CJC Open 6 (2024) 846–848

Images in Cardiology

A Case of Progressive Giant Left Atrium and Spontaneous Echo Contrast

Yohei Ishibashi, MD,[a] Nobuaki Fukuda, MD, PhD,[a] and Shitoshi Hiroi, MD, PhD[a]

[a] *Department of Cardiology, NHO Takasaki General Medical Center, Gunma, Japan*

A 77-year-old man presented to our hospital because of difficulty walking. He had undergone mechanical mitral valve replacement (MVR) and left atrial (LA) appendage closure for mitral stenosis 35 years earlier. He had a giant LA when he was hospitalized for heart failure 7 years earlier and underwent pacemaker implantation for bradycardic atrial fibrillation 4 years earlier. He was treated with warfarin, and the warfarin dose was adjusted with an international normalized ratio (INR) of prothrombin time of 2.0-3.0, according to the guideline.[1]

His level of consciousness and vital signs were stable, with mild pyramidal tract disorder in the left lower extremity. The blood tests showed an INR of 2.56 and a D-dimer level of 1.4 μg/mL (reference: < 1.0). Brain magnetic resonance imaging showed acute infarction in his right internal capsule and multiple old infarcts. Computed tomography conducted 7 years earlier revealed the LA size and volume to be 15.7 × 11.3 cm and 1214 mL, respectively (Fig. 1A and B; Video 1, view video online); however, on admission, these increased to 17.5 × 13.2 cm and 1485 mL, respectively. Contrast in the LA was heterogeneous; however, delayed images showed uniform contrast and no thrombus. No significant compression of the esophagus, bronchus, or other surrounding structures was observed (Fig. 1C and D; Video 2, view video online). Transesophageal echocardiography revealed no thrombus in the LA and LA appendage. The mitral mechanical valve was well functioning, with no significant pressure gradient. No obvious clots or microthrombi on the mechanical valve were observed. The presence of an intracardiac shunt, which can be a cause of stroke, was not observed. Transesophageal echocardiography 7 years earlier showed mild-to-moderate smoke-like echo in the LA—that is, grade 2+ spontaneous echo contrast (SEC), according to Fatkin et al.[2] (Fig. 2A and B; Video 3 [A and B], view video online); however, the present result showed severe smoke-like echo—that is, grade 4+ SEC (Fig. 2C and D; Video 3 [C and D], view video online).

The patient was treated for his stroke primarily with rehabilitation, with no change in his basic drug therapy. After 4 weeks of hospitalization, he was transferred to another hospital for rehabilitation. After 3 weeks, the patient was able to walk and was discharged. Six months after the onset of the stroke, he was treated with warfarin with a target INR of 2.5-3.0, and the stroke did not recur.

A giant LA is rare and causes heart failure, surrounding compression, and thromboembolism.[3] Patients after MVR with giant LA have been reported to have a similar thromboembolic risk, compared to the risk in those without giant LA.[4] On the other hand, patients with nonvalvular atrial fibrillation with severe SEC have been shown to have a higher risk of stroke.[5] In this case, the giant LA was further enlarged, and the SEC further worsened. His computed tomography and echocardiography showed no obvious thrombus overall; however, multiple infarcts suggested the possibility of cardiogenic cerebral infarction due to sludge or microthrombus in the giant LA. The worsening giant LA and SEC might be at risk for thrombosis, even during the management of INR as per guidelines.

Received for publication November 29, 2023. Accepted January 31, 2024.

Corresponding author: Dr Yohei Ishibashi, Department of Cardiology, NHO Takasaki General Medical Center, 36, Takamatsu Takasaki, Gunma 370-0829, Japan. Tel.: +81-27-322-5901; fax: +81-27-322-0161.

E-mail: yishibashi.oct13@gmail.com

See page 847 for disclosure information.

https://doi.org/10.1016/j.cjco.2024.01.011

Novel Teaching Points

- A giant LA after MVR can progressively enlarge, and the risk of thrombosis may also increase.
- Further research, including prospective studies, is required on SEC grading to estimate the risk of stroke and thrombosis in patients with MVR.

Acknowledgements

The authors thank the department of radiology of our hospital for assistance with computed tomography analysis, and Enago (www.enago.jp) for the English-language review.

Ethics Statement

The research reported has adhered to the relevant ethical guidelines.

Patient Consent

The authors confirm that a patient consent form has been obtained for this article.

Funding Sources

The authors have no funding sources to declare.

Disclosures

The authors have no conflicts of interest to disclose.

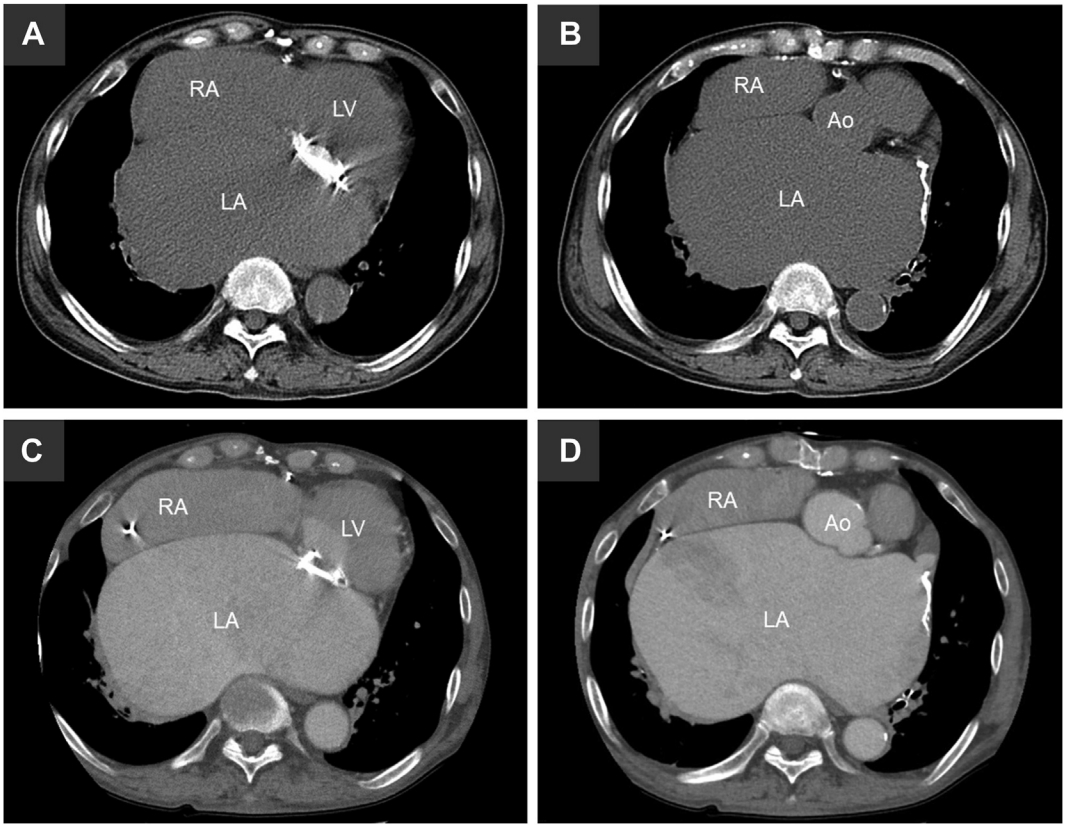

Figure 1. (**A, B**) Plain computed tomography (CT) 7 years earlier and (**C, D**) contrast-enhanced computed tomography on admission. Ao, aorta; LA, left atrium; LV, left ventricle; RA, right atrium.

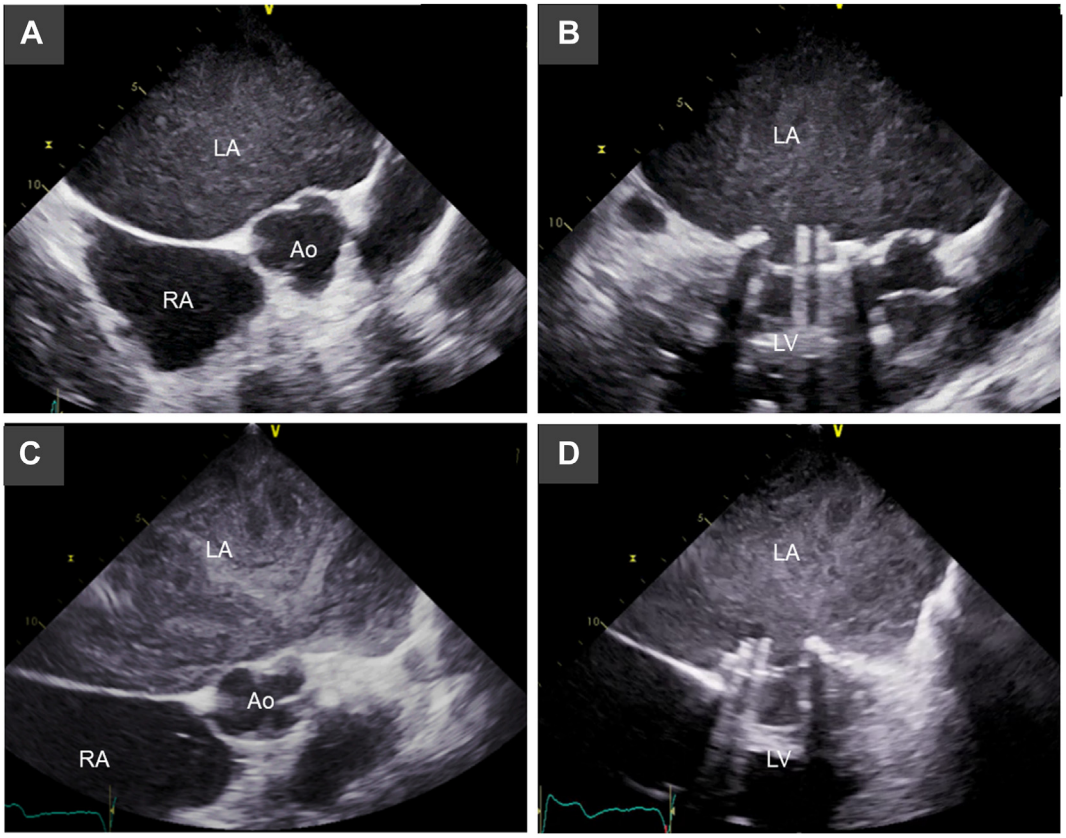

Figure 2. Transesophageal echocardiography (**A, B**) 7 years earlier and (**C, D**) on admission. Ao, aorta; LA, left atrium; LV, left ventricle; RA, right atrium.

References

1. Izumi C, Eishi K, Ashihara K, et al. JCS/JSCS/JATS/JSVS 2020 guidelines on the management of valvular heart disease. Circ J 2020;84:2037-119.

2. Fatkin D, Kelly RP, Feneley MP. Relations between left atrial appendage blood flow velocity, spontaneous echocardiographic contrast and thromboembolic risk in vivo. J Am Coll Cardiol 1994;23:961-9.

3. El Maghraby A, Hajar R. Giant left atrium: a review. Heart Views 2012;13:46-52.

4. Kutay V, Kirali K, Ekim H, Yakut C. Effects of giant left atrium on thromboembolism after mitral valve replacement. Asian Cardiovasc Thorac Ann 2005;13:107-11.

5. Zhao Y, Ji L, Liu J, et al. Intensity of left atrial spontaneous echo contrast as a correlate for stroke risk stratification in patients with nonvalvular atrial fibrillation. Sci Rep 2016;6:27650.

Supplementary Material

To access the supplementary material accompanying this article, visit *CJC Open* at https://www.cjcopen.ca/ and at https://doi.org/10.1016/j.cjco.2024.01.011.