

POST-COVID-19 ENCEPHALOPATHY IN A 49-YEAR-OLD MALE, ULTIMATELY NECESSITATING DISCHARGE TO A MEMORY UNIT

CHIAMAKA SONUBI BS, THEA SWENSON MD, MARTHA PRESLEY MD, JD



SCHOOL OF MEDICINE
VANDERBILT UNIVERSITY

HISTORY

- A 49-year-old male with CML, now converted to ALL (diagnosed 1/2020) complicated by leukemic meningitis, now status post cycle 5 of intrathecal chemotherapy was admitted to inpatient rehab (IPR) following hospitalization for COVID-19.
- He initially presented to the ED with one week of generalized weakness and encephalopathy.
- Infectious and malignant work-up were negative, with the exception of positive Sars-CoV-2 PCR test.
- Hematology and psychiatry were consulted and felt his encephalopathy was unrelated to his leukemia, recent chemotherapy, or delirium but was the neuropsychological sequelae of COVID-19 infection.
- He was discharged to IPR for decreased strength, dependence with ADLs, and cognitive impairment.

CLINICAL COURSE

- In IPR, his strength improved so he could ambulate independently. However, he was easily agitated, would pace, and could not manage his bowels.
- After six weeks of intensive therapy with speech, PT, OT, and neuropsychology, he continued to require maximum cues for ADLs and following simple commands.
- He continued to have delayed responses and difficulty initiating motor task planning, was distractible, fidgety, and oriented only to name and year. He would not answer questions directly, requiring repeated questioning to elicit a response and often stopping mid-sentence in his answers.
- Previously, this patient was working and functionally independent. Following hospitalization for COVID-19 and intense cognitive rehabilitation, his discharge recommendation was to a locked memory unit.

DISCUSSION

- COVID-19 associated encephalopathies, like other encephalopathies, clinically present with confusion, agitation, delirium, and coma.
- Encephalopathy is more frequent in older patients. Risk factors for developing encephalopathy included severe COVID-19 disease, history of chronic neurological disease, or kidney disease.
- Neuroimaging abnormalities are generally in the form cortical or subcortical white matter T2/FLAIR signal hyperintensity. However, in many patients, these abnormalities may not be present.
- Studies have demonstrated that neuroimaging features of hospitalized COVID-19 patients were variable, without specific pattern, but dominated by acute ischemic infarcts and intracranial hemorrhages.
- Neurological manifestations of COVID-19 have been found to occur in more than 4/5ths of COVID-19 hospitalizations.
- Morbidity and mortality associated with encephalopathy mirrors that of sepsis-associated encephalopathy and delirium-associated mortality.
- Of all the neurological manifestations, encephalopathy is associated with a worse functional outcome, mirroring that of intensive care unit delirium and encephalopathy. The neuropsychological impact of COVID-19 has been associated with depression, anxiety, short-term memory, and sleep impairment.

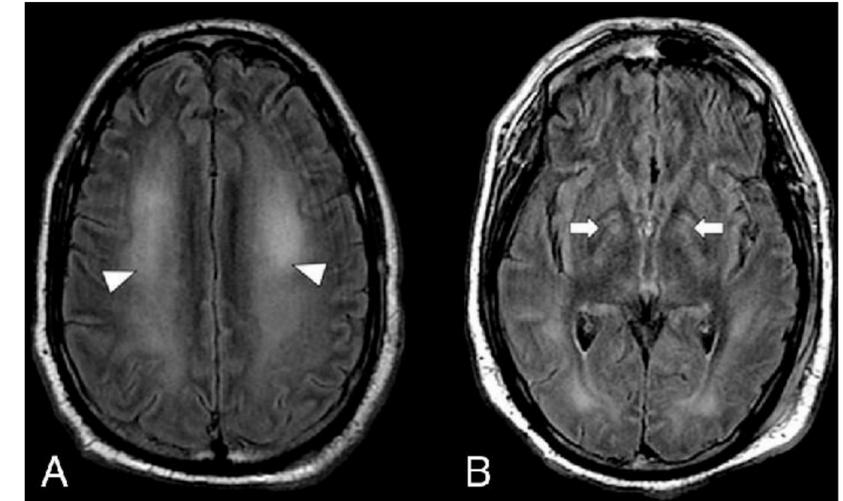


Image 1: An axial MR imaging of the brain of 41-year-old man with COVID-19 and with persistent disorientation and decreased alertness 1 week after extubation. (A) A FLAIR image demonstrates hyperintensity throughout the cerebral white matter (arrowheads). (B) A more inferior FLAIR image demonstrates hyperintensity of the globi pallidi bilaterally (arrows).

CONCLUSIONS

- As knowledge of COVID-19 evolves, there have been increasing reports of delayed neuropsychological sequelae, including depression, anxiety, short-term memory, and sleep impairment.
- Encephalopathy, specifically, has been associated with worse functional outcomes, and in this case, put a fully functional adult in a locked memory unit.
- This case report aims to highlight the importance of ongoing rehabilitation to support post-COVID-19 encephalopathy.

REFERENCES

- Kihira, Delman. "Imaging Features of Acute Encephalopathy in Patients with COVID-19: A Case Series." *American Journal of Neuroradiology: AJNR*, vol. 41, no. 10, Oct. 2020, pp. 1804-08, doi:10.3174/ajnr.A6715.
- Fornell, D. (Ed.). (2021, January 12). How COVID-19 Affects the Brain in Neuroimaging. Retrieved January 17, 2021, from <https://www.itnonline.com/article/how-covid-19-affects-brain-neuroimaging>
- Garg, Paliwal. "Encephalopathy in Patients with COVID-19: A Review." *Journal of Medical Virology*, vol. 93, no. 1, Jan. 2021, pp. 206-22, doi:10.1002/jmv.26207.