SHORT REPORT

Endovascular Treatment of Late Anastomotic Aneurysm Following Bypass Surgery for Atypical Aortic Coarctation due to Takayasu Arteritis

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Thoracic aortic aneurysms; Takayasu arteritis; Endovascular aortic repair

Abstract Extra-anatomic bypass surgery is a common procedure to treat atypical aortic coarctation due to Takayasu arteritis with the objective of preventing hypertensive heart failure and cerebrovascular accidents, and good long-term outcomes have been reported. However, problems at the anastomotic site are frequent, such as the late complication of anastomotic aneurysm, and such events impact on the outcome of this disease. Here, good results were obtained when thoracic endovascular aortic repair was applied for two Japanese patients who developed a late proximal anastomotic aneurysm following thoracic descending-abdominal aorta bypass surgery for repair of atypical coarctation of the aorta.

Introduction

The long-term outcome is generally good when bypass surgery is performed to treat atypical aortic coarctation (AAC) by Takayasu arteritis (TA), although problems can occur due to late development of anastomotic aneurysms. Here the authors report achieving good results when thoracic endovascular aortic repair (TEVAR) was applied for two Japanese patients who developed a late proximal anastomotic aneurysm following thoracic descending-abdominal aorta bypass surgery for repair of atypical coarctation of the aorta.

Case report

Case 1 was a 66-year-old Japanese woman who, in 1963, had undergone DAAB surgery using a 16-mm-diameter polytetrafluoroethylene (PTFE) graft for AAC. A proximal anastomotic aneurysm was diagnosed in 1993, and patch plasty was performed at another hospital. In 2006, the patch plasty site had expanded, and the patient was referred to the authors’ hospital (Fig. 1a). Case 2 was a 58-year-old Japanese woman who had undergone thoracic

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DAAB surgery using a 16-mm-diameter PTFE graft in 1965. In October 2002 she underwent TEVAR for the localized bypass graft injury at another hospital. In 2006, enlargement of an aortic aneurysm occurred at the proximal anastomotic site, and the patient was referred to the authors’ hospital (Fig. 2a). During the follow-up period, neither of the patients showed signs of systemic infection (fever, raised WBC count or elevated CRP). TEVAR was performed under general anesthesia via a femoral artery. The proximal landing zone was the thoracic descending aorta in Case 1 and the aortic arch in Case 2, while the distal landing zone was the graft used for the bypass. In Case 1, a 140-mm long stent graft with a 22–16 mm tapered design was used, and in Case 2, two stent grafts were used, a 190-mm long and a 150-mm long one with a 30–22 mm tapered design. In Case 2, a fenestration type stent graft was used and performed pressure fixation using a balloon (Figs. 1b and 2b). The size of stent graft was decided using 3DCT and a graduated catheter during angiography. The stent grafts were the Najuta type, which was jointly developed by Tokyo Medical University and Kawasumi Laboratories, Inc. (Tokyo) and is currently undergoing clinical trials in Japan. The Najuta graft was a stainless steel modified Z-stent skeleton connected by two support wires and covered with expanded PTFE artificial vessel. The exact configuration was customized for each patient. Details of the Najuta have been reported previously.1

Discussion

TA that is characterized by lesions of the thoracic descending aorta, abdominal aorta and/or renal arteries is classified as type III,2 which is also referred to as AAC. In this disease, progression of the lesions can lead to life-threatening complications due to hypertension of the upper body, such as hypertensive heart failure and cerebral hemorrhage. For that reason, with the objective of correcting the upper body...
hypertension, extra-anatomic bypass surgery is commonly performed. Good long-term outcomes are attained with bypass procedures. However, there is a high incidence of complications at the anastomotic site, such as anastomotic aneurysms, and such events impact on life expectancy. Takeya et al.3 performed 44-year follow-up of 33 patients who had undergone DAAB and reported a 20-year survival rate of 62.3% for 29 of those patients. However, 10 (34%) of the patients developed anastomotic aneurysms, and 2 died within 20 years. Accordingly, effective management of post-operative anastomotic aneurysm is crucial to the long-term outcome of patients who undergo bypass surgery for AAC.

TEVAR for anastomotic aneurysms enables repeat redo surgery to be avoided, and it also does not involve extracorporeal circulation. For that reason, TEVAR is effective as a minimally invasive procedure. Although the follow-up of our two patients has been short at 2.5 years, as of this writing there have been no TEVAR-related complications, and the results thus far have been good. However, to date, there have been only a few reports4,5 of TEVAR to treat aortic aneurysms due to TA, and long-term results have not yet been obtained. Accordingly, in the future it will be necessary to carry out careful observation of the course of post-TEVAR patients.

Conflict of interest/funding

None.

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