

COVID-19 Neurologic Fallout Not Limited to the Severely Ill

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Serious neurologic complications in patients with COVID-19 are not limited to the severely ill, new research confirms.

"We found a range of neurologic diagnoses, including stroke and seizures, among hospitalized patients with COVID-19 and the majority were not critically ill, suggesting that these complications are not limited just to those patients who require ICU care or a ventilator," study investigator Pria Anand, MD, Division of Neuro-Infectious Diseases, Boston University School of Medicine, Boston, Massachusetts, told *Medscape Medical News*.

The study was [published online](#) December 9 in *Neurology Clinical Practice*.

"Moderately Severe" Disability

For the study, the investigators reviewed the medical records of 74 adults (mean age, 64 years) who were hospitalized with COVID-19 and evaluated for neurologic conditions at Boston Medical Center, a safety-net hospital caring primarily for underserved, low-income, racial and ethnic minority populations.

The most common COVID-19 symptoms on arrival to the hospital were cough (39%), dyspnea (36%), and fever (34%). Eleven patients required intubation (15%) and 28 required some form of supplemental oxygen (38%). Thirty-four patients required intensive care (46%).

The most common neurologic COVID-19 symptoms at presentation were altered mental status (53%), myalgia (24%), fatigue (24%), and [headache](#) (18%).

After neurologic assessment, the most common final neurologic diagnosis was multifactorial or toxic-metabolic encephalopathy (35%), followed by seizure (20%), [ischemic stroke](#) (20%), primary movement disorder (9%), peripheral neuropathy (8%), and [hemorrhagic stroke](#) (4%).

Three patients (4%) suffered traumatic brain injuries after falling in their homes after developing COVID-19.

Ten (14%) patients died in the hospital. Survivors had "moderately severe" disability at discharge (median [modified Rankin Scale](#) score of 4 from a pre-admission mRS score of 2) and many were discharged to nursing facilities or rehabilitation hospitals.

"Although we do not have data on their post-hospital course, this suggests that patients with neurologic complications of COVID-19 are likely to require ongoing rehabilitation, even after they leave the hospital," Anand, a member of the American Academy of Neurology, told *Medscape Medical News*.

"There are a diverse range of mechanisms by which COVID-19 can cause neurologic complications," Anand said.

"These complications can result from the body's immunological response to the virus (eg, Guillain-Barré syndrome, an autoimmune disorder affecting the nerves), from having a systemic severe illness (eg, brain injury as a result of insufficient oxygenation), from the increased tendency to form blood clots (eg, stroke), from worsening of preexisting neurologic disorders, and possibly from involvement of the nervous system by the virus itself," she explained.

The researchers say more study is needed to characterize the infectious and post-infectious neurologic complications of COVID-19 in diverse patient populations.

Lingering Issues

Commenting on the findings for *Medscape Medical News*, Kenneth L. Tyler, MD, chair of neurology, University of Colorado School of Medicine, Denver, noted that this is one of the larger series published to date of the neurologic complications associated with COVID-19, and the first to come from a US safety-net hospital in a large metropolitan area.

"Overall, the types and categories of neurological complications reported including encephalopathy (35%) and acute cerebrovascular events (~20%) are similar to those reported elsewhere," said Tyler.

However, the frequency of stroke (~20%) is higher than in some other reports, "likely reflecting the comorbidities such as diabetes, [hypertension](#), limited access to care [that are] present in this population," he said.

Tyler also noted that the "relatively high frequency" of primary movement disorders, notably myoclonus, "hasn't been particularly well recognized or described, although one of the authors has written on this in COVID-19, so perhaps there is a bit of an 'ascertainment bias' — as they were looking harder for it?"

Finally, he noted, it's important to understand that all the published studies "vary tremendously in the populations they examine, so direct comparisons can be difficult."

Also weighing in on the report for *Medscape Medical News*, Richard Temes, MD, director, Northwell Health's Center for Neurocritical Care in Manhasset, New York said neurologic problems have been noted since the start of COVID and have been well described.

"It's common for patients to present with very nonspecific neurological complaints like confusion, disorientation, altered mental status, lethargy, but also neurological disease such as strokes, brain hemorrhages, and seizures are quite common as well," said Temes.

He also noted that a number of patients with COVID-19 will have "lingering effects, especially patients who are hospitalized, that can range from memory deficit, cognitive slowing, and trouble with activities of daily living and [depression](#)."

"These effects can occur with any patient who is hospitalized for a [significant] period of time, especially in the intensive care unit, so it's hard to tease out whether or not this is truly from COVID itself or if it's just being a survivor from a very severe, critical illness. We don't know yet. We need more data on that," he cautioned.

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