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**MECHANISM OF STROKE
IN THE SETTING OF
POSTCARDIOTOMY
VENOARTERIAL
EXTRACORPOREAL
MEMBRANE OXYGENATION
SUPPORT**



To the Editor:

With great interest we read the study by Schaefer and colleagues,¹ who conducted a detailed analysis of the outcomes of postcardiotomy venoarterial extracorporeal membrane oxygenation (VA-ECMO) support focusing on stroke and cannulation-related complications. The stroke rate of right axillary (RAX) VA-ECMO was greater than that of femoral cannulation. In both axillary and femoral VA-ECMO, the right hemisphere was the most

common stroke location (64.5% in RAX and 50% in femoral). This stroke laterality trend in RAX cannulation was similar in our experiences.^{2,3} There are several potential embolic sources in the setting of postcardiotomy VA-ECMO support: VA-ECMO-related (circuit, tubing, or cannula), intracardiac, or arterial/aortic (atherosclerosis, suture line, or intraoperative cannulation site).³ Another possible mechanism of stroke in RAX VA-ECMO may be the “mixing point” between VA-ECMO flow and blood flow ejected from the heart, which can be an issue when heart function is recovered together with lower VA-ECMO flow. We experienced an occlusion of the innominate artery to the right common carotid artery after recovery of heart function in a patient postcardiotomy using RAX VA-ECMO (Figure 1).

In addition to VA-ECMO itself, the type of surgery performed is also important when discussing the cause of stroke; left-side valve surgery using prosthesis or patients with reduced ejection fraction would have a greater chance of developing an intracardiac embolic source.^{3,4} It would have been informative if the authors could have included the type of surgery in Table E6 of their article. We agree with their conclusion that surgeons understand that each configuration has advantages and disadvantages over the other, depending on the scenario of the individual.

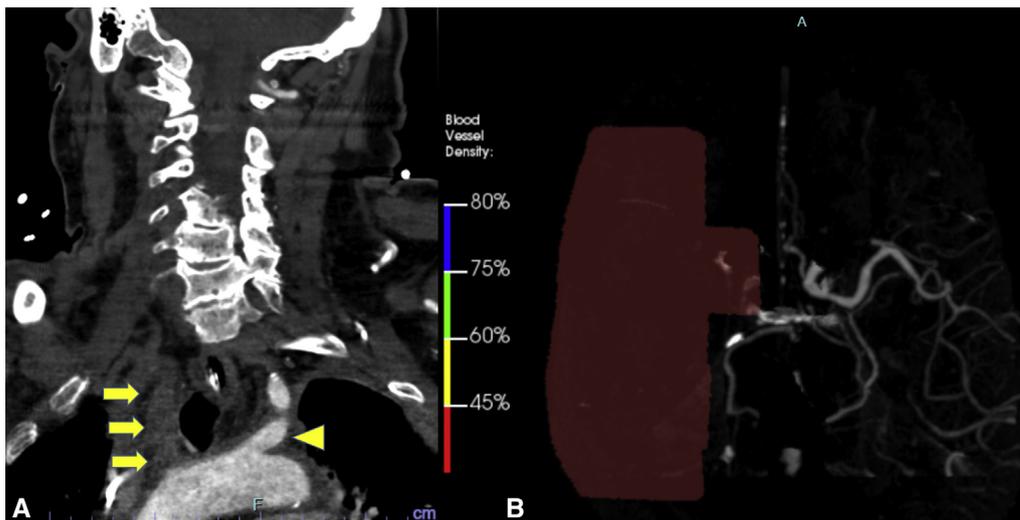


FIGURE 1. A male patient required venoarterial extracorporeal membrane oxygenation (VA-ECMO) via the right axillary artery due to postcardiotomy shock after ischemic ventricular septal defect repair. On postoperative day 2, with recovery of left ventricular function, the patient suddenly developed left hemiparesis with a dropped VA-ECMO flow. Emergent computed tomography (A) showed occlusion of the innominate artery (arrows) to the right common carotid artery. A brain perfusion scan showed a complete occlusion of the right middle cerebral artery system (red area in B). An arrowhead shows the left subclavian artery.

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References

1. Schaefer A-K, Distelmaier K, Riebandt J, Goliash G, Bernardi MH, Zimpfer D, et al. Access site complications of postcardiotomy extracorporeal life support. *J Thorac Cardiovasc Surg*. November 15, 2021 [Epub ahead of print].
2. Ohira S, Malekan R, Goldberg JB, Lansman SL, Spielvogel D, Kai M. Axillary artery cannulation for venoarterial extracorporeal membrane oxygenation in cardiogenic shock. *J Thorac Cardiovasc Surg Tech*. 2020;5:62-71.
3. Ohira S, Spielvogel D, Malekan R, Goldberg JB, Spencer PJ, Lansman SL, et al. Impact of mitral valve prosthesis on stroke after insertion of venoarterial membrane oxygenation for postcardiotomy shock. *J Heart Lung Transplant*. 2021;40:S407.
4. Challa A, Latona J, Fraser J, Spanevello M, Scalia G, Burstow D, et al. Mitral valve bio-prosthesis and annuloplasty thrombosis during extracorporeal membrane oxygenation: case series. *Eur Heart J Case Rep*. 2020;4:1-6.

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