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Letter to the Editor

The development of functional status and muscle strength in the ICU also depend on comorbidities, co-medication and the premorbid physical condition

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Letter to the Editor

We read with interest the article by Martins *et al*. on a prospective, observational cohort study of the evolution of functional status (FS) assessed with the Functional Status Score for the Intensive Care Unit (FSS-ICU) and muscle strength (MS) assessed with the MRC-SS and handgrip strength (HGS) in 48 patients between awakening and discharge from the ICU [1]. The FSS-ICU correlated positively with the MRC-SS and HGS at awakening and discharge, and the MRC-SS cutoff for independence in the FSS-ICU was 49 points for preambulation and 57 points for ambulation [1]. It was concluded that the FSS-ICU, MRC-SS, and HGS are effective tools for measuring progression of patient functionality and MS in the ICU and that MS is related to patient functional independence [1]. The study is noteworthy, but some points should be discussed.

The first point is that pre-existing neuropathy was not considered to be a cause of reduced muscle strength on awakening or discharge [1]. Half of the patients were alcoholics, suggesting that these patients also suffered from neuropathy. Neuropathy can be a cause of muscle wasting and reduced muscle strength [2]. Was the medical history in these patients positive for muscle weakness due to alcoholic neuropathy? Similarly, a quarter of the patients had diabetes mellitus, which is often associated with diabetic neuropathy. Therefore, we needed to know how well the diabetes was controlled before admission to the ICU and how many patients had diabetic neuropathy. Since a quarter of the included patients had a history of hemodialysis [1], it is very likely that these patients also suffered from uremic neuropathy. Patients with pre-existing neuropathy are more likely to have impaired muscle strength during their ICU stay.

The second point is that current medication and medication administered during the ICU stay were not included in the analysis. Medications that can cause myopathy and thus muscle wasting and weakness include glucocorticoids, antiretrovirals, ciprofloxacin, penicillin, interferon and some chemotherapeutic agents [3]. There are also numerous drugs that can cause neuropathy and thus muscle weakness and atrophy. Common neurotoxic drugs that cause neuropathy include chemotherapy drugs such as cisplatin, paclitaxel and vincristine, certain antibiotics such as isoniazid or metronidazole, antiretroviral drugs and cardiovascular drugs such as amiodarone [4]. As two thirds of the included patients received glucocorticoids [1], it is conceivable that these contributed significantly to the decline in muscle strength over time.

The third point is that the physical condition before admission to the ICU was not included in the analysis. Those who are in good physical condition because they exercise regularly may lose MS less quickly than those who have low muscle mass and are not well exercised.

Finally, it is not clear why 10 patients received muscle relaxants but the number of days muscle relaxants were used was zero [1]. This discrepancy should be clarified.

In conclusion, this interesting study has limitations that affect the results and their interpretation. Addressing these limitations could strengthen the conclusions and support the message of the study. All open questions need to be clarified before readers uncritically accept the conclusions of the study. When evaluating the course of FS and MS in the ICU, comorbidities, comedications, and physical status prior to ICU admission must be included in the analysis.

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References

1. Martins GS, Silva KH, Moraes WRA, Nakano EY, Andrade JML, Neves LMT, *et al*. Analysis of the Functional Status Score for the Intensive Care Unit and its correlation with measures of muscle strength in critically ill patients during hospitalization in the intensive care unit. Crit Care Sci, Feb 10, 2025; 37:e20250197. Doi: 10.62675/2965-2774.20250197
2. Hammi C, Yeung B. Neuropathy. [Updated 2022 Oct 15]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing, Jan, 2025. Available from: https://www.ncbi.nlm.nih.gov/books/NBK542220/
3. Miernik S, Matusiewicz A, Olesińska M. Drug-Induced Myopathies: A Comprehensive Review and Update. Biomedicines, Apr 30, 2024; 12(5):987. Doi: 10.3390/biomedicines12050987
4. Jones MR, Urits I, Wolf J, Corrigan D, Colburn L, Peterson E, Williamson A, Viswanath O. Drug-Induced Peripheral Neuropathy: A Narrative Review. Curr Clin Pharmacol. 2020; 15(1):38-48. Doi: 10.2174/1574884714666190121154813