

Stroke in a Young Severe Acute Respiratory Syndrome Coronavirus 2 Infection Patient: A Case Report

Geum Yeon Sim MD, Cynthia Hung MD
Department of Rehabilitation Medicine

Albert Einstein School of Medicine/Montefiore Medical Center, Bronx, NY

Introduction:

- The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) causes symptoms that are classified as coronavirus disease 2019 (COVID-19) [1].
- The most common symptoms of COVID-19 are cough, myalgia, dyspnea, and fever [1].
- There is an increasing evidence of central nervous system involvement [2].
- Presence of cerebrovascular disease has been reported to be 2-6% in SARS-CoV-2 patients [2].
- Here we report an unusual case of a young patient with COVID-19 who presented with focal neurological deficits secondary to cerebral infarction.

Case Description:

- This is a 42-year-old female with a history of hypertension admitted with new left hemiplegia, neglect, cognitive deficits, and hemisensory loss.
- Imaging revealed a large right middle cerebral artery (MCA) infarct.
- The patient received tissue plasminogen activator (tPA) and later a right hemicraniectomy.
- She tested positive for SARS-CoV-2 but was asymptomatic.
- She had high fibrinogen (peak 838 mg/dL) and D-dimer (peak 10.33ug/mL).
- She developed acute left leg deep venous thrombosis (DVT) treated with therapeutic anticoagulation.
- Her echocardiogram was unrevealing. The antiphospholipid panel was negative. Urine toxicology only showed opiates.
- Neurology had determined her stroke was due to coagulopathy from SARS-CoV-2.
- She was discharged on apixaban 5mg twice a day for this and for the DVT's. She was discharged to subacute rehabilitation where she remains 7 months later.

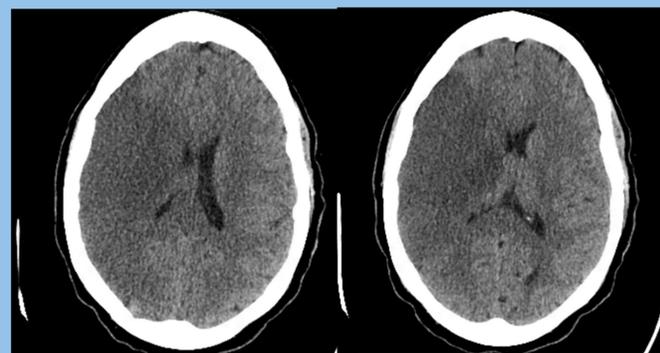


Figure 1. Computed Tomographic image of right middle cerebral artery territory infarct

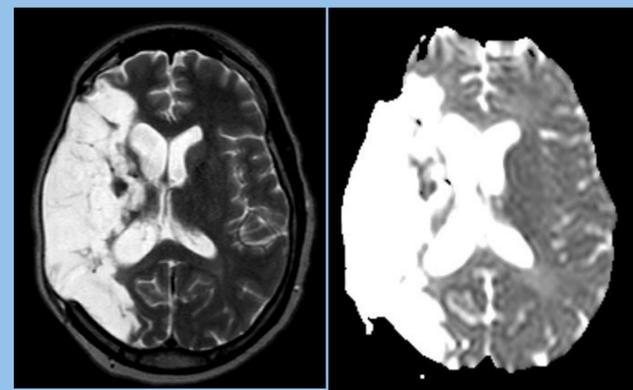


Figure 2. Magnetic resonance imaging done at 5 months follow up showing right chronic middle cerebral artery territory infarct in T2 and ADC sequences respectively

Discussion:

- Our case presents a young patient who experienced a severe stroke while having asymptomatic SARS-CoV-2.
- There have been other reported cases of stroke in young COVID-19 patients. One New York hospital had five COVID-19 stroke patients under age 50 in two weeks whereas normally there are 0.73 young patients admitted with stroke in 2 weeks [2].
- Like many cases of COVID-19, high D-dimer and fibrinogen was also present [3]. These lab findings along with having two thrombosis events could suggest a hypercoagulable state caused by the SARS-CoV-2.
- Possible mechanisms include damage to the vascular endothelium from uncontrolled inflammation or decreased ACE2 levels which is normally antithrombotic. [3].
- Perhaps antithrombotic agents or anticoagulants should be used to prevent thrombosis in SARS-CoV-2 patients.
- At our institution patients are placed on apixaban 2.5 mg twice daily or enoxaparin 40 mg subcutaneous daily for 3-4 weeks post discharge for COVID-19 if the D-dimer is greater than 1ug/mL.

Conclusion:

- COVID-19, a novel disease, can be associated with severe stroke possibly due to hypercoagulability even despite the disease being asymptomatic.
- COVID-19 strokes can lead to prolonged recovery of function.

References:

1. Geier, M et al. Respiratory conditions in coronavirus disease 2019 (COVID-19): Important considerations regarding novel treatment strategies to reduce mortality. *Medical Hypotheses*. 2020
2. Ellul et al. Neurological associations of COVID-19. *Lancet Neurol*. 2020
3. Shi et al.. Coagulopathy in COVID-19: Focus on vascular thrombotic events. *J Mol Cell Cardiol*. 2020