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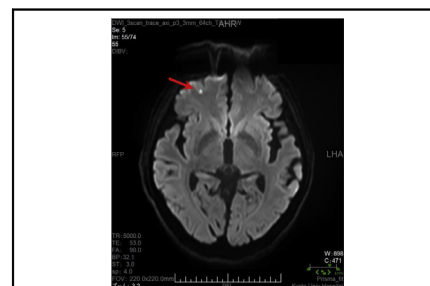


Commentary: Detailed assessment of hidden risks of postoperative delirium

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Postoperative delirium is a serious complication and has a great impact on surgical outcomes.^{1,2} Although it is a transient complication only in the acute phase, it is actually a serious complication in that it has a large negative effect over the long term after surgery.³ Silent cerebral ischemia (SCI) is a type of stroke in which the symptoms that occur in a normal stroke are invisible. SCI is known to be an independent predictor of stroke onset in elderly patients.⁴ Elderly people who develop SCI are more likely to develop a new SCI.⁵ In this issue of the *Journal*, Shibagaki and colleagues⁶ reported the relationship between the preoperative SCI and postoperative delirium after aortic arch replacement. The cerebral white matter lesions shown on magnetic resonance images (MRIs) mainly show the SCI, and periventricular hyperintensity indicates severe white matter lesions on MRI. They examined the preoperative MRIs in detail and found the periventricular hyperintensity is strongly related to the postoperative delirium.

The importance of this report is in the analysis not of simple cardiac surgery but of cases that require brain protection. Brain protection has made great strides, which is a major reason why the safety of arch replacement has improved dramatically over the last 2 decades. However, perioperative cerebral damage cannot be completely prevented, the antero-grade cerebral protection method itself is not always



Postoperative silent stroke.

CENTRAL MESSAGE

Silent cerebral ischemia (SCI) is related to postoperative delirium. SCI is found coincidentally in preoperative evaluations but also could supervene after the aortic arch surgery.

complete, and the possibility of causing perioperative SCI during the operation cannot be denied. Seven of the 59 enrolled cases were excluded in this study as having developed postoperative cerebral infarction, yet there was no description that MRI was examined in all cases after surgery. Therefore, it cannot be denied that perioperative SCI may have occurred, and this SCI might have caused delirium. In fact, Charbonneau and colleagues⁷ reported that subclinical strokes, which means the SCI, were frequently found after the arch repair with thoracic endovascular aortic repair.

While the title indicates total arch replacement, the study really includes hemiarch replacement. In the non-postoperative delirium group, whose average age was 6 years younger, more than 10% did not have a reconstruction of the arch branches. Although a unified method has been adopted for the brain-protection method, cases requiring reconstruction of the arch branches are likely to cause cerebral infarction. From that viewpoint, it can be said that there is an issue in comparison including the small number of total enrolled cases.

I would like to pay tribute to their fine research. It is very interesting and important fact that preoperative silent cerebral ischemia has a great impact on postoperative delirium. However, it is also a fact that there are many factors regarding the SCI during the perioperative period in the cases of aortic arch surgery. The relationship between the possibility of newly emerging SCI under cerebral protection

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Disclosures: The author reported no conflicts of interest.

The *Journal* policy requires editors and reviewers to disclose conflicts of interest and to decline handling or reviewing manuscripts for which they may have a conflict of interest. The editors and reviewers of this article have no conflicts of interest.

Received for publication March 22, 2022; accepted for publication April 15, 2022; available ahead of print June 8, 2022.

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JTCVS Open 2022;10:97-8

2666-2736

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<https://doi.org/10.1016/j.xjon.2022.04.021>

during arch replacement and postoperative delirium is expected to be investigated based on this research.

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