COVID-19 induced infarct of Splenium of the Corpus Callosum

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BACKGROUND

- Infarction of the central splenium of corpus callosum is a rare entity.
- Existing literature identifies causes for splenium infarcts to include multiple sclerosis, Susac syndrome and more recent association is noted with Coronavirus disease of 2019 (COVID-19) (1).
- Patients with COVID-19 who usually present with corpus splenium infarct notably have pre-existing vascular risk factors which are postulated to be exacerbated by COVID-19-induced coagulopathy and inflammation (2).
- We describe a case of central splenium infarct in a patient with underlying vascular risk factors in the setting of acute COVID-19 infection.

CASE PRESENTATION

- A 50-year-old male with history of type II diabetes mellitus, hypercholesterolemia and tobacco use disorder presented for evaluation of fever, malaise, and left arm numbness and tingling ongoing for six hours that later progressed to left-sided upper and lower extremity weakness.

PHYSICAL EXAMINATION

- On initial assessment, he was found to be febrile to 102 °F. Physical examination revealed decreased strength of 3/5 in left upper and lower proximal and distal muscle groups, intact sensation to light touch, and no cranial nerve deficits.

INVESTIGATIONS AND IMAGING

- Patient tested positive for SARS-COVID-19 on initial lab work.
- Computed tomography scan of the head was unremarkable and computed tomography angiography of head and neck did not reveal large vessel occlusion.

CONCLUSION

Clinicians should be aware of the adverse effects of COVID-19 on the cerebrovascular system which includes splenium infarcts in patients with pre-existing vascular risk factors. Prompt evaluation can lead to improved morbidity and mortality in these patients.

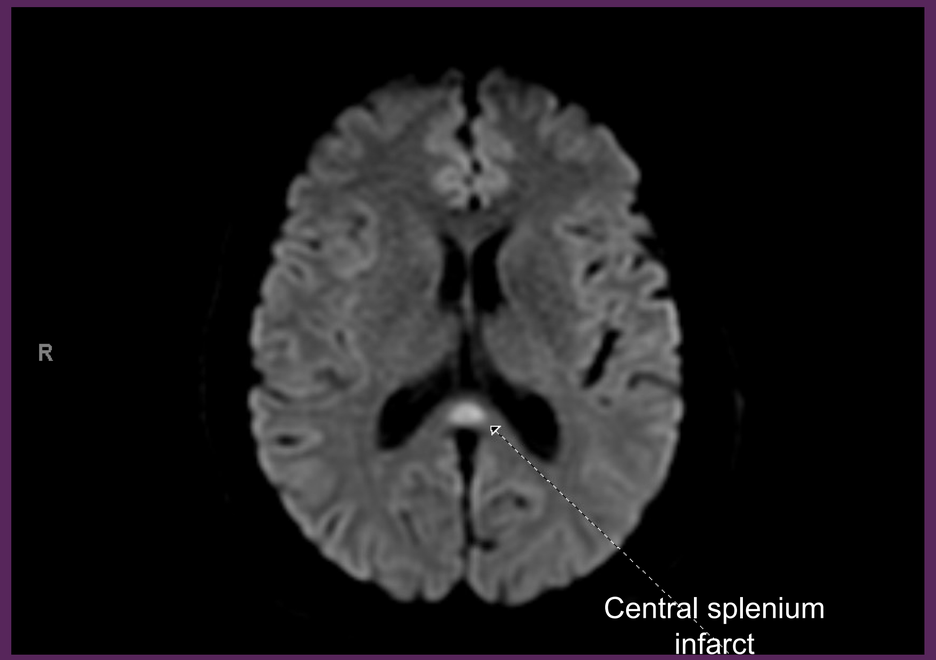

Figure 1: Brain magnetic resonance imaging showing area of increased signal in the splenium consistent with acute infarct of the central splenium.

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INVESTIGATIONS AND IMAGING - CONTINUED

- Follow-up brain magnetic resonance imaging showed an area of increased signal on diffusion-weighted imaging in the splenium consistent with acute infarct of the central splenium.
- A transthoracic echocardiogram did not reveal patent foramen ovale and 30-day event monitor was normal without significant episodes of bradycardia, heart block, or sinus pauses.

OUTCOME AND FOLLOW UP

- Patient was diagnosed with COVID-19 induced central splenium infarction.
- He was started on treatment with Paxlovid, high intensity statin and low-dose aspirin.
- He underwent extensive physical therapy with a gradual return to baseline functional status over twelve weeks.

DISCUSSION

- The rarity of splenial infarction is explained by the collateral blood supply to the callosum from both anterior and posterior circulations (2).
- Some of the identified causes include diffuse atherosclerosis of the anterior and posterior circulations, embolization, vasospasm, vasculitis, hypercoagulability, and hypoxia (2).
- COVID-19 has been proposed to cause stroke by inducing hypoxia and hypercoagulable state, releasing inflammatory cytokines, and causing direct viral invasion of blood vessels causing angiitis.
- However, Covid-19's link to splenium infarction is still unexplainable albeit a well-established association in neurology literature.

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DISCLOSURE

- The authors report no conflicts of interest.