SHORT REPORT

Atherosclerotic and Infectious Left Subclavian Artery Aneurysm: Two Case Reports and Review

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Introduction

Subclavian artery aneurysms (SAA) are rare, contributing to about 1% of all peripheral aneurysms. We present two cases, an atheroslerotic and an infectious SAA. The purpose of this report is to present the range of therapeutic options including interventional and surgical methods available in such cases.

Case Report

Case 1

A 74-year-old man suffered from hoarseness and a sensation of a globus pharyngeus, caused by a left SAA with a diameter of 7.5 cm. The aneurysm and its thrombus arose from a broad neck at the aortic arch (Fig. 1(a)) and was causing compression of the trachea and oesophagus (Fig. 1(b)). Surgical intervention consisted of a transposition of the subclavian artery (PTFE bypass) and of the vertebral artery (direct anastomosis) to the left carotid artery. Under extracorporal circulation and hypothermic circulatory arrest (24 min), the subclavian artery was transected at its origin and the aortic arch reconstructed with a pericardial patch. The postoperative course was uneventful.

Case 2

A 61-year-old patient suffered from fever and chills for two weeks, pain in the left chest and shoulder, weight loss and night sweating. After antibiotic treatment with amoxicillin and clavulanic acid a chest CT revealed a subclavian aneurysm with a diameter of 7 cm (Fig. 2(a)). This was assumed to be infective in origin. MR angiography was performed for preoperative planning (Fig. 2(b)), and antibiotic treatment was changed to Piperacillin, Tazobactam and Amikacin. The intervention consisted of a reversed venous bypass from the left carotid artery to the left subclavian artery with resection of the aneurysm during cardiac arrest (13 min) with direct closure of the aortic arch.

Microbiological culture of tissue from the subclavian artery revealed Salmonella enteritidis and antibiotic treatment was continued for six weeks with the same regime but substituting Amikacin for Ciprofloxacin. The patient developed pneumonia and dysphonia, the investigation of which revealed a paresis of the left recurrent laryngeal nerve. After recovery, the patient was discharged with a patent graft.

Discussion

Only a few case reports and small series of SAAs are found in the literature. SAAs contribute to about 1% of all peripheral aneurysms and are twice as frequent in males than in females.²,³ Since 33–47% of patients with an SAA have other peripheral aneurysms, they should be screened for them.²

About 60% of SAA are caused by atherosclerosis. Other causes include trauma, thoracic outlet syndrome (poststenotic dilatation) and infections (mycotic,
bacterial, tuberculosis, syphilis). Rarely, they can occur in conjunction with arteritis or as congenital lesions.\textsuperscript{1,2,5}

At least 50\% of patients with SAAs are asymptomatic.\textsuperscript{4} SAA may, however, present as a supraclavicular pulsatile mass, cause pain and lead to local compression.\textsuperscript{1,2} Rupture, thrombosis and embolism to the upper extremity or cerebrum are other reported symptoms.

The diagnosis is usually made with computed tomography. However, for further operative planning, angiography, MR angiography or a 3D-reconstruction of the aorta and its branches is mandatory.\textsuperscript{1,4}

For every patient presenting with a subclavian aneurysm, surgery should be considered.\textsuperscript{2–4}

Open surgical techniques used include the exclusion of the SAA and anatomical reconstruction with graft interposition (vein/prosthesis). This technique is restricted to small aneurysms that are at a distance from the aortic arch. Alternatively, the SAA may be ligated and an extra-anatomical reconstruction performed with transposition of the subclavian artery to the carotid artery. Reconstruction of the aortic arch may be performed after median sternotomy with extracorporeal circulation and short hypothermic
circulatory arrest. This procedure was performed in the cases presented.

The operative mortality for subclavian artery repair has been reported as 6–24% and the morbidity is up to 25%. The patency rate after grafting is 86–100%. Endovascular procedures are possible, such as the exclusion of the SAA by placing an endovascular stent in the subclavian artery, which has been carried out for the treatment of small aneurysms. One possibility is the exclusion of the SAA by placing an endovascular stent in the aorta and transposing the subclavian artery to the carotid artery. This technique is familiar from the endovascular treatment of thoracic aortic disease. In this procedure, there is a risk of over-stenting the origin of the carotid artery.

We conclude, that for the very rare pathology of subclavian artery aneurysm, an individually tailored and interdisciplinary treatment is mandatory.

References


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