

Systemic Review of Carotid Artery Thrombosis causing Stroke in COVID-19 patients

Background: An increasing sequela of COVID19 is artery thrombosis. Reports have linked COVID infection with acute arterial occlusion occurring throughout the body. Cases emerged linking COVID with acute arterial thrombosis causing stroke in patients. A few of these cases appeared in healthy individuals.

Purpose: To investigate the relationship between carotid artery thrombosis (CAT) causing stroke in those with COVID.

Method: A literature search was performed from Jan. 2020 to Aug 2021 to identify COVID cases with CAT related strokes. Using keywords, two databases, MEDLINE and EMBASE, were used to identify cases. Patients with COVID infection and radiologic imaging of CAT were included. We excluded cases of thrombi caused by trauma, iatrogenic, and dissection. As control, we obtained cases during non-Covid years. Information collected included demographics, comorbidities, treatment, and outcome. Treatment was divided into four categories: medication only, medication and surgery, surgery only, or no intervention. Outcome was recorded as changes to neurologic symptoms. Three outcomes were noted: improvement or resolution; no change; or worsening or death.

Descriptive statistical analyses were performed.

Results: 55 COVID related stroke caused by CAT were identified; 135 cases served as controls. Average age and male to female ratio was comparable between the two, 55 and 2:1 respectively. In COVID cases, 71% had one or more comorbid medical condition compared to 41% in nonCovid. In COVID, 47% had medicine treatment, 22% surgery, 18% both, and 15% no intervention. In nonCovid, 35% had medicine treatment, 27% surgery, and 35% both. In COVID cases, 8% improved, 31% no improvement, 22% worsening conditions. In nonCOVID, 26% improved, 22% no improvement, 8% worsening of conditions.

Conclusion: In CAT related stroke, COVID patients had more comorbidities and higher disease burden with fewer patients improving and more experiencing worsening symptoms.