Ischemic Stroke in COVID-19 Patients May Be Incidentally but Not Causally Related to the Infection

Josef Finsterer^a Fulvio A. Scorza^b

^aKlinikum Landstrasse, Messerli Institute, Vienna, Austria; ^bDisciplina de Neurociência, Escola Paulista de Medicina/Universidade Federal de São Paulo/(EPM/UNIFESP), São Paulo, Brazil

Dear Editor,

With interest we read the article by Saggese et al. [1] about a 62-year-old man with an acute ischemic stroke in the context of a SARS-CoV-2 infection with minimal manifestations. Consecutively, the patient experienced further thromboembolic events. It was concluded that infections with SARS-CoV-2 favor the development of ischemic stroke [1]. We have the following comments and concerns.

SARS-CoV-2 infections may cause complications as any other infection. One of these complications is ischemic stroke. Ischemic stroke in SARS-CoV-2-infected patients may be explained by exsiccrosis, hypercoagulability, immobility, heart failure, chronic obstructive lung disease, obesity, or arrhythmias triggered by the infection. Ischemic stroke in SARS-CoV-2-infected patients may also result from intraventricular thrombus formation due to a Takotsubo syndrome, increasingly reported in COVID-19 patients [2].

As millions of patients got infected since the onset of the pandemic but only very few experienced an ischemic stroke [3], an increased prevalence of ischemic stroke in SARS-CoV-2-infected patients is questionable. Anyhow, we agree that this point requires further investigations.

However, the risk of experiencing an ischemic stroke during an infection with SARS-CoV-2 may be increased among those with a high cardiovascular risk profile. The best example is the index case. The patient had a high-risk profile (arterial hypertension, diabetes, history of smoking, and previous myocardial infarction requiring placement of a stent) and was generally at an increased risk of experiencing a cerebrovascular event. In patients with a high-risk profile, a minor trigger may be enough to reduce cerebral perfusion below a critical cut-off. Such discrete triggers can be easily forwarded, for example, by any viral infection.

Whether the infection with SARS-CoV-2 promotes hypercoagulability or not is under debate but conceivable. Assuming that the infection generally leads to a hypercoagulable state, it is warranted that all patients with a symptomatic SARS-CoV-2 infection are anticoagulated. However, the relatively low number of patients with thrombotic or embolic events (0.7% of those hospitalized for COVID-19) [3] argues against a generally increased hypercoagulable state.

Missing in this report is a carotid ultrasound. Missing is also the multimodal MRI to assess the acuity and dynamics of the ischemic lesion. Additionally, missing is the

classification of the stroke as embolic or atherosclerotic, and the exclusion of a neoplasm.

We do not agree that dysgeusia is due to affection of the central nervous system (CNS) by the infection [4]. In the vast majority of the cases with CNS involvement in the infection, the cerebrospinal fluid is negative for the virus [Finsterer, submitted], suggesting that rather the cytokine storm is responsible for CNS impairment and that CNS complications are rather immune-mediated than directly attributable to the virus.

Overall, it is quite likely that patients with known micro- or macroangiopathy are at an increased risk of experiencing a cardio-embolic event during an infection with SARS-CoV-2. Whether the infection is generally associated with an increased cerebrovascular risk or leads to a hypercoagulable state remains questionable, but in case there is hypercoagulability, SARS-CoV-2-infected patients need to undergo anticoagulation if there is no con-

traindication. Whether symptomatic patients with a SARS-CoV-2 infection profit from steroids for immune-mediated adverse reactions needs to be investigated.

Conflict of Interest Statement

There are no conflicts of interest.

Funding Sources

No funding was received.

Author Contributions

J.F.: design, literature search, discussion, first draft, and critical comments.

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