

73rd AAN ANNUAL MEETING ABSTRACT

Media Contacts:

Renee Tessman, rtessman@aan.com, (612) 928-6137

M.A. Rosko, mrosko@aan.com, (612) 928-6169

EMBARGOED FOR RELEASE UNTIL 4 P.M. ET, THURSDAY, APRIL 15, 2021

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?

Authors: Jonathon Fanning, BSc, MBBS, Ph.D., FANZCA, FCICM,^{1,2,3,4} Adrian Barnett, BSc, Ph.D.,⁵ Lavien Premraj, BMSc,⁶ Glenn Whitman, M.D.,⁷ Rakesh Arora, MD,^{8,9,10} Denise Battaglini, M.D.,^{11,12,13} Samuel Huth, BSc,^{1,2} Diego Bastos Porto, M.D., MSc,¹⁴ HuiMahn Alex Choi, M.D., MS,¹⁵ Jacky Suen, BSc, Ph.D.,^{1,2} Gianluigi Li Bassi, M.D., Ph.D.,^{1,2,3,5} John Fraser, MBBS, Ph.D., FRCP, FRCA, FFARCSI, FCICM,^{1,2,3,5} Matthew Griffiee, M.D.,¹⁶ Chiara Robba, M.D., Ph.D.,¹¹ Sung-Min Cho, DO, MHS⁷ *on behalf of the COVID-19 Critical Care Consortium Investigators*

¹Critical Care Research Group, Queensland, Australia; ²University of Queensland, Australia; ³UnitingCare Health, Queensland, Australia; ⁴Gold Coast University Hospital, Queensland, Australia; ⁵Queensland University of Technology, Australia; ⁶Griffith University, Australia; ⁷Johns Hopkins University School of Medicine, Baltimore, Maryland, USA; ⁸St. Boniface General Hospital Research Centre, Winnipeg, Manitoba, Canada; ⁹University of Toronto, Canada; ¹⁰University of Manitoba, Canada; ¹¹San Martino Policlinico Hospital, IRCCS for Oncology and Neuroscience, Italy; ¹²University of Genoa, Italy; ¹²University of Barcelona, Spain; ¹³Hospital Sao Camilo de Esteio, Brazil; ¹⁴University of Texas Health Sciences Center, Houston, TX, USA; ¹⁵University of Utah, Salt Lake City, Utah, USA

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.

Study Supported By: The Common Good, an initiative of the Prince Charles Hospital Foundation, Australia; University of Queensland, Australia; Fisher & Paykel Healthcare Ltd.; and Wesley Medical Research, Uniting Care Health, Australia.