Reviewer’s report

Title: Neurological Complications After Cardiac Surgery: A Retrospective Case-control Study of Risk Factors and Outcome

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Reviewer: Khang Cao

Reviewer's report:

I would like to thank all authors for the work they presented. From my perspective, a few issues need to be clarify:

1. First is to discuss the issue of imaging diagnosis. This study only refers to the time after surgery until the imaging diagnosis. However, the important thing that I want to emphasize is the time from onset of symptoms to the time of diagnostic imaging. Because it will involve the detection of lesions in the image, especially in the 37 patients with major stroke patients (including 35 patients with ischemic stroke and 2 patients with hemorrhage stroke).

   Similarly, in the 54 patients with TIA (including delirium/psychosis/convulsion), are there any patients who are actually infarcted but unable to perform MRI? (e.g. after mechanical valve operation or metallic implants, pacemakers). Instead of undergoing an MRI brain imaging, the patient was given 64-section CT scan but early or minor injuries were missed and therefore classified as TIA.

2. Second, internal carotid artery stenosis is considered to increase the risk of postoperative neurological complications. The problem that has not been considered here is that the mechanism of ICA stenosis encompasses two major mechanisms: artery to artery (thrombosis from proximal segment to distal segment) or hypoperfusion (causing border zone infarcts - watershed infarction - should be noted in cardiac surgery) but this has not been mentioned until the imaging diagnosis is performed later. It would be better if it was described previously in MRI or CT. Because it will closely relate to the intraoperation parameters as the operative variables mentioned in Table 1 (Surgical Details - page 9).

3. The third problem is MRI was done on a 1.5 Tesla, but in the protocol, there was no MRA for examining intracranial arterial system, and CT was done on a 64-section CT with contrast (some cases) without referring to the problem of cerebrovascular tree on CTA. Therefore, the risk of stroke is not adequately researched, while the means are quite feasible.
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