Letter to the Editor

Before attributing COVID-19-related ischemic stroke to hypercoagulability alternative causes should be excluded

A R T I C L E  I N F O

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Letter to the Editor

With interest we read the article by Elkhider et al. about four patients with COVID-19 who all developed an ischemic stroke during the infection (Elkhider et al., 2020). It was concluded that “ischemic stroke can be seen as complication of COVID-19 in severe COVID-19 illness” (Elkhider et al., 2020). We have the following comments and concerns.

Missing is the work-up for atrial fibrillation respectively ventricular arrhythmias in all four patients. We should know if the ECG was monitored on the stroke-unit and if any arrhythmias were detected, which could be an alternative explanation to “hypercoagulability” for the strokes. Only patient-1 had echocardiography but a normal left atrial index does not exclude atrial fibrillation, particularly if it had newly developed. Concerning patient-1 the authors mention that fibrinogen was elevated (Elkhider et al., 2020). However, the value was given as 125mg/dl (reference limits: 200-393mg/dl) in the text and in table 2 (Elkhider et al., 2020).

We do not agree that patient-2 had an acute ischemic stroke. The patient presented with confusion already 2 days prior to admission. The authors should explain the reason for his pre-hospital confusion. We should know if encephalitis or encephalopathy was excluded. No multimodal MRI had been carried out. No investigations of the cerebro-spinal fluid were reported. No EEG was recorded. The findings on cerebral CT are not convincing since the occipital hypodensities could also represent encephalitis or an old lesion.

Border-zone infarcts in patient-3 suggest a hemodynamic cause. We should know if the patient had arterial hypotension or heart failure, manifesting with leg oedema, exertional dyspnoea, or neck vein distension, if the fractional shortening was reduced, and if proBNP values were elevated.

Patient-4 had a history of “atrial mass” (Elkhider et al., 2020). We should know the nature of this “atrial mass”. It should be discussed if the mass was a thrombus, a myxoma, an abscess, myocardial thickening, a patient foramen ovale (PFO), or a metastasis. The patient is described with respiratory failure and cardiac arrest. We should know if the authors mean asystole, Torsades des pointes, or ventricular fibrillation, and if the patient required cardio-pulmonary resuscitation (CPR).

Patient-1, -3, and -4 had diabetes (Elkhider et al., 2020). However the HbA1c values were not provided (Elkhider et al., 2020). To assess if diabetes could be an alternative explanation for the stroke, it is crucial to know if diabetes in these three patients was well controlled or not.

Missing in the article is if any of the four patients was a smoker. Missing is also the exclusion of cerebral vasculitis. Though the authors speculate about vasculitis as a possible mechanism of ischemic stroke in COVID-19 patients, they did not exclude vasculitis by CTA, DSA, or biopsy in their four patients. LVO should be written in full and it should be confirmed if it means large vessel occlusion.

We also do not agree that COVID-19-associated ischemic stroke only occurs in patients with severe infection. There are a number of reports in which the COVID-19 infection was mild or moderate but where patients nonetheless developed an ischemic stroke (de Lorenzo et al., 2020; Oxley et al., 2020).

Overall, the interesting report by Elkhider et al. has a number of shortcomings which need to be addressed before drawing final conclusions. Before attributing ischemic stroke associated with COVID-19 to hypercoagulability or vasculitis, several differential causes need to be thoroughly excluded. Since the prevalence of ischemic stroke rather declined than increased since onset of the pandemic, it is likely that the infection is not directly responsible for the occurrence of ischemic stroke.

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JF: design, literature search, discussion, first draft, critical comments.

Informed consent

Was obtained.
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Declaration of competing interest

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