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SHORT REPORT

Endoluminal Repair of a Contained Thoracic Aortic Rupture Due to Primary Staphylococcal Aortitis

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Abstract We report a case of primary infectious thoracic aortitis with contained rupture of the descending thoracic aorta caused by *Staphylococcus aureus* and successfully treated with a rifampicin-rinsed aortic stent graft.

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Open access under [CC BY-NC-ND license](http://creativecommons.org/licenses/by-nc-nd/3.0/).**Introduction**

Infectious aortitis is a rare but life-threatening condition.¹ Aortic rupture is described in non-aneurysmal aortitis.² We present a case of a contained rupture of the proximal thoracic aorta due to a bacterial aortitis.

Case Report

A 63-year-old female presented to our emergency department with crampy abdominal pain and rigors for 4 days. The

past medical history consisted of a Sjögren syndrome, which was treated with azathioprin and prednisolone. The patient was febrile (39.7 °C). The white blood cell (WBC) count was 8.8/nl, and C-reactive protein level was 167 mg l⁻¹. Blood cultures were positive for *Staphylococcus aureus*. A specific focus for the staphylococcal bacteraemia could not be detected. The patient was treated with ceftriaxon intravenously for 9 days and discharged without any complaints.

Four weeks later, the patient was re-admitted with fever, rigors and thoracic pain. Blood cultures were again positive for *S. aureus*. Trans-oesophageal echocardiography now showed inflammatory thickening of the aortic wall at the lesser curvature with a luminal ulcer. Computed tomography angiography (CTA) confirmed the diagnosis of a contained aortic rupture with a extravasation of contrast (Fig. 1). Intravenous antibiotic treatment with penicillin and rifampicin was started.

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Figure 1 CTA of the chest showed aortic wall thickening (A) and a extravasation at the lesser aortic curvature as sign of aortitis and contained aortic rupture (B).

To allow soaking with rifampicin, we chose a Dacron-covered endostent, which was rinsed with rifampicin solution for 5 min prior to administration. Under general anaesthesia, a Zenith Endoprosthesis (Cook Inc., Bloomington, IN, USA) was deployed in the distal aortic arch with overstretching of the left subclavian artery.

Postoperatively, the patient reported a significant pain relief. Control CTA confirmed complete exclusion of the rupture (Fig. 2). Antibiotic treatment was continued intravenously until the values of C-reactive protein were normal. Subsequently, clindamycin and rifampicin were administered orally for further 4 weeks.

At 3 months' follow-up, there were no clinical or radiological signs of a recurrent inflammatory focus of the thoracic aorta.

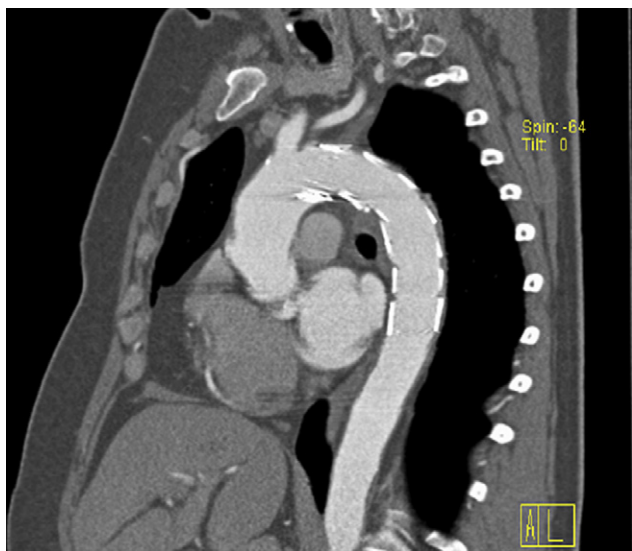


Figure 2 Postoperative CTA demonstrates complete occlusion of the rupture.

Discussion

Infectious aortitis is a rare entity. In the absence of endocarditis, the source of a bacteraemia, as in this case, often remains speculative. Multislice CTA typically shows thickening of the aortic wall with periaortic fluid. As a possible prequel of mycotic aneurysms, there is a certain risk of aortic rupture, even without aneurysmal changes.^{1,2} With normal aortic diameter, aorto-oesophageal and aorto-bronchial fistulae are the most common presentations of aortic wall perforation with infectious complications. To rule out an aortic fistula, oesophagoscopy, bronchoscopy and upper gastrointestinal series by contrast-dye swallow should be performed.

Along with radiological studies, identification of the infectious focus is essential for successful treatment. The exclusion of bacterial endocarditis is one major step in this work-up. Although in some cases the focus of infection remains unexplained, especially in immuno-suppressed individuals. Broad-spectrum antibiotics should be started if blood cultures are negative.

Infectious false aneurysms or contained aortic ruptures need to be surgically treated. Due to the inflammatory changes of the aortic wall, open surgical repair is technically difficult and the risk of secondary ruptures is high. Endoluminal repair of aortic pathologies has been established during the recent decade and has been reported as an alternative treatment option in infected thoracic pseudo-aneurysms by Bell and co-workers.³ Endoluminal repair supplies urgent bleeding control in aortic rupture and the mortality is significantly lower than for open surgical repair.⁴ Due to the infectious nature of bacterial aortitis, there is a potential risk for endograft infections. This severe complication is known from endovascular treatment of aorto-oesophageal fistulae.⁵ In case of graft infection, graft removal and open surgical repair are unavoidable.

Conclusion

Endovascular repair of contained thoracic aortic ruptures in infectious aortitis is a valuable treatment option that has a potentially lower mortality and morbidity than open surgical replacement of the thoracic aorta. Long-term data, especially concerning graft infection, are lacking.

Conflict of Interest

Ingolf Töpel received financial support from Cook Inc., Medtronic Inc. and W.L. Gore.

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