Geriatrics Gerontology International

DOI: 10.1111/ggi.13720

LETTERS TO THE EDITOR

COMMENTS

Post-intensive care unit respiratory failure in older patients: Can we predict intensive care unit discharge properly?

Dear Editor,

We have read with interest the recent original article from Chen *et al*. published in *Geriatrics & Gerontology International*.[1] Chen *et al*. retrospectively investigated the burden and predictors of post-intensive care unit (ICU) respiratory failure in very old (mean age 81 ± 8 years) ICU male patients (76%) weaned from mechanical ventilation. Unfortunately, no mention was made about the type of respiratory failure (hypoxic or hypoxic/hypercapnic) presented by patients at admission to ICU and after they were discharged from ICU. No arterial $PaCO_2$ and pH were reported when patients were admitted to and discharged from ICU. This information is very important to better characterize respiratory failure in this cohort of older patients admitted to and discharged from ICU. However, we consider from a practical viewpoint that some key aspects need to be clarified.

First, the authors investigated the predictive value of the National Early Warning Score (NEWS) as a predictor of post-ICU respiratory failure in this very old cohort of patients. The NEWS score is largely used to predict prehospital, in-hospital and at ICU discharge[2] early clinical deterioration, but its use should be considered with caution in patients with risk factors for hypercapnic respiratory failure.[3] Two major risk factors of developing acute hypercapnic respiratory failure are chronic respiratory disease and neurological diseases.[4] In this study, 66 patients admitted to ICU had acute respiratory failure due to acute exacerbation of chronic obstructive pulmonary disease, and 25 patients were admitted to ICU due to acute respiratory failure secondary to neurological disorders.

Second, in this study, a small proportion of patients (8.5%) developed post-ICU respiratory failure within 14 days, but this subgroup was characterized by high mortality (47.8%), so early identification of this risk subgroup of older patients is very important, and this information should be valuable for physicians and caregivers in their decision-making. However, we agree with the authors that reintubation is associated with increased mortality, and any strategy aimed at reducing the rate of post-extubation respiratory failure and avoiding reintubation deserves consideration.[5] Non-invasive ventilation (NIV) might be a means to avoid reintubation either by treating post-extubation respiratory failure when it develops or preventing it from developing at all by establishing NIV immediately after extubation.[6] We consider this information to be very important before designing a specific randomized clinical trial aimed to investigate the role of NIV as prevention of post-ICU respiratory failure in older patients.

Finally, we take into account the environment where high-risk patients discharged from ICU are monitored.[7] The most suitable hospital setting for starting NIV in older adults should have an adequate number of expert staff according to the severity of the patient's conditions for 24-h cover, multiparametric monitoring, prompt availability of invasive ventilation, reasonable costs, a structured discharge plan and consideration of "end-of-life" choices. The respiratory ICU represents a balanced setting where there is expertise in NIV, cost-effectiveness, knowledge of the history of chronic respiratory patients and awareness of end-of-life issues.[8] In December 2017, the NEWS2 was released, containing important refinements related to the safer use of oxygen in patients with chronic hypercapnic respiratory failure[9] and the addition of delirium will cause a substantial increase in medium- and high-level alerts among hospitalized emergency medical patients.[10] NEWS2 should be used in future studies evaluating the prediction of post-ICU respiratory failure, especially in older patients.

Disclosure statement

The authors declare no conflict of interest.

Paolo Ruggeri,[1] Claudia Profazio[2] and Antonio Esquinas[3]

[1]*Pulmonology Unit, Department of Biomedical and Dental Sciences, Morphological and Functional Images (BIOMORF), University of Messina, Messina, Italy*

[2]*Department of Neurosciences, Nemo Sud Clinical Center for Neuromuscular Disorders, Messina, Italy*

[3]*Department of Intensive Care and Noninvasive Vnetilatory Unit, Intensive Care Unit, Hospital Morales Meseguer Murcia, Murcia, Spain*

References

1 Chen YC, Yu WK, Ko HK *et al*. Post-intensive care unit respiratory failure in older patients liberated from intensive care unit and ventilator: the predictive value of the National Early Warning Score on intensive care unit discharge. *Geriatr Gerontol Int* 2019; **19**: 317–322.
2 Uppanisakorn S, Bhurayanontachai R, Boonyarat J, Kaewpradit J. National Early Warning Score (NEWS) at ICU discharge can predict early clinical deterioration after ICU transfer. *J Crit Care* 2018; **43**: 225–229.
3 O'Driscoll BR, Bakerly ND, Murphy P *et al*. Concerns regarding the design of the bedside monitoring chart for use with the NEWS (National Early Warning System). *Clin Med* 2013; **13**: 319–320.
4 Chakrabarti B, Calverley PM. Management of acute ventilatory failure. *Postgrad Med J* 2006; **82**: 438–445.
5 Thille AW, Harrois A, Schortgen F, Brun-Buisson C, Brochard L. Outcomes of extubation failure in medical intensive care unit patients. *Crit Care Med* 2011; **39**: 2612–2618.
6 Bajaj A, Rathor P, Sehgal V, Shetty A. Efficacy of noninvasive ventilation after planned extubation: a systematic review and meta-analysis of randomized controlled trials. *Heart Lung* 2015; **44**: 150–157.
7 Scala R. Respiratory High-Dependency Care Units for the burden of acute respiratory failure. *Eur J Intern Med* 2012; **23**: 302–308.
8 Scala R. Challenges on non-invasive ventilation to treat acute respiratory failure in the elderly. *BMC Pulm Med* 2016; **16**: 150.
9 Williams B. The National Early Warning Score 2 (NEWS2) in patients with hypercapnic respiratory failure. *Clin Med (Lond)* 2019; **19**: 94–95.
10 Mohammed MA, Faisal M, Richardson D *et al*. The inclusion of delirium in version 2 of the National Early Warning Score will substantially increase the alerts for escalating levels of care: findings from a retrospective database study of emergency medical admissions in two hospitals. *Clin Med (Lond)* 2019; **19**: 104–108.

How to cite this article: Ruggeri P, Profazio C, Esquinas A. Post-intensive care unit respiratory failure in older patients: Can we predict intensive care unit discharge properly? Geriatr. Gerontol. Int. 2019;19:838. https://doi.org/10.1111/ggi.13720