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LETTER

Towards Precision Diagnosis: Thoughts and Suggestions on Enhancing the Nomogram for Ventilator-Associated Pneumonia [Letter]

Zhongqiu Tang, Zhaohui Tang

Department of Oncology, The Central Hospital of Yongzhou, Yongzhou, Hu Nan, 425000, People's Republic of China

Correspondence: Zhaohui Tang, Department of Oncology, The Central Hospital of Yongzhou, No. 369, Yiyun Road, Lengshuitan District, Yongzhou City, Hunan Province, People's Republic of China, Email tangzhaohui2023@163.com

Dear editor

We are writing in response to the manuscript entitled "A Nomogram for Diagnosing Ventilator-Associated Pneumonia Using Circulating Inflammation Indicators in ICU Patients" by Yang.[1] The aim of this study was to construct a columnar graph model for the early diagnosis of VAP (ven tilator-associated pneumonia) based on peripheral blood inflammation indicators, which solves the important clinical problem of early identification of VAP in ICU patients. However, in reading the manuscript, we had some questions about some of the study design and methodology, and we sincerely hope to further discuss and exchange ideas with the authors in order to deepen our understanding of the study.

First, the study differed significantly in the time points of data collection between the VAP and non-VAP groups: data were collected 24 hours before diagnosis in the VAP group, whereas in the non-VAP group the data were collected 3 to 7 days after mechanical ventilation. We were puzzled by this specimen collection schedule. We note that in studies of the same type, investigators usually tend to select the first laboratory examination at the beginning of a patient's admission as the study variable because such data have not yet been affected by subsequent therapeutic measures and can more realistically reflect the patient's baseline status.[2] Adopting such a study design can help to enhance the comparability of the data between the two groups.

Secondly, in this study, the authors used inflammatory indicators such as NLR, PLR, SII and SIRI as independent influences to construct a prediction model. However, these indicators were derived from the inter-calculation of some peripheral blood cells (neutrophils, lymphocytes, platelets, and monocytes). The interrelationships between these cells may lead to a high degree of correlation among the independent variables, resulting in the problem of multicollinearity.[3] However, the authors did not perform covariance analyses as well as Spearman correlation analyses. This may lead to overestimation or underestimation of the weights of certain variables, which may affect the accuracy and clinical usability of the model.[4]

Finally, we note that the authors completed the model construction and evaluation on only one dataset, without performing conventional data splitting (the division of training and testing sets) to carry out internal validation. In fact, even when external validation of multi-center is not possible, a reasonable split of single-center data and implementation of internal validation is still an important means to improve the quality of model evaluation. This not only helps to reduce the risk of overfitting, but also enhances the robustness and generalization ability of the model to a certain extent.[5]

In summary, we believe that this study provides a valuable exploration in the field of early diagnosis of ventilator-associated pneumonia and constructs a promising predictive model. In clinical practice, the exploration of different biomarkers may provide an effective guideline for early screening and intervention in intensive care patients, thereby reducing the incidence of VAP.

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Disclosure

The authors report no conflicts of interest in this communication.

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