Authors have nothing to disclose with regard to commercial support.

DO NOT FORGET LATE AORTIC PSEUDOANEURYSM AFTER HEART TRANSPLANTATION

To the Editor:

We read with great interest the case report by Bojko and colleagues¹ of a patient with aortic aneurysm very late after heart transplantation (HTx). The patient, who had a history of aortic valve replacement for bicuspid aortic valve (BAV) disease, underwent HTx for developed cardiomyopathy secondary to sarcoidosis. An incidental computed tomographic image of the chest taken to rule out pneumonia revealed a distal ascending aortic aneurysm with maximal diameter of 7.2 cm. The patient had been followed up with transthoracic echocardiography, which had shown no evidence of dilatation of the thoracic aorta. Bojko and colleagues¹ successfully performed ascending aortic replacement for delayed aortic aneurysm under deep hypothermic circulatory arrest. In their report, they emphasized the importance of follow-up computed tomographic imaging of the thoracic aorta in patients with BAV disease, even after HTx.

In the report of Bojko and colleagues,¹ intraoperative inspection revealed a chronic pseudoaneurysm of the native ascending aorta. The donor aorta was not involved with aneurysmal formation. Bojko and colleagues¹ specify that they found a pseudoaneurysm, which is not a true aneurysm. We assume that it originated from the anastomotic site of aorta between the donor and recipient. The pseudoaneurysm of this patient was detected more than 20 years after HTx. We ourselves have had a patient with a true aneurysm late after HTx.² Irrespective of the underlying diagnosis in patients, a pseudoaneurysm can develop 14.9 ± 8.0 years after cardiovascular surgery.³ Half of these patients have no symptoms, and the thoracic aortic pseudoaneurysm is detected incidentally, as in the patient of Bojko and colleagues.¹ A thoracic aortic pseudoaneurysm is an extremely rare but life-threatening complication after cardiovascular surgery, with an incidence of less than 0.4%.³ From this standpoint, it is reasonable

that the aortic pseudoaneurysm of the patient in this report may have occurred despite the underlying diagnosis of BAV.

Interestingly, the cumulative late incidence of aortic dissection after aortic valve replacement in patients with BAV was not significantly different from that observed in those with tricuspid aortic valve (hazard ratio, 1.45; 95% confidence interval, 0.69-3.02; $P = .33$).⁴ In terms of thoracic aortic dilatation (a true aneurysm) after aortic valve replacement, BAV was associated with a higher incidence of thoracic aortic dilatation than was seen in patients with tricuspid aortic valve. This is not surprising because of the nature of the aortopathy associated with BAV.⁵ We have no data on any difference in incidence of thoracic aortic pseudoaneurysm between BAV and tricuspid aortic valve.

We do not think that such a development of a thoracic aortic pseudoaneurysm 22 years after HTx is specific to patients with BAV. As Bojko and colleagues¹ mentioned, there are some risk factors for aneurysmal formation associated with HTx. It is unclear, however, whether the aortic pseudoaneurysm described in the report was related to BAV-related aortopathy. A point in this article is that a pseudoaneurysm can develop at every site of aortic anastomosis during the follow-up period. HTx requires an aortic anastomosis between the donor and recipient. Currently, HTx improves late survival rate for eligible patients with end-stage heart failure. Although transplant programs are vigilant in their surveillance for rejection and ventricular function, this article highlights the need to image the ascending aorta as well. We congratulate Bojko and colleagues¹ for illustrating this rare, but life-threatening entity after HTx.

Naoto Fukunaga, MD

Vivek Rao, MD, PhD

Division of Cardiovascular Surgery

Peter Munk Cardiac Centre

Toronto General Hospital

University of Toronto

University Health Network

Toronto, Ontario, Canada

References

1. Bojko M, Eisen H, Mather P, Vallabhajosyula P. Delayed aneurysmal complication of bicuspid aortic valve disease after heart transplantation. *J Thorac Cardiovasc Surg.* 2019;158:e185-6.
2. Elhenawy AM, Feindel CM, Ross H, Butany J, Yau TM. Valve-sparing root and ascending aorta replacement after heart transplantation. *Ann Thorac Surg.* 2012; 94:2114-5.
3. Fukunaga N, Koyama T. Outcomes of surgical repairs for thoracic aortic pseudoaneurysms after cardiovascular surgery. *J Card Surg.* 2016;31:535-40.
4. Itagaki S, Chikwe JP, Chiang YP, Egorova NN, Adams DH. Long-term risk for aortic complications after aortic valve replacement in patients with bicuspid aortic valve versus Marfan syndrome. *J Am Coll Cardiol.* 2015;65:2363-9.
5. Borger MA, Fedal PWM, Stephan EH, Gleason TG, Girdauskas E, Ikonomidis JS, et al. The American Association for Thoracic Surgery consensus guidelines on bicuspid aortic valve-related aortopathy: full online-only version. *J Thorac Cardiovasc Surg.* 2018;156:e41-74.

<https://doi.org/10.1016/j.jtcvs.2019.06.105>

The Editor welcomes submissions for possible publication in the Letters to the Editor section that consist of commentary on an article published in the Journal or other relevant issues. Authors should: • Include no more than 500 words of text, three authors, and five references. • Type with double-spacing. • See <http://jtcvs.ctsnetjournals.org/misc/fora.shtml> for detailed submission instructions. • Submit the letter electronically via jtcvs.editorialmanager.com. Letters commenting on an article published in the JTCVS will be considered if they are received within 6 weeks of the time the article was published. Authors of the article being commented on will be given an opportunity to offer a timely response (2 weeks) to the letter. Authors of letters will be notified that the letter has been received. Unpublished letters cannot be returned.