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COMMENTS

Authors' reply to: Comment to better understanding of the study "Clinical characteristics and prognostic factors in COVID-19 patients aged ≥80 years"

Dear Editor,

We are delighted by the interest in our research by Dr. Arumalla and Dr. Patil,[1] and we welcome the opportunity to clarify our work better. In our manuscript, as the former researchers noticed, the term "severe dementia" was not defined in the methods section. Actually, given the wide clinical spectrum of patients with cognitive disorders, we used this comprehensive formula in the paper. The term "severe dementia" in our manuscript referred to patients with a need for continuous assistance for personal care, reduced awareness of their surroundings and clinical conditions, reduced daily-life physical abilities and eventually swallowing, and reduced capacity to communicate. Dementia diagnosis and severity were assessed by reviewing clinical records and discharge diagnosis, based on the codes defined by "International Classification of Disease, tenth revision" (ICD-10 CM).[2]

Concerning the relevance of our findings on the relationship between dementia and poor prognosis, we agree that as our sample is very small our study cannot draw irrefutable conclusions. Indeed, we already underlined this concern in the study limitations section of the paper. However, recently published data, as well as the clinical experience gained in the management of patients with COVID-19, confirmed that medical assistance to patients with COVID-19 and dementia is very challenging, and the prognosis could be very poor.[3] Cipriani and Fiorino found that up to 12% of all patients that died from COVID-19 had dementia.[4] Similarly, Yao *et al*. found that among the 36 patients evaluated with COVID-19 and dementia, mortality was as high as 62%.[5]

Concerning our findings about increasing age and mortality, our data suggested that considering only patients ≥80 years, the increasing age did not represent by itself a risk factor for poor outcome. This was confirmed by Italian population data,[6] and similar findings were reported by the US Center for Disease Control and Prevention, as the COVID-19 mortality of patients aged 75–84 years old was almost similar or slightly higher than mortality rate at ≥85 years.[7]

In our analysis, we attempted to correct our conclusions for potential confounders and comorbidities. Indeed, we found that comorbidities were similarly distributed in deceased compared with patients who survived, whereas dementia emerged as independently predictive of poor outcome. Moreover, as previously demonstrated, the multivariate analysis of small cohorts very often yields similar conclusions if repeated in greater populations.[8]

To date, considering the very poor data available for very old patients with COVID-19, we did our best to contribute to the knowledge about the peculiar aspects of the disease in this frailer population.

Disclosure statement

The authors declare no conflict of interest.

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Assessing performance of the Geriatric Nutritional Risk Index for the prediction of postoperative delirium and length of hospital stay in older surgical patients

Keywords: adverse outcomes, elderly surgical patients, Geriatric Nutritional Risk Index, postoperative delirium, prediction.

Dear Editor,

With great interest we read the recent article by Zhao *et al.* assessing the predictive ability of the Geriatric Nutritional Risk Index (GNRI) for postoperative delirium (POD) and length of hospital stay in older patients undergoing non-cardiac surgery.[1] By multivariate logistic and linear regression analyses, they concluded that the GNRI was a useful tool for the prediction of POD and prolonged length of hospital stay. Given that POD has been associated with increased morbidity and mortality in older surgical patients, their findings have potential implications.[2] Other than the limitations described by the authors in the discussion section, however, we noted other issues in this study that would make the interpretation of their findings difficult.

First, one of the exclusion criteria in this study was severe hearing impairment. We would like to know why hearing and vision impairments were used as confounders to enter into the univariate and multivariate logistic regression analyses determining the risk factors of POD. In fact, this two factors were also not included in the baseline characteristics of patients for statistical comparison. Thus, the integrity and authenticity of their data are questionable.

Second, the development of POD is actually the consequence of complex interactions among many perioperative predisposing and precipitating factors.[2] The authors provided the baseline characteristics of patients, but not the details of anesthesia and surgery. Thus, it is difficult to determine the extent of the impacts that anesthetic management and surgical interventions might have on the development of POD. The available literature indicates that both the type of anesthesia and choice of anesthetic agents can significantly affect the occurrence of POD in older patients with non-cardiac surgery.[3,4] Furthermore, long duration of surgery, intraoperative hypotension, hypoxemia, large blood loss and blood transfusions have been identified as the independent risk factors for POD in older patients undergoing non-cardiac surgery.[5] Most important, this study also ignored the possible influences of postoperative risk factors on the development of POD. In the available literature, postoperative pain and analgesic methods, sleep deprivation and disorders, early postoperative complications, and immobilizing events have been significantly associated with the occurrence of POD after non-cardiac surgery in older patients.[6,7] We are concerned that not taking intraoperative and postoperative variables associated with the occurrence of POD into the model would have distorted the inferences of multivariable analysis when determining the association between GNRI and POD in this study.

Third, it was unclear why only age, sex, Charlson comorbidity index and type of surgery were selected to enter into the univariate and multivariate logistic regression analysis determining the risk factors of POD. As a general principle, all the variables with statistical significance in the initial comparison, defined as $P < 0.05$, such as body mass index and albumin levels, should be incorporated into univariate analysis to examine multicollinearity among candidate independent variables. Then, the variables with large *P*-values ($P < 0.2$) in the univariate analysis are included into the multivariate model to identify the independent risk factors of POD.[8]

Fourth, to determine if the GNRI is a useful predictor for POD, only showing the existence of an association between the GNRI and the occurrence of POD by multivariate analysis is not enough. The authors should further carry out receiver operating characteristic curve analysis, and provide the GNRI' area under the the receiver operating characteristic curve, cut-off value, sensitivity and specificity, and positive and negative predictive values for POD.[8] Based on these results, the readers can determine whether the GNRI is a valuable predictor for POD after non-cardiac surgery in older patients.

Finally, using a linear regression model to evaluate the association between the GNRI and prolonged length of hospital stay is questionable, because some baseline characteristics affecting the length of hospital stay, such as body mass index and albumin levels, were significantly different among patients with various GNRI levels, and the potential effects of these confounding factors on the outcome of interest cannot be well avoided. The best

*__Re: Zhao Y, et al.__ Geriatric Nutritional Risk Index can predict postoperative delirium and hospital length of stay in elderly patients undergoing non-cardiac surgery. Geriatr Gerontol Int. 2020; 20(8):759–764.