

## Impact of COVID-19 Infection Among Hospitalized Amyotrophic Lateral Sclerosis Patients

### *To the Editor:*

The novel positive-stranded RNA coronavirus-19 (COVID-19), causing the current global pandemic, has around 10% mortality rate. Clinical presentation varies from fever, mild cough, and sore throat to pneumonia/ARDS and multi-organ failure.<sup>1</sup> Comorbid conditions such as hypertension, diabetes, chronic obstructive pulmonary disease, and asthma are suspected to increase the risk of COVID-19-related complications.<sup>2</sup> Infection with the COVID-19 virus poses many challenges in the course of various neuromuscular diseases including amyotrophic lateral sclerosis (ALS) because of the risk of respiratory complications.

For our study, we used Cerner Real-World Data that was provided through Cerner's HealthDataLab research tool.<sup>3</sup> The COVID-19 dataset in HealthDataLab contains de-identified patient data of 117,000 patients from 62 contributing health systems. The dataset contains all patients that were tested for COVID-19 at some point during their visits to one of the 62 health centers. To begin with, all patients having the ALS who were tested for COVID-19 were identified using ICD-9-CM codes (335.29, 335.20), ICD-10-CM code (G12.21) and SNOMED-CT code (86044005). This yielded a total of 19 ALS patients that were tested either positive or negative for COVID-19. From these 19 patients, a total of 6 patients were tested positive and hospitalized.

Of the 6 patients, 5 patients were Caucasians, and one was Hispanic. Male to female ratio was 66.7%: 33.3% with a mean age of 62.1 years (range 49-72 years). Two of the patients had bulbar onset, and 4 of them had limb onset ALS. Two of 6 (33.3%) patients were wheelchair-dependent, and the ALSFRS-R score ranged from 22 to 36 in 6 patients. The major comorbid conditions identified in these patients

were hypertension (66.6%), obesity, diabetes mellitus type-2 (50%), cardiovascular problems (33.3%), hyperlipidemia (33.3%), dementia, progressive supranuclear ophthalmoplegia, pseudo bulbar affect, vertebral artery stenosis, and chronic kidney disease. Only one patient was on riluzole, and none of them were on Edaravone. The number of hospitalization days in these patients ranged from 3 to 27 days. All of them had COVID-19 pneumonia. Of them, 2 (33.3%) deceased from sepsis, multi-organ failure, and respiratory failure. Two patients were discharged to a skilled nursing facility; one patient was discharged to home hospice, and one patient to inpatient rehabilitation.

In a nation-wide analysis in China, 2 or more comorbidities were observed in all patients with severe COVID-19 disease with resultant increased the risk of poorer outcomes.<sup>4</sup> The prevalence of comorbidities in all 6 ALS patients was like previously reported studies. Around 5% of patients with COVID-19 develop multi-organ dysfunction and sepsis secondary to dysregulated host immune response.<sup>5</sup> Sepsis worsens the clinical outcome of COVID-19 patients.<sup>5</sup>

ALS patients with co-existing medical comorbidities can be at higher risk of COVID-19 infection and its complications. There are some limitations to our study, intricate details of in-hospital admission could not be retrieved, and small number making it harder to generalize the findings. Larger studies are needed to shed light on impact of COVID-19 on ALS patients with or without co-existing comorbidities.

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## Sciatic and Femoral Neuropathies Due to Limb-Positioning Device

### To the Editor:

A healthy 22-year-old man underwent reconstructive knee surgery for right anterior cruciate ligament and lateral meniscus tears without perioperative nerve blocks. A tourniquet was placed at the proximal thigh for

167 minutes (including 10 minutes of rest) with a pressure of 300–350 mm Hg. The 9-hour surgery was longer than anticipated due to difficulty with graft fixation. In recovery, a blistering, erythematous, band-like rash was noted at the mid-thigh corresponding to the location of a clamp used to immobilize the limb. The patient immediately noted circumferential sensory loss below the knee and severe weakness of the leg.

After 6 months, there was marked atrophy and weakness of all muscles below the knee, hamstrings, and vastus medialis and lateralis. The right ankle and knee reflexes were absent. Electrodiagnostic evaluation revealed very low amplitude tibial and peroneal compound muscle action potential and absent sural and superficial peroneal sensory nerve action potential. Motor nerve conduction studies of the rectus femoris were normal and symmetric while the saphenous responses could not be obtained on either side. Concentric needle electromyography showed 2+ denervation potentials and chronic motor unit changes in the tibialis anterior, medial gastrocnemius, vastus lateralis, and biceps femoris; there was a single positive wave in the rectus femoris while the adductor longus, tensor fascia latae, and L4 paraspinal muscles were normal. Magnetic resonance imaging of the thigh showed enlargement and increased signal intensity of the sciatic nerve and atrophy of anterior and posterior thigh musculature, sparing the rectus femoris.

A tourniquet was in the region of nerve injury; however, the duration used and pressure applied conformed to accepted practices. The unanticipated long duration of surgery and the blistering rash from the clamp at the mid-thigh led to consideration of compression from the limb positioner as an alternative mechanism. Moreover, the neurophysiologic and radiographic sparing of the rectus femoris implies a more distal entrapment site. Anatomical studies have shown that the motor fascicles to the rectus femoris branch from the femoral nerve early, whereas the fascicles to