Commentary: Tick, tock ... Time windows for intervention for stroke after cardiac surgery

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Stroke after cardiac surgery is a devastating complication and a frequently cited disadvantage of cardiac operations to percutaneous interventions. Because the atherosclerotic process is not limited to the heart and great vessels, a higher prevalence of patients undergoing cardiac surgery have concomitant cerebrovascular disease. In addition, embolic risk is present with all cardiac surgery interventions. Consequently, much has been invested in reducing neurologic complications, with stroke now a rare occurrence (1.3%) after coronary artery bypass grafting.¹ Nonetheless, the ability to rescue patients who experience postoperative stroke remains a key interest.

Contemporary advances in neurointervention have made rescue a real possibility. However, the optimal time for intervention is a last seen well (LSW) time <6 hours, which is not practical for patients who undergo lengthy cardiac operations or have a more complex initial postoperative course. In many institutions, these patients are not offered neurointervention. In a new case series, Sheriff and colleagues² challenge the dogma of restricting intervention to early time windows. They present a single-institution experience from the Massachusetts General Hospital of 7 patients who underwent postcardiac surgery neurointervention for stroke from 2013 to 2018. The patients experienced stroke associated with large vessel occlusion, defined as occlusion or either terminal internal carotid or proximal middle cerebral artery or basilar artery found on computed tomography angiography or magnetic resonance angiography. All patients were evaluated for mechanical thrombectomy using an established institutional protocol. The patients were designated into 2 categories: early (LSW ≤6 hours [n = 5]) and late (LSW ≥6 hours [n = 2]). Patients in both groups demonstrated improvement in stroke scores and better functional outcome at 3 months postoperatively. They identified no major iatrogenic complication secondary to intervention. Although the Sheriff and colleagues² series represents a small and heterogeneous sample, it does illustrate the potential benefit of intervention for this potentially devastating complication. They also evaluate risk factors

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Central Message

Emergency neurointerventional procedures should be considered for perioperative stroke after cardiac surgery by a multidisciplinary team regardless of the time of presentation.

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for stroke. They identified a 2.4% incidence of ischemic strokes where 10% was secondary to large vessel occlusion. Univariate analysis showed increased risk with pump times beyond 150 minutes and crossclamp times more than 110 minutes. Vascular risk factors identified included hypertension (69.9%), hyperlipidemia (59.9%), smoking (52.1%), atrial fibrillation (28.1%), and prior stroke (13.7%), similar to prior studies.³

Sheriff and colleagues² are to be congratulated for evaluating their experience of high-risk neurointervention in patients after cardiac surgery. A recent trial also demonstrated the benefit of intervention in patients beyond the 6-hour window.⁴ This study further highlights the importance of multidisciplinary evaluation of patients with neurological deficits after cardiac surgery and the possibility of rescue. The clock is ticking in patients who experience stroke, but the window of time for rescue may be expanding.

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