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Consider differentials before diagnosing COVID-19 associated polyradiculitis

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Abstract

Evidence is accumulating that SARS-CoV-2 infections and SARS-CoV-2 vaccinations can induce Guillain-Barre syndrome (GBS). More than 400 GBS cases after SARS-CoV-2 infection respectively vaccination have been reported as per the end of 2021. GBS is usually diagnosed according to the Brighton criteria, but also the Besta criteria or Hadden criteria are applied. The diagnosis can be supported by MRI with contrast medium of the cranial or spinal nerves showing enhancing nerve roots. As GBS can be complicated by autonomic dysfunction such as pupillary abnormalities, salivatory dysfunction, reduced heart rate variability, bowel disturbance (constipation, diarrhea), urinary hesitancy, urinary retention, or impotence, it is crucial to investigate GBS patients for autonomic involvement. Before diagnosing GBS various differentials need to be excluded, including neuropathy as a side effect of the anti-SARS-CoV-2 medication, critical ill neuropathy in COVID-19 patients treated on the ICU, and compression neuropathy in COVID-19 patients requiring long-term ventilation.

Key Words: SARS-CoV-2; COVID-19; neuropathy; Guillain-Barre; polyradiculitis.

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We read with interest the article by Darvishi et al. about a 56 years old male with mild COVID-19 manifesting with fever, chills, headache, myalgia, coughing, diarrhoea, and fatigue since 5 days prior to quarantine.[1] Upon administration of the standard anti-COVID-19 therapy according to the national guidelines he recovered almost completely within 2 weeks.[1] However, a few days later he developed subacute onset lower limb weakness, paresthesias, and pain progressing to flaccid paraparesis within 12 days. [1] Work-up revealed Guillain-Barre syndrome (GBS), subtype acute, inflammatory, demyelinating neuropathy (AIDP) and he partially profited from immunoglobulins. The study is appealing but raises concerns and comments. The causal relation between SARS-CoV-2 infections and GBS is meanwhile well established. In a recent review about SARS-CoV-2 associated GBS patients, 220 patients had been collected by the end of December 2020.[2] An update about the frequency of published cases with SARS-CoV-2 associated GBS described 300 patients as per the end of July 2021, suggesting that at least the frequency of reporting this association declined in the first half 2021 compared to 2020, most likely due to the beneficial effect of SARS-CoV-2 vaccinations (Finsterer, personal communication, submitted). Previous studies showed that peripheral nerve roots enhance upon application of gadolinium on spinal MRI in patients with SARS-CoV-2 associated GBS.[3] We should be told if the patient not only underwent spinal CT but also spinal MRI and if lumbar nerve roots or the cauda were enhancing upon administration of gadolinium. GBS is frequently complicated by autonomic dysfunction occurring in 19% of the patients with SARS-CoV-2 associated GBS.[4] We should be told if the index patient had autonomic involvement, particularly bowel disturbance (constipation, diarrhea), urinary hesitancy, urinary retention, or impotence. Missing is the medication the patient received during quarantine for COVID-19. Since some of these compounds are neurotoxic, such as daptomycin, linezolid, lopinavir, ritonavir, hydro-chloroquine, cis-atracurium, clindamycin, or glucocorticoids,[5] it is conceivable that neuropathy was drug-induced. Toxic neuropathy should be excluded as a differential of SARS-CoV-2 associated GBS. Missing are reference limits in Table 1 why it cannot be assessed if cerebro-spinal fluid (CSF) protein was within normal limits or increased. Diagnosing GBS according to Brighton criteria level-1 requires the presence of a

dissociation cyto-albuminique.[6] The authors describe glove-type sensory deficits, suggesting that at least the sensory system of the upper limbs was additionally involved. We should know the results of nerve conduction studies (NCSs) of the median, ulnar and radial nerves, to assess if there was only sensory or also subclinical motor involvement of upper limb nerves.
Overall, the elegant study has some limitations that challenge the results and their interpretation. These limitations should be addressed to further strengthen the conclusions.

List of acronyms

AIDP: acute, inflammatory, demyelinating neuropathy
COVID-19: Coronavirus disease 2019
CSF: cerebro-spinal fluid
GBS: Guillain-Barre syndrome
NCSs: nerve conduction studies
SARS-CoV-2: Severe acute respiratory syndrome coronavirus-2

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JF, FAS, CAS, ACF were involved in the conception, drafting and critical revision of the manuscript. All authors approved the final edited typescript.

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Conflict of Interest

The authors declare no competing interests.

Ethical Publication Statement

We confirm that we have read the Journal's position on issues involved in ethical publication and affirm that this report is consistent with those guidelines.

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