

## LETTERS TO THE EDITOR

# Response to: “MuSK-positive myasthenia may be triggered not only by SARS-CoV-2”

We thank Drs Finsterer and Scorza for their comments on our case report “Myasthenia gravis associated with anti-MuSK antibodies developed after SARS-CoV-2 infection”.

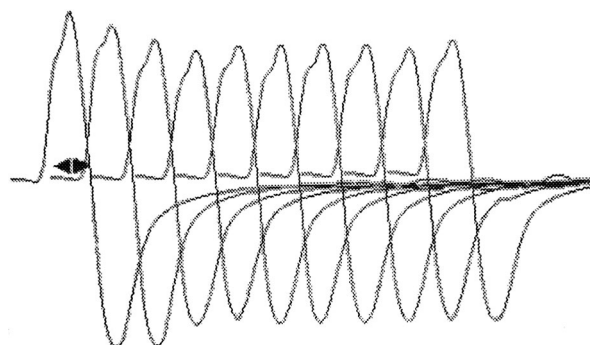
Reports on at least six patients with new-onset myasthenia gravis (MG) after severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection have been published so far [1]. In these reports, the latency between the first signs of Coronavirus Disease 2019 (COVID-19) and symptoms of MG ranged from 5 to 30 days. The causative effect of SARS-CoV-2 infection has been hypothesized, but it has never been demonstrated. In our opinion, the delay of 53 days between COVID-19 and muscle-specific tyrosine kinase-MG (MuSK-MG) onset, in our case, does not argue against a causal relation. Actually, in the published cases of autoimmune encephalitis following herpes simplex encephalitis, the mean interval between the two diseases was 32 days, with a range of 7–61 days [2]. Moreover, in our paper, we clearly stated that the viral infection could have unmasked pre-existing MG.

Onset at 77 years of age is atypical for MuSK-MG. In contrast to MG associated with anti-acetylcholine receptor antibodies (which is more frequent in the elderly), in our MuSK-MG population including 98 patients, the mean age at MuSK-MG onset is 38 years and only three cases presented after the age of 70 [3].

Regarding the possible role of hydroxychloroquine (HCQ), our patient was treated with 400 mg twice a day for 5 days and the therapy was suspended 48 days before the MG onset. There have been isolated and unconfirmed reports of new MG onset related to HCQ [4]. In these cases, MG developed during long-term HCQ treatment (range: 3 weeks to 13 years, mean 44 months) and generally remitted after HCQ withdrawal [4].

Our patient had a mild form of MuSK-MG and clinical improvement may have been spontaneous, even though observed under azathioprine treatment. The comment: “...azathioprine...can be ineffective for the treatment of MUSK-MG” is not based on clinical evidence. Indeed, azathioprine is still largely used in MuSK-MG with benefit [3,5]. Moreover, we want to emphasize that after 2 months of immunosuppressive treatment the patient had not fully recovered, as he still complained of fatigue in chewing.

According to Drs Finsterer and Scorza, the diagnosis of MG was not adequately confirmed. In our patient, symptoms were absolutely suggestive of MG (neither weakness of deep tendon



**FIGURE 1** Repetitive nerve stimulation of right ulnar nerve at 3 Hz at rest. Registration from abductor digiti minimi. Stimulation at wrist. Amplitude of the first potential: 6.4 mV. Amplitude of the fourth potential 4.8 mV. Decrement of amplitude 1–4: –25.1%

reflex nor ataxia nor symptoms suggestive of other diseases were present). Indeed, we performed single-fiber electromyography with evidence of increased jitter. In addition, repetitive nerve stimulation of the ulnar nerve demonstrated a decrease of the fourth potential amplitude at 3 Hz greater than 20% (Figure 1). In view of the detection of specific antibodies [5], lumbar puncture, as well as more extensive electrophysiological studies were considered unnecessary.

We speculated that the viral infection may have triggered or unmasked a subclinical disease because this patient had never shown MG symptoms before. Moreover, regarding respiratory function, the patient had no clinical signs of respiratory muscle involvement. Indeed, at the onset of MG, the maximum expiratory count was greater than 25 and blood oxygen saturation was normal (98%).

### AUTHOR CONTRIBUTIONS

**Andrea Assini:** Writing – original draft (lead); Writing – review and editing (lead). **Ilaria Gandoglia:** Writing – original draft (equal); Writing – review and editing (equal). **Valentina Damato:** Writing – original draft (equal); Writing – review and editing (equal). **Klaudio Rikani:** Writing – original draft (equal). **Amelia Evoli:** Writing – original draft (lead); Writing – review and editing (lead). **Massimo Del Sette:** Writing – original draft (equal); Writing – review and editing (equal).

## CONFLICT OF INTEREST

There is no conflict of interest with the present work.

## DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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