SUCCESSFUL ENDOVASCULAR TREATMENT OF MYCOTIC ANEURYSMS OF THE INFERIOR MESENTERIC ARTERY AND THE ABDOMINAL AORTA

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Aim. To report a case of successful endovascular treatment of mycotic aneurysms of the inferior mesenteric artery and the aorta.

Case report. Infrarenal aortitis in a 55-year-old multimorbid man resulted in formation of two mycotic aneurysms, one in the infrarenal aorta and the other in the inferior mesenteric artery. The patient was treated with a bifurcated aortic endograft. Antibiotic therapy was continued postoperatively for one year. Shrinkage of both aneurysms was obtained with no signs of infection or endoleaks at five year follow-up.

Conclusion. Aortic endografting combined with long-term antibiotic treatment may be considered as a treatment option in similar cases.

***Key words**: mycotic aneurysm, inferior mesenteric artery, endovascular treatment of the mycotic aneurysm.*

INTRODUCTION

Although mycotic aneurysms of the aorta are rare, various case reports regarding their management are available. Mycotic aneurysms of the aortic branches are even more uncommon. They are characterized with a high rupture rate of 85% [1] leading to mortality rates of up to 70%, depending on the location of the lesion [2]. We present a case report of successful endovascular treatment followed by a long-term antibiotic therapy for the mycotic aneurysms of the inferior mesenteric artery and the abdominal aorta.

Case report

A 55-year-old man with a history of heart failure due to dilated cardiomyopathy (ejection fraction approximately 40%), diabetes mellitus type 2, paroxysmal atrial fibrillation, arterial hypertension, smoking and alcohol abuse was referred to the central hospital because of abdominal pain and fever. The patient had actually suffered from fever episodes for approximately one month prior to the admission. Both the leukocyte count and the C-reactive protein (CRP) level were high at admission, 16.8E9/L (normal range 3.4–8.2E9/L) and over 140 mg/L (normal concentration below 10 mg/L) respectively. Therefore a wide spectrum intravenous antibiotic treatment was initiated (cefuroxime 1,5 g x 3/day and metronidazole 500 mg x 3/day). Primary computed tomography (CT) revealed distal aortitis and periaortic lymphadenopathy. Even though the CRP level decreased to 30 mg/L, and the leukocyte level normalized (7.2E9/L) within six days after admission, the abdominal pain increased to an extent that the patient required epidural anesthesia. Abdominal CT the same day revealed an extensive infrarenal periaortic oedema together with two saccular aneurysms with the largest diameter of 2.8 cm. The first one involved the inferior mesenteric artery (IMA), while the second one affected the abdominal aorta (Fig. 1). The patient was transferred to the university hospital and treated with percutaneous implantation of Excluder endoprosthesis (W.L. Gore & Assoc, Flagstaff, Ariz) obtaining complete isolation of the mycotic aneurysms. The aortic neck was 19.3 mm in diameter and over 38 mm in length. The distal aortic diameter was slightly over 18 mm, thus allowing a 23 mm x 120 mm trunk-ipsilateral leg component and a 12 mm x 70 mm contralateral leg component implantations (Fig. 2). No IMA's embolization was performed during the procedure in order to reduce the risk of rupture. Aortic endografting provided complete abdominal pain relief. The patient was treated postoperatively with intravenous cefuroxime 1,5 x 3/day and metronidazole 500 mg x 3/day for 1 day followed by ceftriaxone 2 g x 1/day for 18 days at the department of internal medicine and was eventually discharged asymptomatic. No bacterial growth was found according to numerous specific blood tests and blood cultures taken pre– and postoperatively by an infection disease specialist. Oral antibiotic treatment (levofloxacin 500 mg x 1 daily followed by cephalexin 500 mg x 3 daily) was, however, administered for one year. Positron emission CT-scan at one-month follow-up revealed considerable decrease of aortic inflammation with the total isolation

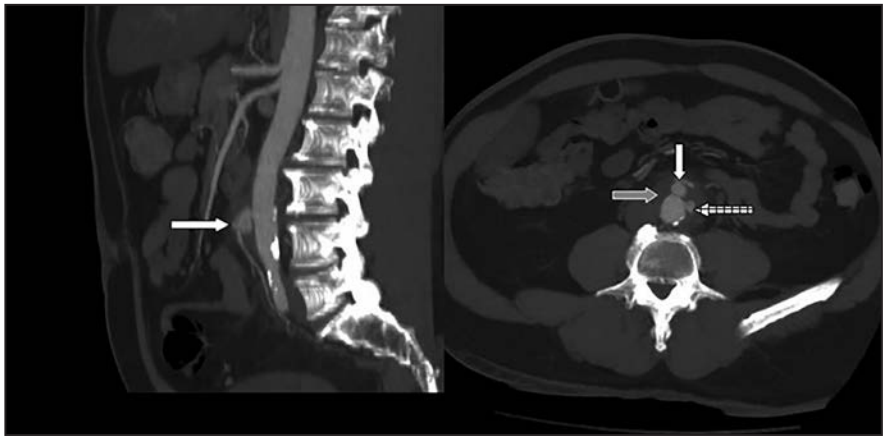

Fig. 1. Preoperative CT. The white arrows demonstrate the mycotic aneurysm of the IMA. The check arrow points to the mycotic aneurysm of the aorta, the grey arrow-to the periaortic oedema.

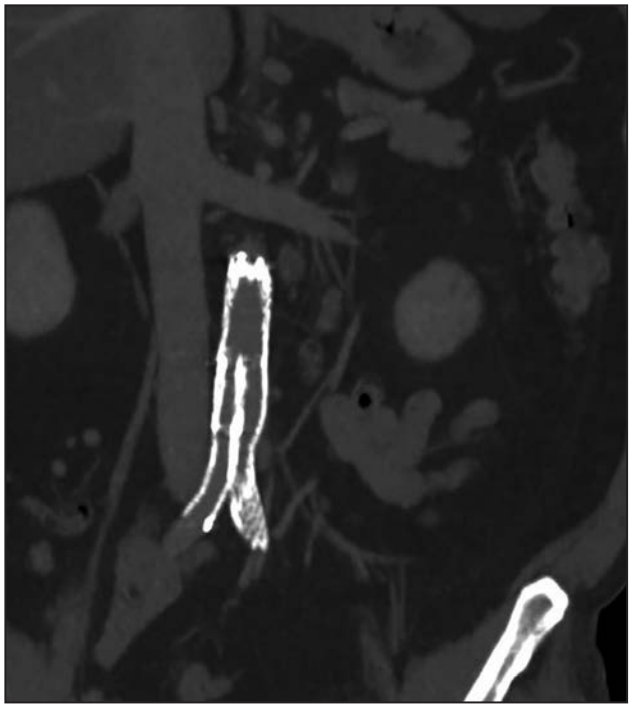

Fig. 2. CT-scan-cut showing the endograft with the leg components fit the aorta.

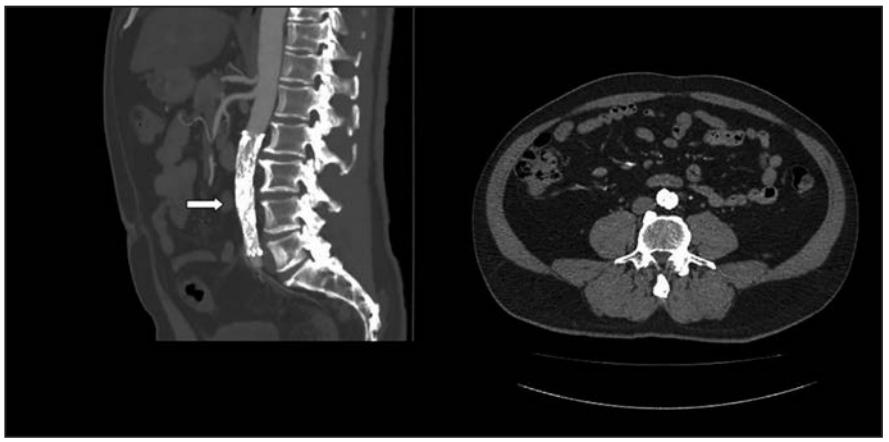

Fig. 3. Two-year postoperative CT showing no periaortic oedema or aneurysmatic changes. The white arrow points to an intestinal loop.

and shrinkage of the aneurysms. Two-year CT-control showed no aortic inflammatory changes or aneurysm progression (Fig. 3). The follow-up at the infection disease outpatient clinic was continued for two years. To date, 5 years after the endograft implantation, the patient remains completely asymptomatic with no signs of infection or aneurysm growth. Despite that, the patient will be followed-up, with ultrasound examinations performed annually.

DISCUSSION

Mycotic aneurysms can develop as a result of bacterial infection of the arterial wall. Staphylococcus, Salmonella and Streptococcus species are the most common causative pathogens of mycotic aneurysms [3, 4]. The infection more frequently occurs in patients with immunodeficiency, cardiac valvular abnormalities, diabetes and intravenous drug addiction [5]. This particular patient suffered from heart failure, diabetes and was addicted to alcohol. These factors made him potentially vulnerable to the complications described. An echocardiography was performed preoperatively, but no valvular pathological changes were found.

Due to unpredictable progression many authors suggest operative treatment of mycotic aneurysms. Available modalities include traditional open surgical and endovascular interventions combined with antibiotic therapy [1, 6]. Despite aggressive treatment policy the mortality rate varies from 5 to 40% [1, 7, 8]. Interestingly, traditional open and endovascular aortic repair (EVAR) do not seem to have significant differences in terms of early mortality or intermediate-term survival rates [8]. To our knowledge, there is only one english-language case report depicting the management of the mycotic aneurysm of the inferior mesenteric artery published in 1979 [9]. The procedure included excision without revascularization. Our case was, however, quite specific as it comprised distal aortitis and two mycotic aneurysms, one of which affected the IMA. As the patient's ejection fraction due to the heart failure was decreased, and the patient's general condition was poor, EVAR was considered as a more appropriate treatment modality.

The arterial inflow discontinuation consequently led to the aneurysm shrinkage with no subsequent endoleaks found at follow-up.

Definitive recommendations in regards to antibiotic treatment as well as its length do not exist at the moment. However, preoperative antibiotic treatment lasting for longer than one week is recognized as a significant protective factor for persistent infection [10]. The duration of postoperative antibiotic therapy in the previously published reports varied from several weeks [11] to a lifelong suppressing treatment [6]. In our case numerous blood tests revealed no bacterial or fungal growth. This, however, doesn't rule out the infectious etiology of the described aortic changes as the blood cultures were taken only after the initiation of the antibiotic treatment thus, possibly, complicating the interpretation of the results. The antibiotic treatment policy, including the recommendation for appropriate treatment length, was negotiated with the specialists of the infectious diseases unit.

CONCLUSION

Aortic endografting followed by a long-term antibiotic treatment may be considered as a treatment option in similar cases.

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