Letter regarding ‘Neurointervention for emergent large vessel occlusion strokes during the COVID-19 pandemic’

We read with great interest the recent article by Fiorella et al.1 in which the authors discussed several practical points on neurointerventional management of large vessel occlusion (LVO) acute ischemic stroke (AIS) during the coronavirus 2019 (COVID-19) pandemic. Although we fully agree with Fiorella et al about considering aggressive measures in triaging during the endovascular treatment (EVT) of AIS patients in order to minimize severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection exposure and transmission to healthcare personnel (HCP), we are urging a more cautious and balanced approach.

While EVT is one of the most effective treatment in the management of LVO strokes, its impact is optimized if it is performed in a timely manner.2 It has been speculated that every 30-min delay from symptom onset to reperfusion (OTR) of the occluded vessel translates into a decrease in good functional outcome by 12%–21%.3 4 OTR time constitutes a decrease in good functional outcome by 12%–21%.3 4

Endotracheal intubation prior to EVT of suspected or confirmed SARS-CoV-2-infected patients has been recommended as one of the precautionary measures to protect HCP. The impact of this approach on patients' outcomes was evaluated in a recent multi-institutional prospective study by Kasab et al of 458 patients from 28 North American centers.13 The authors reported significantly longer door to reperfusion time, higher in-hospital mortality, and lower likelihood of functional independence at discharge in patients who underwent intubation prior to EVT. Furthermore, two other studies by Taqi et al14 and Settcase et al15 investigated the impact of sedation modes on timing and the delay in reperfusion, and showed better functional outcome in patients who underwent conscious sedation compared with general anesthesia. This impact was attributed to shorter OTP times.

While pre-procedural intubation has been shown to have a negative impact on patients' functional outcomes due to delaying the EVT, intubation itself is considered a high-risk procedure in terms of potential SARS-CoV-2 exposure and transmission caused by close contact with the patient's airway before, during and after the procedure.16 Taking into consideration the concerns of stroke centers in terms of scarcity of resources during the pandemic,12 17 we propose an algorithm in which suspected or confirmed SARS-CoV-2-infected patients are categorized based on their individual risk factors in order to make a reasonable decision as to whether they require pre-procedural intubation. Risk factors include: diagnosis of LVO in the posterior circulation, severe stroke (National Institutes of Health Stroke Scale (NIHSS) score on admission >15) or Glasgow Coma Scale (GCS) <9, inability to follow commands due to aphasia, acute respiratory distress/hypoxemia (drop of O2 saturation by pulse oximetry (SpO2) <93%) or any signs of dyspnea (gasping, sweating, tachycardia, use of auxiliary respiratory muscles), persistent systolic blood pressure >180 mmHg and/or end-tidal CO2 >45 mmHg, active cough, active vomiting, severe agitation and seizures.12 18–20 For patients with any of the above-mentioned risk factors, endotracheal intubation should be performed in a negative-pressure room by an airway specialist with video-guided laryngoscopy and consideration of all precautionary measures before arrival to the angiography suite. Mitigating intubation-associated complications, particularly hypotension which is more common in SARS-CoV-2-infected patients,12 by using sympathomimetics and prescribing ketamine or etomidate to maintain cerebral perfusion pressure, are additional points that should be considered.11 The authors believe that proceeding with EVT using conscious sedation in a selected group of patients and those without the above-mentioned risk factors should be highly considered. This practice would ideally avoid further delay of the EVT in these patients and improve the long-term functional outcome, while limiting the exposure of HCP to SARS-CoV-2 infection.

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