Author’s response to reviews

Title: The Geriatric Nutritional Risk Index Independently Predicts Adverse Outcomes in Patients with Pyogenic Liver Abscess.

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Author’s response to reviews:

Dear editor:

Thank you for your letter and for the reviewers’ comments concerning our manuscript entitled “The Geriatric Nutritional Risk Index Independently Predicts Adverse Outcomes in Patients with Pyogenic Liver Abscess” (ID:BGTC-D-18-00508). Those comments are all valuable and very helpful for revising and improving our paper, as well as the important guiding significance to our researches. We have studied comments carefully and have made correction which we hope meet with approval. The main corrections in the paper and the responds to the reviewer’s comments are as flowing:

Responds to the reviewer’s comments:

Reviewer #1:

1. Suggest give footnotes in tables to explain which p-values are from this test one by one. The notes of “*, independent t test; **, Mann-Whitney U test” was added.

2. Not suggest to discuss height, weight and BMI with GNRI
   Line 124, “height, weight and BMI” was deleted.

3. Whether the author check the ROC of some multivariate model? Whether the model with of GNRI, PLT and PT can generate a better ROC? Or some other multivariable model?
   ROC curves for GNRI, albumin, BMI, platelet, prothrombin time and hemoglobin were plotted, as shown in Fig. a-d. GNRI had the highest area under the ROC curves.

4. From table 3, there are only 21 (less than 10%) mortality. It may not good to use this model to
predict mortality. First, the mortality of PLA has been significantly reduced, ranging between 10% and 40%. The mortality in our article is only 21 (less than 10%), which is reasonable. Second, Liisa Meddings et al suggested that PLA in hospital mortality was only 5.6%, and multivariable logistic regression was used to predicted in-hospital mortality in patients with PLA[1]. Third, line 224-225, limitations section, “PLA patients’ mortality rate during hospitalization was substantially smaller (21 cases of death)” was added.

5. It is included all of the variables of interest. Suggest to do some model selection (backward/forward)
Line 115, “which was finally determined with a forward stepwise variable selection procedure” was added.

Reviewer #2:
1. Abstract: The authors did not mention ROC in methods
Line 28-29, “Multivariate logistic regression analyses and receiver-operating characteristic (ROC) curve analysis were performed” was added.

2. Introduction: Why study the "uncommon" disease?
Line 46-47, “Pyogenic liver abscess (PLA), although as uncommon disease, can pose a serious threat to people’s lives” was added.

3. How does prognosis, timely and aggressive resuscitation make differences to the health outcomes of PLA patients
Please turn to references 6 and 7.

4. What is the mortality rate/ recovery rate of PLA?
Line 49-50, “the mortality of PLA has been significantly reduced, ranging between 10% and 40%” was added.

5. Can you provide any information about the relationship between liver disease and malnutrition?
Line 53-55, “It has been well established that the malnutrition is very prevalent among the patients suffering from PLA, showing a close relationship with the elevated risk of cardiovascular and infection-related mortality” was added.

6. Can you provide background information about GNRI cutoff point?
Line 57-60, “Over the years it has been validated in various studies and its prognostic value has been demonstrated for patients on maintenance haemodialysis (the cutoff value of GNRI was 90), sepsis institutionalized (the cutoff value of GNRI was 87) and also in acutely hospitalized patients (the cutoff value of GNRI was 92).” was added.

7. Methods: I suppose that height and body weight were also collected from individual medical records on admission. Please confirm.
Line 81, “such as height, body weight” was added.

8. How to define all adverse outcomes? There is a number for adverse outcomes in table 3. How did you obtain that number? Is this the number of people who have all or any of the adverse
The number of all adverse outcomes is one of any adverse outcomes.

9. Line 110-112. The multivariate analysis plan was not clear
Line 113-115, “Each parameter was selected for P value <0.05 in initial univariate results and age, gender, GNRI and anemia for the multivariate logistic regression analyses model, which was finally determined with a forward stepwise variable selection procedure” was added.

10. You have a reference for GNRI cutoff. Is it necessary to do ROC?
GNRI has different cut-off values for different diseases, its prognostic value has been demonstrated for patients on maintenance haemodialysis (the cutoff value of GNRI was 90), sepsis institutionalized (the cutoff value of GNRI was 87) and also in acutely hospitalized patients (the cutoff value of GNRI was 92).

11. Surgery/operation seems very rare (n=4). Why and how did this variable make to the "multivariate" analysis?
We have removed surgical variables to percutaneous drainage, and make the multivariate analysis.

12. Table 4 and table 5, the notes of multivariate analysis seem to be unnecessary.
Table 4 and table 5, the notes of multivariate analysis were deleted.

13. Figure is blurry and not well labeled
The figure has been uploaded again.

14. Discussion: Line 180-181. Do you mean higher BMI and serum albumin were associated with reduced risk of infection-related death?
Line 183, “Both, BMI and serum albumin are linearly associated with reduced risk of infection-related death” was added.

We appreciate for Editors/Reviewers’ warm work earnestly, and hope that the correction will meet with approval.

Once again, thank you very much for your comments and suggestions.

Sincerely,

Chao Zheng