

The Spectrum of Acute Cerebrovascular Disease in Patients Hospitalized with COVID-19 Diagnosis at OLSU-S

Rachel Triay, MD Candidate, 2022¹, Junaid Ansari, MD¹, Victoria Winter, MD Candidate, 2022¹, Rosario Maria S. Riel-Romero, MD, FAAP, FAAN, FACNS¹, Eduardo Gonzalez-Toledo, MD¹, Felicity N.E. Gavins, PhD², Roger E. Kelley, MD¹.

¹Louisiana State University Health Sciences Center, Shreveport, LA, USA, ²Brunel University, London, United Kingdom.

Objective: To determine the spectrum of acute cerebrovascular disease (CVD) among COVID-19 patients admitted to Ochsner-Louisiana State University Health Sciences Center, Shreveport (OLSU-S) after SARS-CoV-2 positive results.

Background: Coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) is now known to cause a broad range of neurological manifestations. COVID-19 infection causes a pro-inflammatory, hypercoagulable state and there is an increased risk of CVDs which can have many adverse outcomes compared to other neurological complications.

Methods: We conducted a retrospective, observational study of hospitalized adult patients (age > 18 years) admitted to OLSU-S with laboratory confirmed SARS-CoV-2. All clinical data was reviewed including epidemiology, clinical features, laboratory data, neuroradiological findings, hospital management and course from 34 patients hospitalized for COVID-19 management with neurological symptoms at OLSU-S between March 15, 2020 to March 15, 2021.

Results: We screened 34 patients admitted to OLSU-S with COVID-19 who either presented with or developed neurological complications during their hospital course. Of these patients with neurological complications and acute COVID-19 infection (Neuro-COVID), 15 (44.1%) were diagnosed with CVD. In our Neuro-COVID cohort, CVD was more common in male patients (11 [73.3%]). Hypertension was the most common underlying comorbidity (10 [66.6%]), followed by diabetes (5 [33.3%]), and obesity (5 [33.3%]). There were 5 (33.3%) patients who had a previous history of CVDs. Of those with acute CVD, 3 (20%) received tPA, 3 (20%) received endovascular thrombectomy, and the remainder were not candidates for hyperacute interventions. Patients with COVID-19 related CVD had more serious clinical courses with 8 (53.3%) patients admitted to the intensive care unit, 5 (33.3%) patients requiring ventilation, and 7 (46.7%) patient deaths. EEG abnormalities were noted in 6 acute CVD patients, which ranged from mild to moderate encephalopathy and one case of unilateral focal slowing. Neuroimaging showed severe and unique types of strokes. This included an intraventricular haemorrhage, haemorrhage of the basal ganglia, venous infarct of the thalamus and 11 acute ischemic strokes. Of the acute ischemic strokes, 5 had hemorrhagic transformation.

Conclusions: Our observations confirm the increased incidence of acute CVDs seen in Neuro-COVID patients. Acute CVDs associated with COVID-19 tended to be more severe, leading to poor prognosis and more mortality.