperative anesthesiological and postoperative reanimation care facilities, the surgical treatment of the aneurysms of the critical segments, i.e., the aortic arch and branching regions, still account for considerable mortality and morbidity rates¹.

The promising results of endovascular stent graft repair of abdominal aortic aneurysms has attracted physicians and so special interest was directed to the use of this technique for the treatment of aneurysms at different segments of the arterial tree. At present, the procedure is applied when treating different kinds of aneurysms at nearly all regions of the whole arteriovenous network².

Although, at first, the proposed technique was meant for surgically high-risk candidates, successful mid-term results of the surgical modality challenged the boundaries of indications of endovascular treatment. Despite the contradictory nature of the treatment of infected aneurysms, endoluminal stent grafting is also applied for the treatment of mycotic aneurysms²⁻⁸. Currently, long-term results are not available; however, short and mid-term results of the

treatment have been promising²⁻⁸, when compared to conventional extensive debridement and artificial graft replacement or extra-anatomic bypass procedures^{1,2}.

In this report, we present the results of a 40-year-old patient in the mid-term follow up who was previously treated with endovascular stent grafting for mycotic saccular aneurysm at the aortic arch.

Case Report

The patient was a 40-year-old male with a history of acute lymphoblastic leukemia, ankylosing spondylitis and chronic hepatitis B infection. On his first admission, he had been diagnosed with Ortner's syndrome secondary to mycotic saccular aneurysm at the distal aortic arch (Figure 1), 1.5 years ago. It (**What does "it" refer to?**) preceded pneumonia following his first dose of chemotherapy for leukemia. He had undergone endoluminal stent graft treatment covering the distal aortic arch and the proximal portion of the descending aorta in order to exclude the aneurysm. Multiple blood cultures obtained before and after the treatment at that time did not reveal any positive results for possible microorganisms. However, the decision was made to initiate lifelong antibiotic therapy with co-trimoxazole². Since then, the patient has been symptom-free and has been regularly followed and treated by the cardiovascular surgery and hematology institutions. Because of his comorbidity status, mostly due to leukemia, the preliminary stent grafting used for the treatment of the mycotic saccular aneurysm at the aortic arch was not considered as a bridge to definitive treatment.

However, unexpectedly, the patient was admitted with acute onset back-flank pain and underwent thoracoabdominal computed tomography angiography. The diagnosis was rupture of the descending aorta, from the region immediately at the end of the stent graft (Figure 2A-B). The decision was to treat him with endovascular stent grafting. Intervention was performed under general anesthesia. The Stent graft system (Talent Thoracic Stent Graft, Medtronic AVE, Coil Track TDS) was deployed from the right femoral artery, anchored to the previous stent graft in the descending aorta and the region of rupture was excluded successfully (Figure 3A-B). Multiple blood cultures were obtained as soon as the diagnosis was made, before and after the stent graft repair. However, a possible causative agent could not be cultivated. Postoperative

Keywords

Aorta, thoracic/abnormalities; blood vessel prosthesis; aortic aneurysm, thoracic; aneurism, infected.

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course was uneventful and the patient was discharged with lifelong antibiotic recommendation with co-trimoxazole.

The patient was followed and remained asymptomatic for a one-year period after the treatment, but unfortunately died due to the complications of acute lymphoblastic leukemia.

Discussion

The mycotic aortic aneurysms constitute approximately 1% of all aneurysms². The classical treatment of the disease includes open surgical procedures with extensive debridement of the tissues at the vicinity of the aneurysm and resection of the diseased aortic segment. Revascularization of the distal vascular bed can be mediated with *in situ* grafts or extra-anatomic bypass procedures. However, this procedure carries the risk of increased mortality and morbidity¹⁻³.

With the advances in endovascular stent graft treatment modalities and despite the controversies, endovascular treatment is also currently used for the treatment of mycotic aneurysms²⁻⁷. Although, in the early term it may be life saving, long term results are still lacking in order to establish the method as a standard therapy for mycotic aneurysm repair.

The literature contains successful mid-term results of endovascular mycotic aneurysm repair in up to 33 months³. However, similar cases have also been presented with peripheral seeding⁶ or rupture of the pseudo aneurysm proximal to the stent graft⁷. Our patient had undergone endovascular stent graft treatment of mycotic saccular aneurysm at the aortic arch² and had been asymptomatic for 18 months until he presented with the rupture of descending aorta from the distal margin of the stent graft.

Another issue with the endovascular mycotic aneurysm repair is the postoperative treatment of the patients.

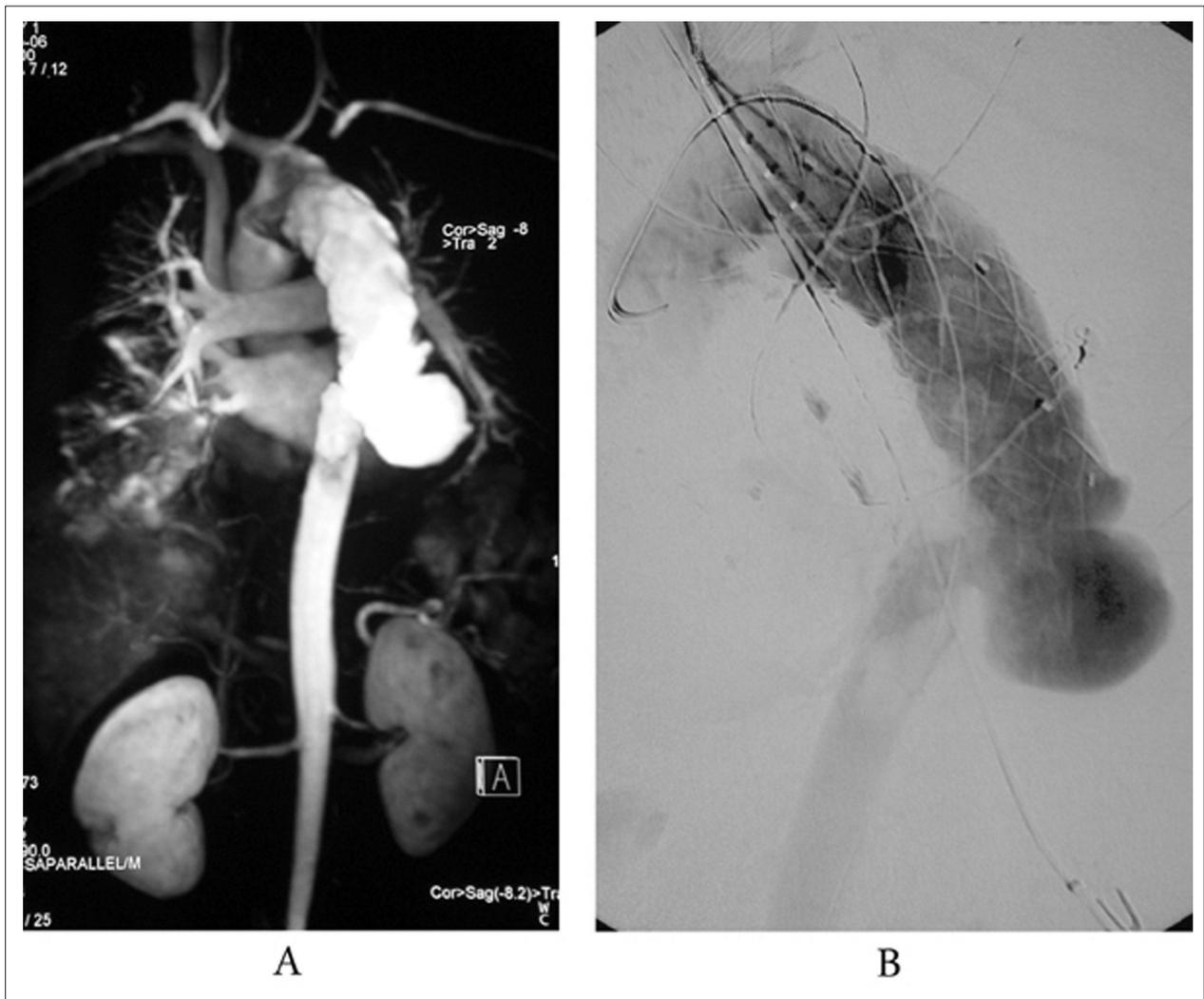


Figure 1 - A - Computed tomography angiography showing the previous endovascular stent graft treatment for the mycotic saccular aneurysm at the aortic arch and the descending aortic rupture from the distal margin of the stent graft. B - Angiography showing the previous endovascular stent graft treatment for the mycotic saccular aneurysm at the aortic arch and the descending aortic rupture from the distal margin of the stent graft.

Case Report

Since the etiology still remains after the exclusion with endovascular stent graft, the antibiotic therapy is a matter of concern. It is difficult to detect a causative agent in a case as the blood cultures may be negative² and so deciding on the appropriate antibiotic type is complicated. Hence, there is no consensus in the literature on the type and duration of antibiotic therapy. Many authors recommend postoperative antibiotic use²⁻⁷, and even sometimes lifelong therapy²⁻⁶.

The endovascular stent grafting may also be preferred as a bridge to surgical repair. When used for the treatment of mycotic aneurysms, aorto-enteric, aorto-esophageal or aortobronchial fistula, there is a high probability that the most recent stent-graft implant may become infected and may lead to a greater problem. Therefore, some authors prefer endovascular stent grafting as the initial life saving procedure and to perform the definitive treatment when the patients are in stable conditions⁸. In our case, the patient had multiple comorbidity factors, the most important being the active leukemia. Further additional invasive interventions, such as surgical repairs, were not

planned and so the strategy was to prescribe lifelong oral antibiotic therapy and follow the patient closely with regular outpatient clinic controls.

In conclusion, endovascular treatment may be lifesaving in patients with comorbidities and virtually inoperable when adopting conventional techniques. A careful follow-up is mandatory after endovascular mycotic aneurysm repair. The creation of a multicentric database consisting of data on the pathology with the proposed treatment modality will help to provide guidelines for the method.

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Potential Conflict of Interest

No potential conflict of interest relevant to this article was reported.

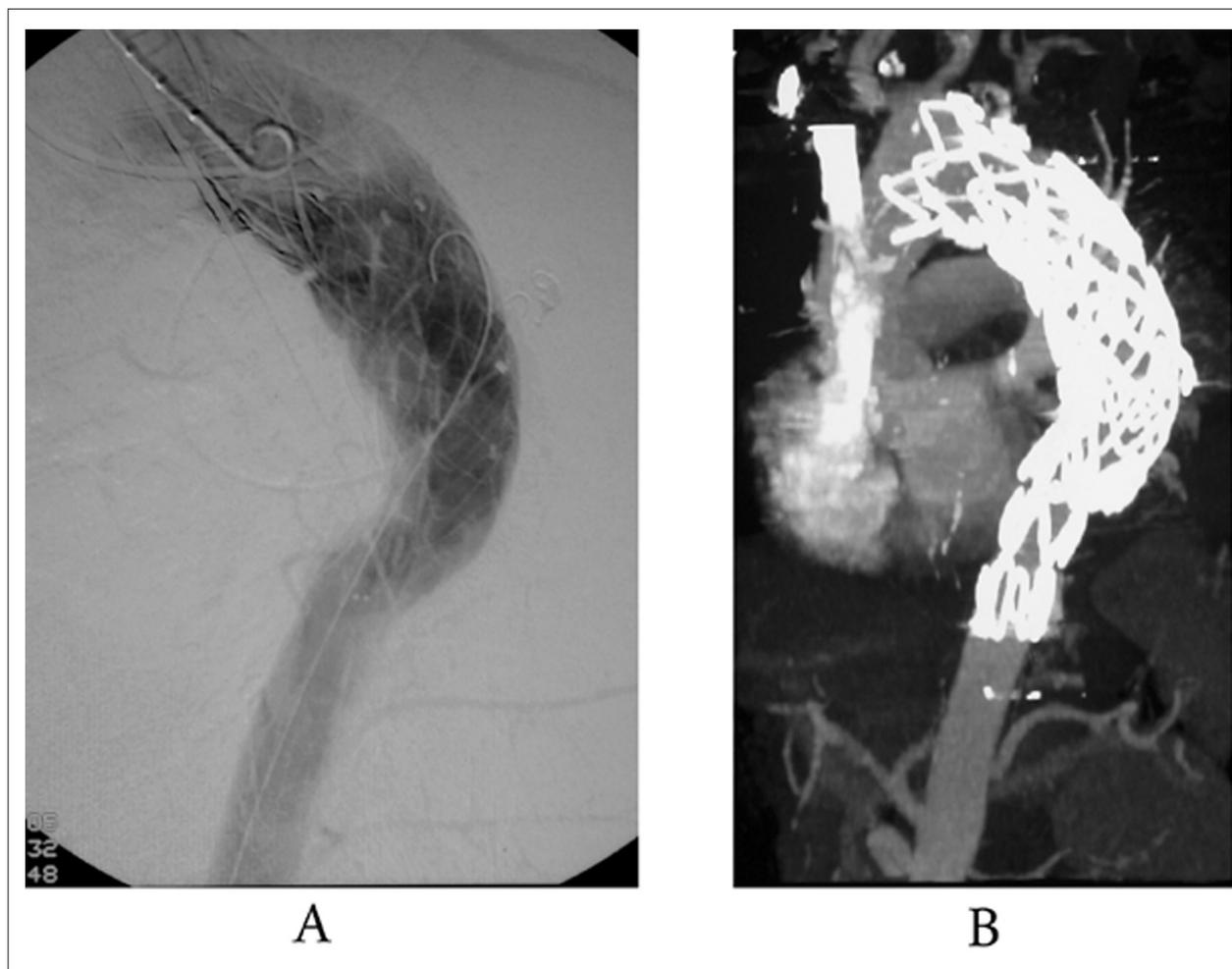


Figure 2 – A - Angiography showing the successful exclusion of the aortic rupture by endovascular stent graft with anchoring the body of the new graft system to the previously implanted graft. **B** - Computed tomography angiography showing the successful exclusion of the aortic rupture by endovascular stent graft with anchoring the body of the new graft system to the previously implanted graft.

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Study Association

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