

LETTER

Electrical muscle stimulation for prevention of critical illness polyneuropathy

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See related research by Routsis et al., <http://ccforum.com/content/14/2/R74>

We read with interest the study by Routsis and colleagues showing that electrical muscle stimulation (EMS) reduced the frequency of critical illness polyneuropathy in intensive care unit (ICU) patients [1]. The authors stated that an intention-to-treat analysis was used. One hundred and forty patients were randomized to electrical stimulation or to usual care. Measurement of the main outcome could only be performed in cooperating patients surviving after awakening. Thus, 39 patients (57%) and 44 patients (61%) who died or who had impaired cognitive state were excluded from analysis in each arm. Data from five out of 29 subjects on the intervention arm were also excluded from the final analysis because of neuromuscular blocker use ($n = 3$) or a lack of electrical stimulation during the ICU stay ($n = 2$). The latter probably induced a

selection bias, as subjects receiving neuromuscular blockers have increased risk of critical illness polyneuropathy and patients with this condition have not been excluded from the usual care group [2]. The authors reported other outcomes such as duration of mechanical ventilation or ICU length of stay for patients with strength score evaluation, while analysis in all randomized subjects could have been valuable.

Finally, reported strength scores represented the addition of upper and lower extremities, while stimulation was only applied to the latter. As systemic effects of EMS have not been definitely established in this setting, it would have been interesting to compare the strength of muscles where the intervention was tested.

Authors' response

Serafim Nanas

We thank Dr Rodriguez and colleagues for their interest in our study [1]. We agree that some selection bias could exist because we excluded patients receiving neuromuscular blocking agents in the EMS group but not in the control group. This was not, however, the case in our study. Among the patients that could be finally evaluated for critical illness polyneuropathy ($n = 52$), only one patient – assigned to the control group – received prolonged neuromuscular blockade agents. As this patient was not diagnosed with critical illness polyneuropathy (Medical Research Council score 52), this case could not affect our results.

Secondly, the duration of mechanical ventilation, the duration of weaning and the ICU length of stay are

reported in all patients that were randomized regardless of whether they could be evaluated with the Medical Research Council scale for muscle strength.

Finally, in a previous study by our group [3] we showed that EMS of lower extremities has an acute systemic effect on the microcirculation of critically ill patients. Moreover, the data of our recent study [1] – showing a shorter duration of weaning in patients assigned to the EMS group – indicate a long-term systemic effect of EMS. The effect of EMS of lower extremities on the muscle strength of upper extremities is relevant, but this was not the scope of the study. We agree, however, that this is of interest and deserves to be examined in a further study.

Abbreviations

EMS, electrical muscle stimulation; ICU, intensive care unit.

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Competing interests

The authors declare they have no competing interests.

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