Stroke

RESPONSE TO LETTER TO THE EDITOR

Response by Nguyen et al to Letter Regarding Article, "Mechanical Thrombectomy in the Era of the COVID-19 Pandemic: Emergency Preparedness for Neuroscience Teams: A Guidance Statement From the Society of Vascular and Interventional Neurology"

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In Response:

We thank Drs Sharma and Rasmussen for their thoughtful perspectives on our report on mechanical thrombectomy in the era of COVID-19.[1] In thrombectomy candidates with unknown coronavirus disease 2019 (COVID-19) status, we recommend conscious sedation (CS) first line to (1) minimize delays to treatment, (2) optimize patient outcomes,[2] (3) conserve ventilator and critical care bed resources, and (4) conserve anesthesiologist and staff exposure to the aerosolizing events of intubation and extubation.[1] We agree with the Society for Neuroscience in Anesthesiology & Critical Care recommendations of early notification and joint decision-making with anesthesiologists regarding anesthesia management of thrombectomy candidates. We also agree that general anesthesia (GA) is preferred for patients at risk for airway deterioration (orthopnea, tachypnea, high oxygen requirement), patients unable to protect their airway, patients with active vomiting, agitation, and uncooperative patients.[3]

However, we take issue with the recommendation that patients with aphasia, severe stroke, or posterior circulation stroke are by default preferred GA candidates. These elements in isolation have not been shown predictors for emergency conversion to GA,[4] nor were they predictors for GA in the HERMES trial (Highly Effective Reperfusion Using Multiple Endovascular Devices Collaboration).[2] Of the 797 patients who underwent thrombectomy in the HERMES meta-analysis of randomized trials, 236 (30%) were treated under GA, and outcomes were better for patients who received CS compared with GA (common odds ratio, 1.5 [95% CI, 1.1–2.0]). The authors recommended avoiding GA when possible. In the ESCAPE (Endovascular Treatment for Small Core and Proximal Occlusion Ischemic Stroke) and REVASCAT (Endovascular Revascularization With Solitaire Device Versus Best Medical Therapy in Anterior Circulation Stroke Within 8 Hours) trials which discouraged GA, GA was used in <10% of patients.[2] Even patients who require emergency conversion to GA in the middle of a procedure do not have lower chances of successful reperfusion or functional independence compared with those who undergo primary GA.[4]

We acknowledge the 3 single-center randomized trials of GA versus CS which found no difference in outcome or a slight benefit of GA.[3] These studies had a protocol-specific approach which achieved fast anesthetic induction times that are unlikely reproducible at most institutions, now compounded by the delays of donning personal protective equipment and moving a patient to a negative pressure room for intubation. Furthermore, these studies demonstrated higher rates of reperfusion in the GA versus CS groups (modified Thrombolysis in Cerebral Infarction 2b-3: 85.2% versus 75.7%, respectively; odds ratio, 2.0 [95% CI, 1.2–3.5], P=0.01), which is a source of bias in favor of GA. Still, it is reasonable to accept that the results of the 3 randomized GA versus CS trials brings equipoise to this debate, in contrast to prior literature markedly in favor of CS. As such, centers accustomed to performing thrombectomy under GA should have the choice of intraprocedural anesthesia management based on local experience and resource availability.

Drs Sharma and Rasmussen recommend that an anesthesiologist is involved in every stroke thrombectomy during the COVID-19 pandemic. At hospitals with unlimited availability of anesthesiologists, personal protective equipment, and ventilator resources, this is welcome. However, the reality in many hospitals is that these resources are finite. Critical care nurses with

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sedation training have been shown to provide equivalent sedation care as anesthesia providers with similar patient outcomes.[5] Therefore, in unknown COVID-19 status patients referred for thrombectomy, we advocate protocols that minimize staff exposure but do not deviate from local standard practice. At most centers, this will consist of CS as first line. For patients with COVID-19 positive or high suspect patients, we recommend the decision regarding intubation be deferred to the anesthesiologist to allow flexibility in choosing which approach leads to the least amount of exposure to staff while achieving optimal stroke care for the patient.

ARTICLE INFORMATION

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Disclosures

Dr Nguyen reported grants from Medtronic outside the submitted work; she is Principal investigator of the CLEAR study (CT for Late Endovascular Reperfusion) funded by Medtronic; serves on the Data Safety Monitoring Board for TESLA (Thrombectomy for Emergent Salvage of Large Anterior Circulation Ischemic Stroke), ENDOLOW (Endovascular Therapy for Low NIHSS Ischemic Strokes), SELECT 2 (A Randomized Controlled Trial to Optimize Patient's Selection for Endovascular Treatment in Acute Ischemic Stroke) trials. Dr Nogueira reported consulting fees for advisory roles with Stryker Neurovascular, Cerenovus, Medtronic, Phenox, Anaconda, Genentech, Biogen, Prolong Pharmaceuticals, Imperative Care and stock options for advisory roles with Brainomix, Viz-AI, Corindus Vascular Robotics, Vesalio, Ceretrieve, Astrocyte and Cerebrotech. Dr Jovin reported other from Anaconda outside the submitted work.

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