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Therapeutic Apheresis and Dialysis

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LETTER TO THE EDITOR

Broadening the diagnostic approach for SARS-CoV-2 associated myopathy and rhabdomyolysis

Dear Editor,

With interest, we read the article by Sabljic et al. about a 63-year-old female with a second renal transplant under mycophenolate mofetil, tacrolimus, and steroids, who experienced a severe SARS-CoV-2 infection manifesting as pneumonia [1]. Her COVID-19 infection was managed with ceftriaxone, remdesivir, dexamethasone, tacrolimus reduction, and discontinuation of mycophenolate mofetil [1]. A few days after discharge, the patient developed proximal quadriparesis and rhabdomyolysis [1]. The study is appealing but raises comments and concerns.

We do not agree that the patient had only liver damage. Glutamate oxalate transaminase (GOT) and glutamate pyruvate transaminase (GPT) are ubiquitous and also generated in the muscle. Since the patient had presumed toxic myopathy, it is more likely that elevation of GOT and GPT resulted from muscle damage rather than liver damage. An argument for both, myopathy and hepatopathy, however, is that the activity of cytochrome P450 3A4 (CYP3A4) was decreased [1].

The diagnosis "toxic myopathy" is unproven. The authors do not mention if the patient had undergone muscle biopsy, MRI of the skeletal muscles with contrast medium, nerve conduction studies (NCSs), muscle ultrasound, or needle electromyography [1]. Thus, it cannot be excluded that quadriparesis was due to infectious myopathy, immune-mediated myopathy, or even damage of peripheral nerves. SARS-CoV-2 infections and SARS-CoV-2 vaccinations can go along with myositis and myalgia [2]. About half of the SARS-CoV-2 infected patients develop myalgia or elevation of creatine kinase (CK) [2]. Peri-SARS-CoV-2 myositis or myopathy may be due to invasion of the virus into the skeletal muscle or due to the immune response against the virus. An argument against a direct viral attack in the index case, however, is that CK started to increase not earlier than after the end of COVID-19 treatment, suggesting a treatment-related effect. In previously published cases, on the contrary, CK raised shortly after onset of COVID-19, suggesting a direct damage of the muscle by the virus [3,4].

Considering that myopathy was in fact a toxic myopathy, it is also conceivable that the acute viral infection activated the myotoxic potential of tacrolimus, steroids, atorvastatin, and ezetimibe that the patient was regularly taking already prior to the infection and that remdesivir was not the culprit agent. Tacrolimus, steroids, atorvastatin, and ezetimibe are known for their myotoxic potential [5].

Missing are the myoglobin levels in the serum and urine for assessing the severity of rhabdomyolysis and the information if quadriparesis was associated with muscle pain or asymptomatic.

As polyradiculitis (Guillain–Barre syndrome [GBS]) can manifest with CK elevation and is a frequent complication of SARS-CoV-2 infections [6], there is a need to refer patients with acute muscle weakness related to SARS-CoV-2 infectious to the neurologist so as not to overlook GBS.

Overall, the interesting study has several shortcomings which challenge the results and their interpretation. The etiology and pathophysiology of quadriparesis in the index patient remain unsolved as work-up did not include invasive techniques. Acute myopathy in SARS-CoV-2 infected requires extensive, invasive diagnostic approaches not to miss the trigger of the malaise.

CONFLICTS OF INTEREST

None.

Josef Finsterer[1]
Talal Almas[2]

[1]*Klinik Landstrasse, Messerli Institute, Vienna, Austria*
[2]*RCSI University of Medicine and Health Sciences, Dublin, Ireland*

Correspondence
Josef Finsterer, Klinik Landstrasse, Messerli Institute, Postfach 20, 1180 Vienna, Austria.
Email: fifigs1@yahoo.de

ORCID

Josef Finsterer https://orcid.org/0000-0003-2839-7305
Talal Almas https://orcid.org/0000-0002-8867-600X

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