Be aware: COVID-19 the new stroke mimicker

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Received: 17 August 2020 / Accepted: 29 October 2020 / Published online: 16 November 2020
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Keywords COVID-19 · Stroke · Stroke mimic

Introduction

Patients with acute neurologic symptoms with suspected acute cerebral ischemia may have other causes simulating ischemic stroke, called stroke mimics. Here, we report a novel observation of a stroke mimic in a COVID-19-infected patient.

Case presentation

A 59-year-old man with a history of spinal disc herniation was admitted to the emergency ward of our hospital because of acute onset of left-sided weakness and sensory loss since 3 days. On examination, the patient was awake, alert, and orientated. The temperature was 37.0 ºC, the blood pressure 110/89 mmHg, the respiratory rate 12 breaths per minute, and the oxygen saturation 98%. His speech was fluent and clear, but he had a left-sided upper motor neuron facial palsy, left-sided weakness and sensory loss. He was able to walk without assistance, but instable gait. The remainder of his neurologic examination was normal. The patient’s National Institutes of Health Stroke Scale was 6. Blood tests revealed lowered serum leucocytes (3.87 10E9/l), C-reactive protein and D dimer levels were normal. Non-contrast CT scan of the head revealed no intracranial hemorrhage and a CT angiography displayed no arterial occlusion. Thrombolysis was not performed because of the extended time window. The patient was admitted to the stroke unit and started with secondary prevention. At day 2, the patient developed fever without respiratory symptoms. He tested positive for COVID-19. Magnetic resonance imaging of the head was performed at day 2 and is shown in Fig. 1. There were no signs of recent ischemia. Neurological examination at day 3 showed a slightly recovered left-sided upper motor neuron facial palsy, weakness, and sensory loss.

Discussion

Some COVID-19-infected patients may present at onset with neurological manifestations such as impaired consciousness, headache by meningitis, encephalitis, myelitis, smell/taste dysfunction, Guillain–Barre syndrome, epilepsy, and stroke [1]. Strokes in COVID-19 patients are not uncommon. The incidence of acute ischemic types of stroke in severely affected COVID-19 patients is around 3% [2]. Cardiovascular risk factors and relevant co-morbidities (e.g., diabetes mellitus and arterial hypertension) are associated with a more severe COVID-19 disease course and elevated stroke risk [1]. Severe COVID-19 cases suffer from coagulopathy, prolonged prothrombin time, decreased platelet counts, hyper-fibrinolysis, and up to disseminated intravascular coagulation [3].

The long-lasting neurological symptoms (> 72 h) during our patient’s systemic viral infection and the absence of diffusion-restrictive cerebral ischemia on MRI reflect rather an underlying neuro-inflammatory encephalopathy presenting as a stroke mimic, than a stroke/transient ischemic attack. Accumulating evidence suggests that severely affected COVID-19 patients might suffer from a cytokine storm syndrome, which has been implicated as the putative
mechanism for necrotizing encephalopathy [1]. However, the
cause of stroke like symptoms in this patient is unknown and
it could be unrelated to COVID-19.

Our stroke mimic case contacted the emergency depart-
ment at a late time window, excluding him for intravenous
thrombolysis. In case of earlier arrival, intravenous throm-
bolysis could have been given, as the complication rate upon
intravenous thrombolysis in stroke mimics is generally low
[4]. However, in patients with underlying infection, there
could be an increased risk of intracranial hemorrhage, as we
have seen in patients with stroke and underlying infective
endocarditis [5]. The safety profile of intravenous throm-
bolysis in COVID-19-infected patients is unknown.

COVID-19-infected patients can present with symptoms
mimicking a stroke. However, we have to be aware of a
stroke in COVID-19-infected patients because of the high
incidence. Therefore, we need to pay attention to neurologic
manifestations, in particular for those patients with a severe
infection.

Funding  No targeted funding reported.

Compliance with ethical standards

Conflict of interest  The authors declare no conflict of interest relevant
to the manuscript.

Ethical approval  The study was approved by the local Ethics Commit-
tee of the Antwerp University Hospital.

Informed consent  Our patient provided written informed consent for
the study participation.

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