Category :**Sepsis/septic shock: management**

A58 - ***Neuromuscular electrical stimulation prevents the skeletal muscle weakness in patients with severe covid-19 associated with sepsis and septic shock – a case series***

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Introduction:

Neuromuscular electrical stimulation (NMES) results on muscle strength and functionality in patients with severe coronavírus disease 2019 (COVID-19) associated with sepsis and septic shock are unknown.

Methods:

Patients with severe COVID-19 associated with sepsis or septic shock were selected. The NMES intervention was performed on 7 consecutive days in a daily session of 40 minutes (frequency of 100Hz and a pulse of 350 μs). Electrodes were positioned in the vastus medialis and vastus lateralis muscles, and inguinal region. The outcome measures were the femoris cross-sectional área (RF-CSA), thickness of the anterior compartment of the quadriceps muscle, rectus femoris echogenicity, International Classification of Functioning, Disability, and Health (ICF)-muscle strength, Physical Function ICU Test-scored (PFIT-s), Morton Mobility Index (DEMMI), and the Surgical Intensive Care Unit Optimal Mobilization Score (SOMS). The patients were evaluated on days 1, 5, and 8.

Results:

The RF-CSA area decreased significantly (−16.9%; $P<0.05$) from days 1 to 8, but showed maintenance of the thickness of the anterior compartment of the quadriceps muscle (-3.20%; $P=0.3$) from days 1 to 8. These patients showed a reduction of 2.1% per day in the rectus femoris cross-sectional area and 0.3% per day in the thickness of the anterior compartment of the quadriceps muscle during 8 days. Patients showed maintenance of the echogenicity (1.3%; $P=0.8$) from days 1 to 8 with an increase of 0.16% per day. All patients showed an increase in the MRC score and reduction of the ICF-muscle strength, meaning improved muscle strength from days 1 to 8 ($P<0.05$). The PFIT-s increased from days 1 to 5 and improved until day 8 compared to day 5 ($P<0.05$). DEMMI and SOMS scores increased on day 8 compared to days 1 and 5 ($P<0.05$).

Conclusion:

NMES showed a protective effect on muscle strength and improve the functionality of patients with several COVID-19 associated with sepsis and septic shock.