

## Brainstem Encephalitis and Myelitis Must Be Excluded Before Diagnosing SARS-CoV-2-Related Brainstem and Spinal Cord Infarction

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### LETTER TO THE EDITOR

We were interested to read the article by Xiao *et al.* about a 15-year-old boy who was diagnosed with a brain stem and spinal cord infarction during a SARS-CoV-2 infection [Xiao, Q. *et al.*, 2024]. Several points should be discussed.

The first point is that the diagnosis of ischemic stroke is not certain. As long as various differential diagnoses have not been sufficiently ruled out, the diagnosis of brain stem and spinal cord stroke remains uncertain. The first differential diagnosis that must be ruled out is infectious or immunological myelitis and brain stem encephalitis. To rule out encephalitis/myelitis, it would have been imperative to examine the CSF for infectious agents and immunologic parameters, including cell count, protein level, lactate level, culture, oligoclonal bands, and immunologic parameters. The second differential diagnosis that must be ruled out is Guillain-Barre syndrome with Bickerstaff encephalitis. As the patient had hypotonia, it cannot be ruled out that the peripheral nervous system is also affected. The fact that the patient presented with hypotension, that he obviously had no cardiovascular risk factors and that the MRI images also allow various differential diagnoses speaks against an ischemic stroke. The MRI shows DWI hyperintensity, but no ADC maps were described or shown. Since ischemic stroke is characterized by cytotoxic edema, it is imperative that cytotoxic edema is clearly documented. In this regard, MR or CT

angiography and MR venography to rule out cytotoxic edema are also lacking.

The second point is that it was not mentioned whether the patient was quadriplegic or paraplegic on admission. Since it is mentioned that the patient was still paraplegic on discharge [Xiao, Q. *et al.*, 2024], it can be assumed that paraplegia was also present on admission. Were the upper or lower limbs paraplegic or was the patient a quadriplegic? Knowledge of the clinical picture on admission is crucial for assessing whether the patient has benefited from treatment or not. The third point is that the MRI was performed without contrast. To assess whether the lesions were inflammatory or infectious, it would have been essential to perform a T1-weighted image with contrast to see whether there was enhancement or not.

The fourth point is that the treatment used was not specified. Did the patient undergo thrombolysis? What type of secondary prophylaxis was administered?

We do not believe that an elevated D-dimer value only reflects hypercoagulability. As it is also an inflammatory marker, it can also be elevated simply due to pneumonia.

### REFERENCES

1. Xiao, Q., Yang, X. & Wang, S. "Spinal cord and brainstem extensive infarction: A case with rare complication of COVID-19 infection." *Neurology India*, 72.2 (2024): 451-452.

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