Standards for the treatment of juvenile, ischemic stroke should not be abandoned for SARS-CoV-2 positives ✤, ✯, ✯

Letter to the editor

We read with interest the article by Hashemi et al. about a 12-year-old male with acute ischemic stroke in the territory of the left middle cerebral artery being attributed to SARS-CoV-2 related cerebral vasculitis [1]. The patient was treated with acetyl-salicylic acid, steroids, and intravenous immunoglobulins [1]. The long-term outcome of the patient was not provided [1]. The study is appealing but raises concerns that should be discussed.

We disagree with the notion that the patient had a status epilepticus (SE) [1]. We should be informed about the clinical manifestations of the SE. Were ever any tonic-clonic contractions observed, was there a tongue bite, was there a secessus alvi or urinae, or was the SE classified as non-convulsive SE? Missing in this respect is the electroencephalography (EEG). Were ever epileptiform discharges recorded on EEG? There is a discrepancy between the abstract and the main text [1]. In the abstract, the patient is described with new-onset seizures but in the main text, there is no mentioning of any single seizure [1]. There is also discrepancy between the semiology of seizures [1]. According to the abstract the patient had single seizures, whereas in the main text the patient had SE [1]. These discrepancies should be solved. It is also unclear why the patient initially received phenytoin intravenously which was later switched to levetiracetam. We should be informed why the antiepileptic medication was changed and why the patient was put on a long-term anti-seizure medication without ever recording an EEG.

Another shortcoming of the study is that the patient did not undergo thrombectomy or thrombolysis in the acute situation. According to the case description, the patient was referred to the emergency department within thirty minutes after onset of the cerebrovascular event [1]. Therefore, there was enough time to initiate thrombolysis followed by thrombectomy. We should know if there were any contraindications for thrombolysis or thrombectomy or if the department was not equipped with the facilities to carry out standard stroke therapy. Was the stroke volume assessed as too large to apply thrombolysis?

A further shortcoming is that the patient did not undergo perfusion CT or multimodal cerebral MRI (diffusion-weighted imaging (DWI) and perfusion-weighted imaging (PWI)) in the acute stage of the event to assess the extent of the mismatch between necrosis and penumbra.

According to Figure 4, the left internal carotid artery (ICA) was entirely occluded [1]. We should know if there was also an ICA occlusion found on CT-angiography of the extra-cranial arteries and if there was any residual flow on carotid ultrasound. It is also crucial to know how dissection of the left ICA had been ruled out.

We also disagree with the diagnosis SARS-CoV-2 related cerebral vasculitis [1]. Anti-nuclear antibodies, anti-neutrophil cytoplasmic antibodies, complement factors, rheumatoid factors were non-informative and methylene-tetra-hydrofolate reductase deficiency was ruled out [1]. We should be told if the patient ever complained about headache, if blood sedimentation rate was elevated, of the C-reactive protein was increased, if cerebral MRI with black blood sequences was indicative of vasculitis, and if the diagnosis “cerebral vasculitis” was supported by biopsy of an affected cerebral vessel. The skin rash described not necessarily indicates vasculitis particularly in the light of a missing skin biopsy to confirm cutaneous vasculitis.

Overall, the interesting study has limitations that call the results and their interpretation into question. Clarifying these

Abbreviations: DWI, diffusion weighted imaging; EEG, electroencephalography; ICA, internal carotid artery; PWI, perfusion weighted imaging.

✩ Competing Interests: the author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

** Funding: no funding was received

https://doi.org/10.1016/j.radcr.2022.10.015

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weaknesses would strengthen the conclusions and could improve the study. Acute, ischemic stroke in a child should be managed by thrombolysis or thrombectomy after ruling out contraindications even if the patient is SARS-CoV-2 positive. Diagnosing SARS-CoV-2-related cerebral vasculitis requires extensive work-up and exclusion of various differential diagnoses.

**Author contribution**

Josef Finsterer: Design, literature search, discussion, first draft, critical comments, final approval.

**Compliance with ethics guidelines**

This article is based on previously conducted studies and does not contain any new studies with human participants or animals performed by any of the authors.

**REFERENCE**

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Received 16 August 2022
Accepted 4 October 2022