

## INVITED COMMENTARY

## Is TEVAR a Safe Approach for the Treatment of Mycotic Thoracic Aortic Aneurysms?

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Infected (mycotic) aortic aneurysm (MAA) is a rare and life threatening disease, with a very high mortality rate both without treatment and with medical treatment alone.<sup>1</sup> Conventional surgical treatment has been considered the gold standard and consists of resection of the aneurysm, extensive local debridement and revascularisation by *in situ* reconstruction or extra-anatomic bypass. However, surgical treatment also carries a high mortality and morbidity, especially when it is associated with the presence of sepsis, immunodeficiency, and difficult anatomical location of the aorta, such as the aortic arch.<sup>2</sup>

Sörelius et al.<sup>3</sup> present a very interesting paper entitled “Nationwide study on treatment of mycotic thoracic aortic aneurysms”. Local patient registries (2000–09) and the Swedish vascular registry (2010–16) were analysed at eight tertiary referral vascular centres in Sweden, looking at survival as the primary outcome. Secondary outcomes included surgical strategy, rate of infection related complications (IRC), and re-operations. Fifty-two patients were identified. Thoracic endovascular treatment (TEVAR) was performed in the vast majority of the cohort (96%). Survival was 92%, 88%, 78%, and 71% at one month, three months, one year, and five years, respectively. IRCs occurred in nine patients (17%) and were fatal in six (12%). IRCs included three cases of sepsis, three graft infections, one recurrent mycotic aneurysm, and two cases of aorto-oesophageal/bronchial fistula (80% of IRCs occurring within the first year). Nine patients underwent re-operation. Antibiotics were administered for a median of 15 weeks. The authors concluded that TEVAR was mainly used as treatment for mycotic thoracic aortic aneurysms (MTAAs), with acceptable short and long-term survival when compared with open cohorts in the literature. However, IRCs are of concern and warrant follow up and long-term antibiotic treatment.

This series is probably the largest published to date on MTAAs and it is the result of the Swedish vascular surgery collaboration network, based on the national Swedish vascular registry (Swedvasc). National vascular registries should be encouraged in other countries following the

Swedish model and even European or International registries established. Large prospective registries are especially valuable in the study of rare pathologies such as MTAA.

Surprisingly, infection related death and long-term survival at five years in the Swedish series on MTAA were better than those of another interesting study published by the same author as principal investigator.<sup>3,4</sup> The European multicentre study on the endovascular treatment of MAA identified 123 patients with mycotic aneurysms also involving other locations in the aorta.<sup>4</sup> Antibiotic therapy was administered for a mean of 30 weeks and infection related death occurred in 23 patients (19%), nine after discontinuation of antibiotic treatment. Five year survival was 55%. The authors concluded that although endovascular treatment of MAA is feasible and a durable treatment option for most patients, late infections do occur, are often lethal, and warrant long-term antibiotic treatment and follow up.

The incidence of MAA is reportedly higher in East Asia and several single centre series from this area have been published on surgical treatment of MAA.<sup>2,5</sup> In a recent study by Kim et al.,<sup>5</sup> 19 patients underwent open repair for MAA, from 2006 to 2016. All infected tissue was extensively debrided and covered with soft tissue. Aortic continuity was restored *in situ* with aortic graft (Dacron, Gore-Tex, or homograft). The early mortality rate was 10.5% and the five year survival rate was 75%. Results of endovascular repair of MTAA compare well with those of open repair.

Unfortunately, recommendations are difficult to establish on the best MTAA approach. Different factors like the anatomical location of the aneurysm, the pre-operative medical conditions, and the infectious pathogen should be thoroughly evaluated and each patient treated on a case by case basis, using conventional open repair, endovascular repair, or a combination of both approaches.

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