Successful Treatment of Giant Ascending Aortic Aneurysm with Takayasu Arteritis

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Summary

A 50-year-old man who suffered from dyspnea on effort with hearing loss was referred to our hospital. Computed tomography angiography revealed a giant 90-mm diameter ascending aortic aneurysm with severe calcification and neck vessel occlusion. Transthoracic echocardiography revealed moderate-to-severe aortic regurgitation. His condition was diagnosed as Takayasu arteritis and he underwent aortic valve reimplantation with total arch replacement. Postoperative computed tomography angiography showed complete aneurysm resection and the patient was discharged without any complications and his hearing loss improved. He is currently being followed up as an outpatient.

Key words: Aortic regurgitation

In surgical treatment for patients with Takayasu arteritis (TA), in addition to marked calcification of the arteries, dilation and stenosis lesions are simultaneously present. Thus, it is vital to consider the procedure based on the patient’s vascular condition. We successfully treated a patient with TA by performing aortic replacement, carotid artery bypass, and aortic valve reimplantation which coexisted with a giant ascending aortic aneurysm, artery stenosis with occlusion of neck vessels, and aortic regurgitation (AR).

Case Report

A 50-year-old man who suffered from dyspnea on effort and was referred to our hospital for closer examination. Computed tomography angiography revealed a giant 90-mm diameter ascending aortic aneurysm with severe calcification (Figure 1A, B). The left common carotid artery was completely occluded, and the right common carotid artery was severely stenosed. Transthoracic echocardiography revealed moderate-to-severe AR. Human leucocyte antigen typing showed B52. The patient’s condition was diagnosed as TA. Aortic valve reimplantation (Gelweave Valsalva, Vascutek Ltd., Renfrewshire, Scotland, UK) with total arch replacement (Gelweave Plexus 4 Branch SA) was performed. The right common carotid artery was reconstructed in an end-to-side fashion with a separate skin incision in the neck. The bilateral subclavian arteries were reconstructed with the graft used for cardiopulmonary bypass introduction. Postoperative computed tomography angiography showed complete aneurysm resection (Figure 2). The patient was discharged without any complications and is currently being followed up as an outpatient.

Discussion

Takayasu first reported TA in 1908 as a peculiar condition that involved arteriovenous fistulas of the eyes. Since then, various types of surgical treatment for chronic vasculitis involving the aorta and its branches have been performed. In surgical treatment for patients with TA, in addition to marked calcification of the artery, dilatation and stenosis lesions are simultaneously present, so it is necessary to reflect on the procedure according to the patient’s condition. We successfully treated a patient with TA by performing aortic replacement, carotid artery bypass, and aortic valve reimplantation which coexisted with a giant ascending aortic aneurysm, artery stenosis with occlusion of neck vessels, and AR.

The patient suffered from a 90-mm diameter ascending aortic aneurysm with severe calcification, moderate-to-severe AR, occlusion of the left common carotid artery, and severe stenosis of the right common carotid artery and brachiocephalic artery. Aortic valve reimplantation was performed for AR as it was thought to preserve the motion of the aortic annulus and 3 cusps of the aortic valve according to the preoperative cardiac echocardiography. Moreover, the cause and mechanism of the AR in this case were type Ia and Ib, which were not associated with the cusp lesion. This is the reason why we did not replace the native valve. For the total arch replacement, to
Figure 1. A: Computed tomography angiography revealed a giant ascending aortic aneurysm with severe calcification with an occluded left common carotid artery. B: Computed tomography in axial image revealed a 90-mm diameter ascending aortic aneurysm.

Figure 2. Postoperative computed tomography angiography showed complete aneurysm resection with reconstruction of the bilateral subclavian arteries.

avoid occlusion of the reconstructed supra-aortic branches, the 3 supra-aortic vessels were reconstructed as mentioned above. Although AR in TA has been frequently reported since Jervell's report in 1954, the 10-year survival rate for TA complicated with AR is remarkably low at 63%.

According to Moriwaki, et al., among their 126 patients with TA, 7 of whom died in the distant phase all died of heart failure due to AR, and AR is an important key to treat TA. Among the causes of death in TA in Japan, the proportion of aortic aneurysms is increasing year by year. The frequency of its occurrence was said to be about 15 to 25%, however, it has been reported that it occurs in more than half of autopsy cases.

Regarding the reconstruction range of diseased arteries by TA, there is an opinion that they should be replaced so as to leave as little of the lesion as possible in order to avoid the occurrence of postoperative anastomotic dehiscence or pseudoaneurysm. On the other hand, another report stated that the risk of rupture over the long-term is low at a site where calcification is strong.

Conclusion
We successfully performed aortic valve reimplantation with total arch replacement in a Takayasu arteritis patient with a 90-mm diameter ascending aortic aneurysm with severe calcification and neck vessel occlusion. In consideration of the risk of rupture due to the aneurysm diameter, shape of the aneurysm, presence of calcification, surgical invasiveness, and approach including endovascular treatment, it will be necessary to deal with each condition in consideration with the treatment. The patient has agreed to the publication of his case details and images in this report.

Acknowledgments
We would like to thank Daisuke Tanishima and Jun Takeuchi for their assistance with the computed tomography angiography, and Dr. Edward Barroga (http://orcid.org/0000-0002-8920-2607) for editing the manuscript.

Disclosure
Conflicts of interest: All authors have no conflicts of interest associated with this report.
References