

Significant decline in subarachnoid hemorrhage hospitalizations due to COVID-19

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New research led by investigators from Boston Medical Center and Grady Memorial Hospital demonstrates the significant decline in hospitalizations for neurological emergencies during the COVID-19 pandemic. The rate of Subarachnoid hemorrhage (SAH)—bleeding in the space between the brain and the tissue covering the brain—hospitalizations declined 22.5 percent during the study period, which is consistent with the other reported decreases in emergencies such as stroke or heart attacks.

Published in *Stroke & Vascular Neurology*, the study compares subarachnoid hemorrhage hospital admissions for the months following throughout the initial COVID surge, in hospitals that bore a greater burden by COVID-19, and those that did not.

"SAH is a global health burden, with high fatality and permanent disability rates, representing a potential impact of these emergent situations," said lead co-author Thanh N Nguyen, MD, FRCPC, a vascular and interventional neurologist at Boston Medical Center, and a professor of neurology and radiology at Boston University School of Medicine. "These neurological conditions can be life-threatening if care is not being promptly sought."

Other important data from this study includes the rate of embolization of ruptured aneurysms and aneurysmal SAH hospitalizations, which declined by 11.5 percent and 24.6 percent respectively.

Hospitals with a higher COVID-19 hospitalization burden were found to be more vulnerable to the decline in SAH admissions and ruptured [aneurysm](#) coiling volume. However, even hospitals with lower COVID-19 hospitalization burden were found to have decreases in SAH admissions, suggesting that access to [hospital care](#) was not the main

factor for these decreases.

The cross-sectional, retrospective, observational study was done including data from six continents, 37 countries, and 140 comprehensive stroke centers. Patients with the diagnosis of SAH, aneurysmal SAH, ruptured aneurysm in need of coiling interventions, and COVID-19 were identified through prospective aneurysm databases and ICD-10 codes. Monthly and weekly admission volume data were collected over three periods of time: March 1, 2020, to May 31, 2020 ([pandemic months](#)), November 1, 2019, to February 29, 2020 (immediately preceding pandemic months), and March 1, 2019, to May 31, 2019 (equivalent period one year prior to pandemic). The findings are similar to reported decreases in SAH city-wide in Paris during a two-week period of the pandemic, and decreases in a Toronto [hospital](#), whereas other cities such as Berlin and Joinville (South Brazil) reported no decreases in SAH during the COVID-19 pandemic.

High and intermediate procedural volume centers were more affected by declines in SAH hospitalizations and ruptured aneurysm embolization than low volume SAH coiling centers during the pandemic. However, hospitals with low SAH coiling volumes demonstrated an increase in the coiling of ruptured aneurysms during the pandemic, despite a significant decrease in total SAH admissions.

"This suggests a shift towards treating more patients with ruptured aneurysms with endovascular techniques during the pandemic to potentially shorten hospitalization times and mitigate risks of perioperative infection to the patient or provider," says Raul Nogueira, MD, director of neuroendovascular service at the Marcus Stroke & Neuroscience Center—Grady

Memorial Hospital, lead co-investigator and professor of neurology and radiology at Emory University School of Medicine.

More information: Thanh N Nguyen et al, Decline in subarachnoid haemorrhage volumes associated with the first wave of the COVID-19 pandemic, *Stroke and Vascular Neurology* (2021).
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