Int. j. adv. multidisc. res. stud. 2026; 6(6):1261-1262

Received: 08-11-2026
Accepted: 18-11-2026

International Journal of Advanced Multidisciplinary Research and Studies

ISSN: 2583-049X

Letter to the Editor

Can Progressive Rehabilitation Really Reduce the Prevalence of Delirium in Ventilated ICU Patients?

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Letter to the Editor

We were interested to read the article by Zou *et al*. on the effect of progressive rehabilitation to prevent delirium in 38 intensive care unit (ICO) patients at high risk of delirium, assessing state of consciousness, Richmond Agitation Sedation Scale (RASS) score and muscle strength [1]. The study group had higher scores on the Delirium Severity Scale (DSS) and higher scores for functional independence (FIM) compared to control subjects [1]. The duration of mechanical ventilation, ICU stay and total hospital stay were lower in the study group compared to controls [1]. It was concluded that progressive occupational therapy rehabilitation can reduce the incidence of delirium, improve self-care skills and shorten recovery time in ICU patients [1]. The study is impressive, but several points should be discussed.

The first point is that the cause of admission to the ICU was stated as "postoperative", "cardiovascular", "respiratory" and "other" [1]. However, the exact causes were not specified. Since the propensity to develop delirium may depend on the type of surgery, the type of cardiovascular disease and the type of pulmonary disease, it would be important to specify the exact indication for ICU admission and include it in the analysis.

The second issue is that the comorbidities of the 38 included patients were not included in the analysis [1]. Comorbidities, in particular arterial hypertension, previous cognitive impairment, visual or hearing impairment, chronic alcoholism, previous respiratory disease, malignant disease and previous psychiatric illness should be included in the analysis of the impact of progressive rehabilitation on ICU admission. Other risk factors favoring the development of delirium, such as infections, previous surgery, metabolic disorders, hypoxia, hypernatremia, duration of mechanical ventilation, inadvertent removal of catheters, endotracheal tubes, urinary catheters, artificial light, use of physical restraints, high care needs, low family involvement or staff burnout are also not mentioned [2, 3]. As these factors were identified as triggers for delirium in the ICU, they must be included in the analysis as confounding variables.

The third point is that the current medication was not included in the assessment [1]. Knowledge of current medication is important not only because it can trigger delirium, but also because it is important for the effect of progressive rehabilitation. Medications known to promote delirium include steroids, opioids (e.g. fentanyl), benzodiazepines (e.g. lorazepam), antipsychotics (e.g. haloperidol, quetiapine), diuretics (e.g. furosemide), antihistamines and anticholingergics [4].

The fourth point is that no cerebral imaging or EEG recordings were performed in the 38 included patients [1]. Since cerebral disorders per se can be complicated by delirium [5], it would have been imperative to know how many of them had structural or functional cerebral abnormalities.

The fifth point is that it was not reported whether all treated patients were awake or sedated, and if they were sedated, how long they were sedated during the rehabilitation procedures. It is crucial to know whether the patient was awake but intubated, as the awake patients may benefit more from progressive rehabilitation in terms of delirium prevention than the sedated patients.

The sixth point is that the term "high-risk ICU patients with delirium" was not defined [1]. What was the reason that these patients were at increased risk of delirium? Was it the cerebral damage, the medication, the medical history or the ICU conditions?

To summarize, this interesting study has limitations that put the results and their interpretation into perspective. These limitations should be addressed to possibly strengthen the conclusions and substantiate the message of the study. Unresolved issues need to be clarified before readers can uncritically accept the study's message. Before concluding that occupational therapy with progressive rehabilitation can reduce the incidence of delirium, improve self-care skills and shorten recovery time in ICU patients, the cause of admission to the ICU, current medication, comorbidities and cerebral imaging and EEG data need to be included in the analysis.

Declarations

Ethical approval: Not applicable.

Consent to participation: Not applicable.

Consent for publication: Not applicable.

Funding: None received.

Availability of data and material: All data are available from the corresponding author.

Completing interests: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Author contribution: Jf was responsible for the design and conception, discussed available data with coauthors, wrote the first draft, and gave final approval. JG-M: Contributed to literature search, discussion, correction, and final approval.

Acknowledgements: None.

Keywords: Intensive Care Unit, Delirium, Progressive Rehabilitation, Occupational Therapy, Mechanical Ventilation

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