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

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Introduction:

- In 2019, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) which causes coronavirus disease 2019 (COVID-19) was detected in China[1].
- SARS-CoV-2 typically causes respiratory illness [1].
- Central nervous system involvement is increasingly described as well.
- The presence of cerebrovascular disease has been reported to be 2-6% in SARS-CoV-2 patients [2].
- We present a case of COVID-19 infection with concomitant cerebral infarction and acute pulmonary emboli (PE).

Case Description:

- A 76-year-old male was admitted for new right hemiparesis and expressive aphasia.
- He had a history of hypertension, hyperlipidemia, diabetes mellitus, asthma, prostate cancer, and COVID-19 from two months prior.
- Imaging revealed acute infarct in the left superior frontal gyrus, A2 segment of left anterior cerebral artery (ACA) thrombus, and right upper lobe pulmonary emboli.
- Testing showed positive SARS-CoV-2 and high D-dimer (14.28 ug/ml) .
- Echocardiogram only showed mildly decreased left ventricular ejection fraction.
- His stroke was felt to be from SARS-CoV-2 hypercoagulability
- The patient's deficits improved and he was discharged home.
- He was discharged on apixaban 5 mg twice daily due to his hypercoagulability and PE.
- Several months later, the patient reported being able to walk three to four blocks at a time.

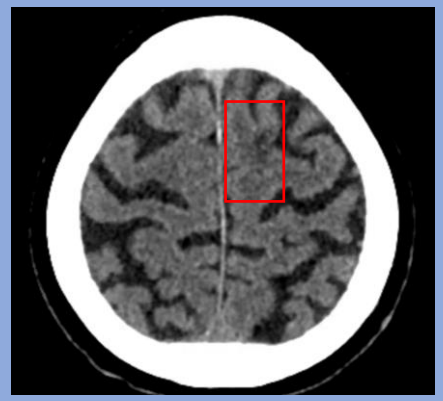

Figure 1. Computed Tomographic imaging showing subtle loss of gray-white matter differentiation along the left superior frontal gyrus, which may be secondary to an acute infarct.

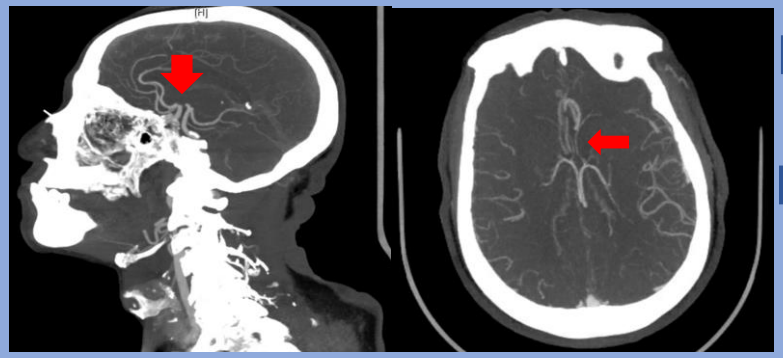

Figure 2 Computed Tomography Angiogram showing acute focal thrombosis of the A2 segment of the left anterior cerebral artery and proximal pericallosal artery.

Discussion:

- This is a case of COVID-19 with associated stroke and pulmonary embolism.
- Stroke and thrombosis have been reported in even mild cases of SARS-CoV-2 infection
- Low ACE2 levels and vascular endothelial damage from inflammation are possible mechanisms [3].
- Anticoagulant medications are potentially useful for COVID-19 stroke prevention.
- 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.
- Thus, it is important to remember to assess for COVID-19 in patients with unexplained stroke.
- The rehabilitation plan along with anticoagulation therapy, if indicated, should be instituted early for COVID-19 stroke patients.

Conclusion:

- SARS-CoV-2, a novel disease, can be associated with hypercoagulability manifesting as stroke or pulmonary emboli.

References:

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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