Abstract Title: Stroke complicating critically ill patients with SARS-CoV-2: Analysis of the COVID-19 Critical Care Consortium (CCCC) international, multicenter observational study

Press Release Title: How Common Is Stroke in People Critically Ill with COVID-19?

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Objective: To determine the frequency, types and outcomes of stroke occurring as a complication of coronavirus disease 2019 (COVID-19) requiring intensive care unit (ICU) admission.

Background: COVID-19 has been implicated in the occurrence of neurological complications and associated increased morbidity and mortality. Cerebrovascular complications are particularly concerning, with a frequency from 1-6% reported in SARS-CoV-2 positive patients. However, such reports have generally been restricted to small patient populations and not specifically focused on the most critically ill patients requiring ICU care.

Design/Methods: The COVID-19 Critical Care Consortium (CCCC) is a prospective observational study enrolling patients over 18 years requiring ICU admission for SARS-CoV-2 infection. Patients diagnosed with acute stroke post ICU admission from January 1st through December 21st, 2020, were included in analysis. Survival models utilizing parametric Weibull regression were used to investigate the impact of stroke on ICU death and discharge rates. These results were confirmed using semi-parametric Cox models.

Results: 2,699 eligible patients (median age=53, male=65%) were registered across more than 370 sites spanning 52 countries. Of these, 59 (2.2%) patients experienced acute stroke during their ICU stay: 19 (32%) ischemic, 27 (46%) hemorrhagic, and 13 (22%) unspecified. The survival model demonstrated that the probability of having a stroke in the ICU was small, but gradually increased over time. Hemorrhagic stroke greatly increased the cumulative hazard of death (HR=2.7; 95% CI: 1.4, 5.3), while ischemic stroke did not (HR= 1.0; 95% CI: 0.5, 2.4).
Despite high mortality (72%) in patients with hemorrhagic stroke, stroke was the primary cause of death in only 15%, with multiorgan failure the leading cause of death.

**Conclusions:** In an international registry of critically ill COVID-19 patients, acute stroke was infrequent - occurring in 2.2% of patients. Hemorrhagic, but not ischemic stroke, was associated with significantly increased mortality.

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