

Teaching Neuroimages: COVID-19–Associated Acute Disseminated Encephalomyelitis With Corpus Callosal Hemorrhage

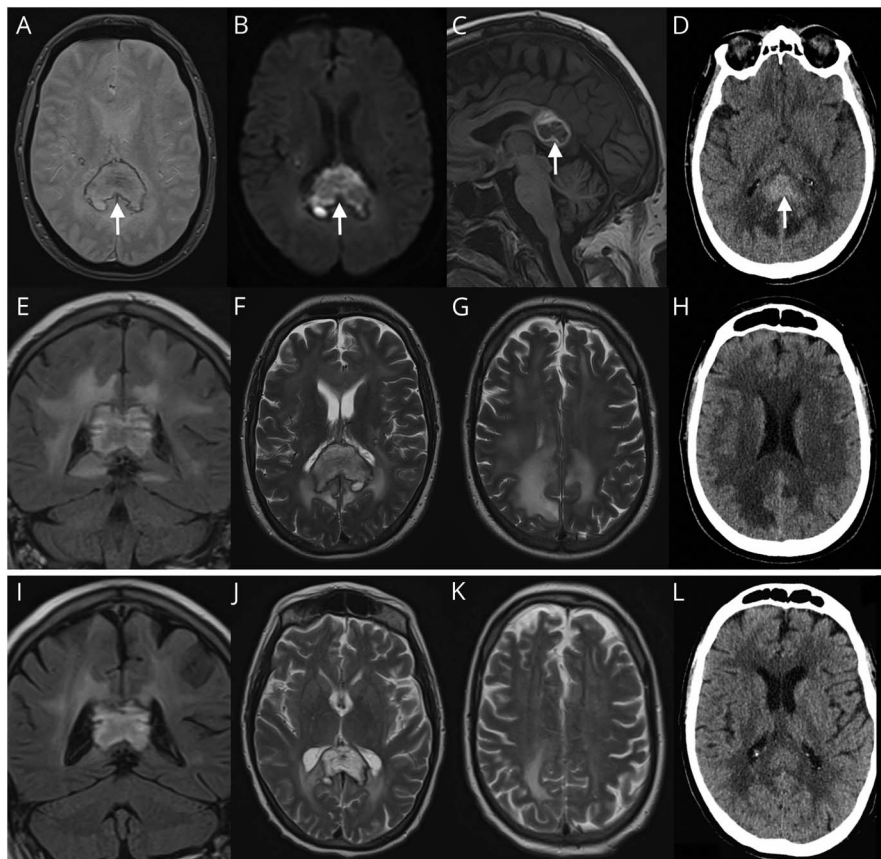
Christopher Green, FRCR,* Hamish Morrison, MRCP,* Paul Smith, FRCR, Farhad Golestani, FRCP, MD, Claire Rice, FRCP, PhD, Elizabeth Coulthard, FRCP, PhD, Julie Searle, FRCR, and Iain Lyburn, FRCR

Neurology® 2021;96:e307–e308. doi:10.1212/WNL.0000000000011001

Correspondence

Dr. Green
c.green10@nhs.net

Figure Brain MRI and CT



Initial MRI and CT with arrows highlighting peripheral low signal on T2* (A), abnormal diffusion (B), high T1 (C), and increased attenuation (D) within the corpus callosum splenium. Confluent high FLAIR (E) and T2 (F and G) abnormality and low attenuation (H) are noted within the deep cerebral white matter. Improved appearances at 2 weeks are seen (I–L).

A 55-year-old man with severe coronavirus disease 2019 (COVID-19) required ventilation and hemofiltration. Central venous catheter thrombosis necessitated heparin infusion. On day 20 post-admission, impaired conscious level, complex ophthalmoplegia, and hyperreflexia prompted non-contrast neuroimaging, demonstrating corpus callosal and right subinsular hemorrhage with diffuse white matter signal change (figure). CSF analysis was not performed due to clinical concerns

*These authors contributed equally to this work.

From the Gloucestershire Hospitals NHS Foundation Trust (C.G., H.M., P.S., F.G., J.S.), Gloucester; North Bristol NHS Trust (C.R., E.C.); and Cobalt Medical Charity (I.L.), Cheltenham, UK.

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 article.

Copyright © 2020 American Academy of Neurology

Copyright © 2020 American Academy of Neurology. Unauthorized reproduction of this article is prohibited.

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)

MORE ONLINE

→ **Teaching slides**
links.lww.com/WNL/B251

Table Differential Diagnosis for Infective Splenic Lesions

Viral
Influenza, coronavirus, rotavirus, measles, adenovirus, human parvovirus B19, cytomegalovirus, varicella-zoster, adenovirus, rubella, human herpesvirus-6, human herpesvirus-7, HIV, mumps, parainfluenza, enterovirus, Epstein-Barr
Bacterial
<i>Legionella pneumophila</i> , <i>Streptococcus pneumoniae</i> , <i>Salmonella enteritidis</i> , <i>Escherichia coli</i> , <i>Enterococcus faecalis</i> , <i>Klebsiella pneumoniae</i> (febrile urinary tract infection), <i>Campylobacter jejuni</i>
Other
<i>Mycoplasma pneumoniae</i> , malaria, dengue fever

regarding raised intracranial pressure. Administration of high-dose corticosteroids led to clinical and radiologic improvement (figure).

The differential diagnosis of infective splenic lesions is presented (table).¹ We consider the likely diagnosis to be acute disseminated encephalomyelitis with hemorrhage, adding to the clinical spectrum of neurologic complications of COVID-19 and highlighting the possibility of favorable outcome.²

Study Funding

No targeted funding reported.

Disclosure

The authors report no disclosures relevant to the manuscript. Go to Neurology.org/N for full disclosures.

Appendix Authors

Name	Location	Contribution
Christopher Green, FRCR	Gloucestershire Royal Hospital, UK	Drafting/revision of the manuscript for content, including medical writing for content
Hamish Morrison, MRCP	Gloucestershire Royal Hospital, UK	Drafting/revision of the manuscript for content, including medical writing for content
Paul Smith, FRCR	Gloucestershire Royal Hospital, UK	Drafting/revision of the manuscript for content, including medical writing for content
Farhad Golestani, FRCP, MD	Gloucestershire Royal Hospital, UK	Drafting/revision of the manuscript for content, including medical writing for content
Claire Rice, FRCP, PhD	North Bristol NHS Trust, UK	Drafting/revision of the manuscript for content, including medical writing for content
Elizabeth Coulthard, FRCP, PhD	North Bristol NHS Trust, UK	Drafting/revision of the manuscript for content, including medical writing for content
Julie Searle, FRCR	Gloucestershire Royal Hospital, UK	Drafting/revision of the manuscript for content, including medical writing for content
Iain Lyburn, FRCR	Gloucestershire Royal Hospital, UK	Drafting/revision of the manuscript for content, including medical writing for content

References

1. Blaauw J, Meiners LC. The splenium of the corpus callosum: embryology, anatomy, function and imaging with pathophysiological hypothesis. *Neuroradiology* 2020;62:563–585.
2. Wang HY, Li XL, Yan ZR, et al. Potential neurological symptoms of COVID-19. *Ther Adv Neurol Disord* 2020;13:1756286420917830.

Neurology[®]

Teaching Neuroimages: COVID-19–Associated Acute Disseminated Encephalomyelitis With Corpus Callosal Hemorrhage

Christopher Green, Hamish Morrison, Paul Smith, et al.

Neurology 2021;96:e307-e308 Published Online before print October 14, 2020

DOI 10.1212/WNL.0000000000011001

This information is current as of October 14, 2020

Updated Information & Services	including high resolution figures, can be found at: http://n.neurology.org/content/96/2/e307.full
References	This article cites 2 articles, 0 of which you can access for free at: http://n.neurology.org/content/96/2/e307.full#ref-list-1
Subspecialty Collections	This article, along with others on similar topics, appears in the following collection(s): Acute disseminated encephalomyelitis http://n.neurology.org/cgi/collection/acute_disseminated_encephalomyelitis COVID-19 http://n.neurology.org/cgi/collection/covid_19 Intracerebral hemorrhage http://n.neurology.org/cgi/collection/intracerebral_hemorrhage MRI http://n.neurology.org/cgi/collection/mri Viral infections http://n.neurology.org/cgi/collection/viral_infections
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 © 2020 American Academy of Neurology. All rights reserved. Print ISSN: 0028-3878. Online ISSN: 1526-632X.

