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Re: Tenecteplase for thrombolysis in stroke patients: Systematic review with meta-analysis



Dear editor,

We read with great interest and appreciate the systematic review and meta-analysis by Oliveria et al. entitled “Tenecteplase for thrombolysis in stroke patients: Systematic review with meta-analysis”. The authors concluded that intravenous Tenecteplase has several advantages over Alteplase, namely higher rate of arterial recanalization leading to better neurological outcome, lower cost, and better pharmacological profile, including being more specific for fibrin and longer half-life. As far as safety, there were no advantages determined by the rate of symptomatic intracerebral hemorrhage incidents and 3-month mortality rate [1]. Although we fully agree with Oliveria et al. notes, we believe that during the coronavirus disease of 2019 (COVID-19) pandemic, intravenous Tenecteplase administration could have additional potential therapeutic and preventive benefits.

Cerebral vascular events such as arterial stroke and cerebral venous sinus thrombosis have been shown to be associated with severe acute respiratory syndrome *coronavirus 2* (SARS-CoV-2) infection possibly due to a hypercoagulable state and vascular endothelial dysfunction [2–10], or an indirect consequence of severe illness [11]. Approximately 1–3% of COVID-19 patients experienced stroke, which was shown to be in association with the illness severity [12]. Time is a well-known critical factor in determination of the neurological outcome of acute ischemic stroke (AIS) patients either by thrombolytic agents or interventional mechanical thrombectomy. American Stroke Association guidelines endorse providing *faster thrombolytic therapy* from the symptom onset and shorter door to needle time (DTN) [13–15].

With certain COVID-19 restrictions and protocols, particularly stay-at-home policies and social distancing, particularly in the elderly, the timing to seek medical attention in the case of stroke has been shown to be negatively impacted, and highly time-sensitive therapeutic measures for the treatment of AIS may not take place in a timely fashion [16]. Moreover, after presenting to the emergency departments, time-consuming infection control and preventive measures such as screening for COVID-19, etc. might contribute to increase DTN [13]. A recent metanalysis showed that DTN in AIS has been significantly longer during the pandemic, which is concerning [17]. Although these preventive measures are essential in protection against the virus transmission, they could potentially negatively influence the AIS treatment outcomes [18]. In addition, access to COVID-19 test results might not be available until after AIS treatment initiation at times. This could potentially increase the risk of exposure of the emergency department's medical staff and other patients to the asymptomatic virus carriers.

Hence, we believe using intravenous Tenecteplase in treating patients with AIS is a forward step toward reducing the exposure of health care workers to potentially SARS-CoV-2 infected patients and decreasing the risk of virus transmission. Tenecteplase requires almost 2 min to be prepared and injected in a single dose, while Alteplase needs more than an hour to be administered. Also, unlike Alteplase, Tenecteplase does not require an additional intravenous line for an infusion pump, and it avoids the need for hospital staff to check the infusion pump repeatedly. In addition, in some centers, Alteplase is being used to treat acute respiratory distress syndrome associated with SARS-CoV-2. The increases in demand and interruption in the supply of Alteplase has caused Alteplase to be less accessible worldwide [13,19].

All these reasons have made Tenecteplase a strong alternative for alteplase during pandemic.

We do appreciate Oliveria and colleagues, providing us with a great systematic review and meta-analysis and pointing out the potential advantages of using Tenecteplase over Alteplase. However, we believe that health care facilities and providers should consider intravenous Tenecteplase administration for AIS during the Pandemic.

Declaration of Competing Interest

None.

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