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Letter by Erdoes et al Regarding Article, “Cerebral Embolization During Transcatheter Aortic Valve Implantation: A Transcranial Doppler Study”

To the Editor:

We read with great interest the article by Kahlert et al¹ quantifying high-intensity transient signals by transcranial Doppler ultrasonography during transcatheter aortic valve implantation (TAVI). The results corroborate our previous findings in 67 consecutive patients undergoing transfemoral and transapical TAVI with self-expanding and balloon-expandable prostheses.² Both series revealed procedural high-intensity transient signals in all patients, with the highest load during deployment of transfemorally introduced self-expanding prostheses. We also concur with most of the recommendations to reduce the risk of periprocedural cerebral embolism, including reduction of mechanical trauma to aortic intimal surfaces and valvular calcifications, avoidance of long-lasting preimplantation maneuvers, etc.

We respectfully disagree, however, with one of the suggested strategies to reduce cerebral embolic load, namely carotid artery compression during valve positioning and deployment. It has been shown that even surgical dissection before carotid endarterectomy,^{3,4} as well as carotid angiography and stenting,⁴ can disrupt carotid plaque and dislodge transcranial Doppler-detectable emboli into the cerebral circulation. In our cohort, 16% of the patients had carotid stenoses of >50%;² Kahlert et al describe in 35% of their study population a prevalence of carotid artery plaques or stenosis of $\geq 30\%$.¹ Thus, in the geriatric population typically undergoing TAVI, the presence of potentially vulnerable atherosclerotic plaques in the carotid arteries is noteworthy. In addition, external compression of a carotid artery after complicated attempts to cannulate the internal jugular vein has been found to carry significant risks, including stroke.⁵

In our opinion, a minimal touch principle should apply to both endoluminal and external aortic arch vessel manipulation. In preparation for TAVI, we perform internal jugular venous cannulation as access for rapid ventricular pacing with ultrasound guidance to avoid trauma to the atherosclerotic carotid arteries. During TAVI procedures, we consider attempts to reduce iatrogenic cerebral embolization by means of carotid artery compression as ill-advised and possibly counterproductive.

Disclosures

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References

1. Kahlert P, Al-Rashid F, Döttger P, Mori K, Plicht B, Wendt D, Bergmann L, Kottenberg E, Schlamann M, Mummel P, Holle D, Thielmann M, Jakob HG, Konorza T, Heusch G, Erbel R, Eggebrecht H. Cerebral embolization during transcatheter aortic valve implantation: a transcranial Doppler study. *Circulation*. 2012;126:1245–1255.
2. Erdoes G, Basciani R, Huber C, Stortecky S, Wenaweser P, Windecker S, Carrel T, Eberle B. Transcranial Doppler-detected cerebral embolic load during transcatheter aortic valve implantation. *Eur J Cardiothorac Surg*. 2012;41:778–83; discussion 783.
3. Ackerstaff RG, Moons KG, van de Vlasakker CJ, Moll FL, Vermeulen FE, Algra A, Spencer MP. Association of intraoperative transcranial doppler monitoring variables with stroke from carotid endarterectomy. *Stroke*. 2000;31:1817–1823.
4. King A, Markus HS. Doppler embolic signals in cerebrovascular disease and prediction of stroke risk: a systematic review and meta-analysis. *Stroke*. 2009;40:3711–3717.
5. Guilbert MC, Elkouri S, Bracco D, Corriveau MM, Beaudoin N, Dubois MJ, Bruneau L, Blair JF. Arterial trauma during central venous catheter insertion: Case series, review and proposed algorithm. *J Vasc Surg*. 2008;48:918–25; discussion 925.