Journal of Medical Case Reports and Reviews

Received 11 Feb 2021 | Revised 15 Feb 2021 | Accepted 18 Apr 2021 | Published Online 22 Apr 2021

JMCRR 04 (04), 847-848 (2021) ISSN (O) 2589-8655 | (P) 2589-8647

JMCRR

CONSIDER ADVERSE REACTIONS TO ANTI-SARS-COV-2 COMPOUNDS AS CAUSES OF PEDIATRIC NEURO-COVID

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Key words: SARS-CoV-2, COVID-19, neurology, pediatric, side effects

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Letter to the Editor

With interest we read the article by LaRovere et al. about a retrospective analysis of 365 patients aged <21y with neurological complications of clinically manifesting infection with SARS-CoV-2 (neuro-COVID).[1] It was concluded that neuro-COVID in this cohort was frequently mild and transient and that only 43 patients (11,7%) experienced life-threatening neurological complications, such as encephalopathy (n=15), Ischämie/hemorrhaghic stroke (n=12), CNS-infection/ADEM (n=8), cerebral edema (n=4), or Guillain-Barre syndrome (n=4).[1] We have the following comments and concerns.

The main shortcoming of the study is its retrospective design. Inherent to retrospective studies is that the diagnostic work-up and treatment does not follow the same protocol in each patient. Accordingly, only 25% of the patients underwent cerebro-spinal fluid (CSF) investigations, only 17% underwent a cerebral CT scan, and only 15% an MRI of the brain [1]. We should be told how many of the 43 patients with life-threatening neurological disease underwent cerebral imaging, CSF investigations and an electroencephalography (EEG). Given the low number of patients undergoing cerebral imaging it is conceivable that not all patients with life-threatening neurological disease underwent cerebral imaging.

A further shortcoming of the study is that the anti-COVID-19 treatment the 365 patients with neurological involvement received was not specified. From several compounds used in the anti-COVID-19 treatment, such as chloroquine, hydro-chloroquine, azithromycin, lopinavir/ritonavir, tocilizumab, steroids, interferon-alpha, umifenovir, or favipiravir, it is well-known that they are potentially neurotoxic.[2] Thus, we should be told in how many of the 365 patients the anti-COVID-19 treatment was entirely or partially responsible for the neurological manifestations.

Since pre-morbid neurological disease was frequent among the 365 patients with neuro-COVID (seizures (n=57), neuromuscular disease (n=25), autism/developmental disorder (n=18), encephalopathy (n=18), congenital neurologic disorder (n=16)), we should be told to which degree the pre-morbid neurological disease influenced the severity and outcome of neuro-COVID, particularly among those with life-threatening neurological disease. Since these pre-morbid neurological conditions frequently require drug treatment, we should know in how many of these patients drug interactions with the anti-COVID treatment occurred and were responsible for neuro-COVID.

Listing GBS among the life-threatening conditions of neuro-COVID suggests that all four patients with SARS-CoV-2 associated GBS required mechanical ventilation. We should be told in how many of these

four patients GBS or SARS-CoV-2 associated pneumonia was the indication for mechanical ventilation. Did the deceased 14 neuro-COVID patients die from neuro-COVID or from non-neurological disease?

Overall, the study is appealing but has several limitations which challenge the conclusions.

References

1 LaRovere KL, Riggs BJ, Poussaint TY, Young CC, Newhams MM, Maamari M, Walker TC, Singh AR, Dapul H, Hobbs CV, McLaughlin GE, Son MBF, Maddux AB, Clouser KN, Rowan CM, McGuire JK, Fitzgerald JC, Gertz SJ, Shein SL, Munoz AC, Thomas NJ, Irby K, Levy ER, Staat MA, Tenforde MW, Feldstein LR, Halasa NB, Giuliano JS Jr, Hall MW, Kong M, Carroll CL, Schuster JE, Doymaz S, Loftis LL, Tarquinio KM, Babbitt CJ, Nofziger RA, Kleinman LC, Keenaghan MA, Cvijanovich NZ, Spinella PC, Hume JR, Wellnitz K, Mack EH, Michelson KN, Flori HR, Patel MM, Randolph AG; Overcoming COVID-19 Investigators. Neurologic Involvement in Children and Adolescents Hospitalized in the United States for COVID-19 or Multisystem Inflammatory Syndrome. JAMA Neurol. 2021 Mar 5. doi: 10.1001/jamaneurol.2021.0504.

2 Borah P, Deb PK, Chandrasekaran B, Goyal M, Bansal M, Hussain S, Shinu P, Venugopala KN, Al-Shar'i NA, Deka S, Singh V. Neurological Consequences of SARS-CoV-2 Infection and Concurrence of Treatment-Induced Neuropsychiatric Adverse Events in COVID-19 Patients: Navigating the Uncharted. Front Mol Biosci. 2021 Feb 18;8:627723. doi: 10.3389/fmolb.2021.627723.