

Epilepsy and COVID-19's Double-Edged Sword

More Severe Disease and Delayed Epilepsy Care

Anne T. Berg, PhD, and Barbara Jobst, MD

Neurology® 2022;98:779-780. doi:10.1212/WNL.0000000000200367

Very early into the COVID-19 pandemic, it became clear that people with preexisting medical conditions, including people with epilepsy, were at greater risk of more severe consequences from COVID-19.^{1,2} In this issue of *Neurology*®, 2 studies address the increased risks associated with COVID-19 for people with epilepsy and the effects the shutdown had on providing epilepsy care.^{3,4}

In a thoughtful study of >200,000 adults (>20 years of age) who had PCR SARS-CoV-2 testing in The Republic of Korea, Yoo et al.³ found that people with epilepsy did not have a higher risk of acquiring SARS-CoV-2 infections (1.84% vs 2.12%; odds ratio [OR] 0.86, 95% CI 0.67–1.11) but those who developed COVID-19 infections had a higher risk of developing serious complications, including intensive care unit admission, mechanical ventilation, and death (18.06% vs 9.72%; OR 2.05, 95% CI 1.04–4.04). Mortality was higher but not significantly so (9.72% with and 6.48% without epilepsy; OR 1.55, CI 0.65–3.70).

The effect sizes reported by Yoo et al.³ are comparable to those from a meta-analysis of studies done during the early part of the COVID-19 pandemic that suggested that severe outcomes were more common in people with than without epilepsy.² The study enrolled adults and was performed prior to the availability of any vaccines (January 1–June 4, 2020). A study in children (<21 years of age) and slightly later in the pandemic (March 15, 2020, through December 15, 2020) but still before availability of vaccines found that 21.5% of children hospitalized for PCR-positive COVID-19 developed neurologic involvement during their hospitalization (neuro-COVID).⁵ Those with neuro-COVID were more likely to be admitted to the intensive care unit, to require mechanical ventilation or extracorporeal membrane oxygenation, had longer lengths of stay, and were more likely to die or have other serious posthospitalization outcomes. Children at greatest risk for neuro-COVID during admission had preexisting neurologic conditions, the most common of which was epilepsy: 16% with neuro-COVID had epilepsy vs 3% without neuro-COVID.

The reasons people with epilepsy have more severe COVID-19 outcomes are unclear. One factor may be the interaction of drugs used to treat seizures (and other neurologic and non-neurologic conditions) with the medications used to treat COVID-19.^{6,7}

In addition to the fact that people with epilepsy may face more severe disease if they have COVID-19, the pandemic has other adverse effects on their care. In a study of tertiary epilepsy centers in the United States, Ahrens et al.⁴ found that video-EEG admissions and epilepsy surgeries declined by about 23% in the summer of 2020 as compared to 2019. Hospital beds usually assigned to patients with epilepsy were filled with patients with COVID-19 and epilepsy monitoring units were closed. Early in the pandemic, these decisions appeared justified, as epilepsy video-EEG monitoring admissions are frequently considered “elective” and the risks of infection and severe morbidity and death were, at the time, alarmingly high. Some of the decisions were driven by the need to make space for extremely ill patients who could only be cared for in the hospital. But many restrictions were imposed as a reaction to the unknowns of COVID-19. The consequences of these changes may not be readily apparent. We may never

Correspondence

Dr. Berg
a-berg@northwestern.edu

RELATED ARTICLES

Research Article

Risk of COVID-19 Infection and of Severe Complications Among People With Epilepsy: A Nationwide Cohort Study

Page 788

Research Article

Impact of the COVID-19 Pandemic on Epilepsy Center Practice in the United States

Page 789

MORE ONLINE

COVID-19 Resources

For the latest articles, invited commentaries, and blogs from physicians around the world

[NPub.org/COVID19](https://www.npub.org/COVID19)

From the Department of Neurology (A.T.B.), Northwestern University–Feinberg School of Medicine, Chicago, IL; and Department of Neurology (B.J.), Geisel School of Medicine at Dartmouth, Hanover, NH.

Go to [Neurology.org/N](https://www.neurology.org/N) for full disclosures. Funding information and disclosures deemed relevant by the authors, if any, are provided at the end of the editorial.

know, for example, how many patients died of sudden unexpected death in epilepsy or injured themselves during a seizure while awaiting admission for epilepsy surgery during the pandemic. We are just starting to measure the health costs of these measures. Hopefully we will learn from the experience to ensure that pandemic precautions in the future do not create greater risks and harms to patients with epilepsy (or other disorders requiring urgent care) than the next pandemic disease itself.

As a result of the pandemic, we all went through a crash course in telemedicine. Telehealth visits greatly increased during the pandemic, as reported by Ahrens et al.⁴ In some ways, this may have improved access to care, as transportation is a frequent barrier to care for people with epilepsy. The extent to which telehealth visits can provide the same level of care and meet the same needs of patients as traditional in-person visits remains to be seen. The data presented by Ahrens et al.⁴ suggest that there may have been important compromises for patients who required hospital-based procedures.

As the pandemic has evolved from an acute to a chronic situation, we have learned that we need to be wiser about counterbalancing the benefits of medical therapies and evaluations for other medical conditions such as epilepsy (EEG monitoring, surgeries) against the risks and consequences of infection. The pandemic pushed telehealth rapidly to emerge as a valuable component in health care delivery. Regulators and administrators must recognize that it is here to stay, but it cannot replace all care. Robust uptake of primary preventive measures, especially vaccination, can provide the needed balance. If we

could address the health literacy (or illiteracy) in the United States and elsewhere that moves so many to avoid well-vetted and safe primary prevention methods, vaccination in particular, perhaps we could manage the ongoing and future outbreaks more effectively.

Study Funding

The authors report no targeted funding.

Disclosure

A. Berg: editorial board: *Neurology*[®]; speaker bureau: BioMarin; advisory boards: Neurocrin, Zogenix; consulting: Greenwich. B. Jobst: Associate Editor: *Neurology*; research support: Neuropace Inc., Harvard Pilgrim, Inc., Centers for Disease Control and Prevention, NIH, Department of Defense. Go to [Neurology.org/N](https://www.neurology.org/N) for full disclosures.

References

1. Chen T, Wu D, Chen H, et al. Clinical characteristics of 113 deceased patients with coronavirus disease 2019: retrospective study. *BMJ* 2020;368:m1091.
2. Siahaan YMT, Ketaren RJ, Hartoyo V, Hariyanto TI. Epilepsy and the risk of severe coronavirus disease 2019 outcomes: a systematic review, meta-analysis, and meta-regression. *Epilepsy Behav*. 2021;125:108437.
3. Yoo J, Kim JH, Jeon J, Kim J, Song T-J. Risk of COVID-19 infection and severe complications among people with epilepsy: a nationwide cohort study. *Neurology*. 2022;98(19):e1886-e1892.
4. Ahrens SM, Ostendorf AP, Lado FA, et al. Impact of the COVID-19 epidemic on epilepsy center practice in the United States. *Neurology*. 2022;98(19):e1893-e1901.
5. LaRovere KL, Riggs BJ, Poussaint TY, et al. Neurologic involvement in children and adolescents hospitalized in the United States for COVID-19 or multisystem inflammatory syndrome. *JAMA Neurol*. 2021;78(5):536-547.
6. Asadi-Pooya AA, Attar A, Moghadami M, Karimzadeh I. Management of COVID-19 in people with epilepsy: drug considerations. *Neurol Sci*. 2020;41(8):2005-2011.
7. Jain S, Potschka H, Chandra PP, Tripathi M, Vohora D. Management of COVID-19 in patients with seizures: mechanisms of action of potential COVID-19 drug treatments and consideration for potential drug-drug interactions with anti-seizure medications. *Epilepsy Res*. 2021;174:106675.

Neurology®

Epilepsy and COVID-19's Double-Edged Sword: More Severe Disease and Delayed Epilepsy Care

Anne T. Berg and Barbara Jobst

Neurology 2022;98;779-780 Published Online before print March 25, 2022

DOI 10.1212/WNL.0000000000200367

This information is current as of March 25, 2022

Updated Information & Services	including high resolution figures, can be found at: http://n.neurology.org/content/98/19/779.full
References	This article cites 7 articles, 3 of which you can access for free at: http://n.neurology.org/content/98/19/779.full#ref-list-1
Subspecialty Collections	This article, along with others on similar topics, appears in the following collection(s): All Epilepsy/Seizures http://n.neurology.org/cgi/collection/all_epilepsy_seizures COVID-19 http://n.neurology.org/cgi/collection/covid_19 Epilepsy surgery http://n.neurology.org/cgi/collection/epilepsy_surgery_ Risk factors in epidemiology http://n.neurology.org/cgi/collection/risk_factors_in_epidemiology Video/ EEG use in epilepsy http://n.neurology.org/cgi/collection/video__eeg_use_in_epilepsy
Permissions & Licensing	Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at: http://www.neurology.org/about/about_the_journal#permissions
Reprints	Information about ordering reprints can be found online: http://n.neurology.org/subscribers/advertise

Neurology® is the official journal of the American Academy of Neurology. Published continuously since 1951, it is now a weekly with 48 issues per year. Copyright © 2022 American Academy of Neurology. All rights reserved. Print ISSN: 0028-3878. Online ISSN: 1526-632X.

