

Neurologic manifestations in hospitalized patients with COVID-19

The ALBACOVID registry

Carlos Manuel Romero-Sánchez, MD, Inmaculada Díaz-Maroto, MD, Eva Fernández-Díaz, MD, et al.

Cite as: *Neurology*® 2020;95:e1060-e1070. doi:10.1212/WNL.00000000000009937

Correspondence

Dr. Romero-Sánchez
carlosmanuelromerosanchez@gmail.com

Study objective

To study the frequency and characteristics of neurologic symptoms observed in patients hospitalized with coronavirus disease 2019 (COVID-19).

What is known and what this paper adds

Neurological symptoms have been reported in patients with COVID-19, including headache, dizziness, anosmia, and dysgeusia. This study found that more than half of patients hospitalized with COVID-19 have some neurologic manifestations.

Participants and setting

The study includes data from all the 841 patients (56.2% men; mean age, 66.4 ± 15.0 years) admitted to 2 hospitals in the Spanish province of Albacete during March, 2020 with COVID-19. All patients had confirmed infection with SARS-CoV-2 by throat swab PCR or identification of IgG/IgM antibodies in serum.

Design, size, and duration

This is a retrospective observational study. Electronic medical records, laboratory test results, radiology findings, and EEG and EMG recordings were reviewed to identify any neurological manifestations; these were classified as nonspecific symptoms (headache, dizziness or myalgia), neuropsychiatric disorders (insomnia, depression, anxiety or psychosis), central nervous system disorders (direct viral infection, disorders of consciousness, seizures and stroke), peripheral nervous system (PNS) disorders (cranial neuropathies, anosmia/dysgeusia, peripheral neuropathy), myopathy and demyelinating events.

Primary outcome measures

The primary outcome was the proportion of patients who had neurologic manifestations.

Table Associations between selected neurologic manifestations and COVID-19 severities

Neurologic manifestation	Odds ratio (95% confidence interval) for severe cases vs nonsevere cases
Any	1.65 (1.2–2.2)
Disorders of consciousness	8.18 (5.5–12.2)
Myalgia	0.63 (0.4–0.9)
Myopathy	9.13 (3.1–26.7)
Movement disorders	7.89 (0.9–67.8)

Main results and the role of chance

In total, 483 patients (57.4%) had neurologic manifestations. Nonspecific symptoms such as myalgia (17.2%), headache (14.1%), and dizziness (6.1%) were mostly present in the early stages of infection. Anosmia (4.9%) and dysgeusia (6.2%) usually occurred early and were more common in less severe cases. Disorders of consciousness (19.6%) occurred mostly in severe cases and advanced stages. Other reported neurologic manifestations included myopathy (3.1%), dysautonomia (2.5%), cerebrovascular diseases (1.7%), seizures (0.7%), movement disorders (0.7%), encephalitis (n = 1), Guillain-Barré syndrome (n = 1), and optic neuritis (n = 1). Neurologic complications were the main cause of death in 4.1% of the patients who died.

Bias, confounding, and other reasons for caution

Pandemic conditions precluded full neurologic evaluations and diagnostic work-up for every patient.

Study funding/potential competing interests

This study received no funding. The authors report no competing interests. Go to [Neurology.org/N](https://www.neurology.org/N) for full disclosures.

A draft of the short-form article was written by M. Dalefield, a writer with Editage, a division of Cactus Communications. The corresponding author(s) of the full-length article and the journal editors edited and approved the final version.

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Neurology 2020;95:e1060-e1070 Published Online before print June 1, 2020
DOI 10.1212/WNL.00000000000009937

This information is current as of June 1, 2020

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