Commentary: Sometimes it helps to take a closer look

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In this issue of *JTCVS Open*, Shibagaki and colleagues present a retrospective investigation that illustrates the power of imaging to identify potential practice-changing information that surgeons otherwise might not see. Using magnetic resonance imaging (MRI) findings of lacunar infarcts, periventricular intensity, and deep subcortical white matter hyperintensity, the investigators demonstrate an association of these surrogates for silent ischemia with postoperative delirium among patients undergoing aortic arch replacement. Detailed clinical screening of these patients preoperatively showed no suspicion for this complication.

While observing this study’s intriguing findings, 2 significant limitations should be noted. As mentioned by the authors, the investigation lacked a formal, objective assessment of patients’ preoperative neurocognition. Also, the study transitioned from its use of the Neelon and Champagne Confusion Scale to the Intensive Care Delirium Screening Checklist; by doing so, the definition of the primary outcome transitioned as well. This change could have impacted study findings. Adding to this, the study cohort was relatively small.

Regardless, the investigation’s methodology speaks to the authors’ efforts to minimize patient selection bias and maximize the study’s relevance. Patients with pre-existing neurocognitive dysfunction and those who developed postoperative stroke were excluded. The MRI studies of the brain, mostly undertaken within the month immediately preceding the anticipated surgery, were formally scored by a neuroradiologist who was blinded to patients’ postoperative delirium outcome. Regression analysis was performed to show that the association between high-grade periventricular intensity and postoperative delirium was independent of patient and operative factors that typically contribute to delirium.

The overarching take-home message seems relatively obvious: there can be more to the clinical picture than what meets the eye. The authors show that imaging helps illuminate what otherwise might be hidden. Whether it’s an MRI study of the brain before a complex aneurysmal aortic arch resection or a computed tomography scan of the chest for the routine coronary artery bypass grafting procedure, additional information may influence surgeons to change course—or, if nothing else, help set realistic postoperative expectations for patients and their families.

So, where does one go from here? Delirium is a serious complication and a relatively common occurrence for all patients undergoing cardiac surgery, not just those patients planned for complex aneurysmal aortic arch replacement. Should we start obtaining preoperative MRIs of the brain on all our patients? Hard to say. Although MRI of the brain currently appears to be a routine occurrence before cardiac surgery in Japan, the authors acknowledge that this may not be a universal standard practice. They also imagine the possibility that its cost-effectiveness could someday be called...
into question. Could the more commonplace computed tomography of the head be used instead? Would more formal neurocognitive testing simply suffice? These questions certainly deserve further investigation.

In the meantime, we can start by recognizing that we may not always see the risk factors for delirium with conscientious clinical exam alone. Perhaps MRI or similar imaging modalities hold the key to helping us take an even closer look.

References

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