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RESPONSE TO LETTER

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

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Dear editor

We are grateful for Tang et al's thoughtful comments regarding our study, "A Nomogram for Diagnosing Ventilator-Associated Pneumonia Using Circulating Inflammation Indicators in ICU Patients".[1] We appreciate the chance to address the issues brought up and offer further clarification.

The research methodology used in this retrospective case-control study is to deduce the cause from the outcome. The study presented by Tang et al is a retrospective cohort study that uses a from-exposure-to-outcome research methodology.[2] It is inappropriate to directly compare the methods of data collection in these two researches because they employ distinct design approaches. The selection time of the included data in the VAP group and the control group was decided by the time requirement for diagnosing VAP patients, which is 48 hours after mechanical ventilation and 48 hours following extubation. In a previous case-control study,[3] VAP patients' inflammatory indicators were tested on VAP day. In the controls, indicators from the mechanical ventilation day ±2 days were included. The condition of patients with mechanical ventilation is constantly changing during hospitalization, and the routine blood parameters are continuously monitored. Thus, obtaining parameters at different times is convenient. Furthermore, rather than predicting the occurrence of VAP, our research aims to diagnose VAP using these markers. Therefore, collecting the first laboratory examination at the beginning of a patient's admission is inappropriate.

In this study, we evaluated multicollinearity between variables using the variance inflation factor (VIF), as indicated in the methodology section. There was a lack of covariance among the indications of VAP diagnosis, as all variables in this study had a VIF < 5 and a tolerance value > 0.1 following multicollinearity analysis. Therefore, the covariance analyses and *Spearman* correlation analyses suggested by Tang et al are not necessary. Numerous studies,[4,5] such as those involving NLR, PLR, and other composite inflammatory indicators, have reported the absence of multicollinearity. We believe that scientific research requires more than just experience; it also requires the use of statistics. Some readers have been confused since we have not provided enough material to prove the indicators are not multicollinear. We appreciate Tang et al raising the issue.

Lastly, we would like to discuss the following reasons for not performing the conventional data splitting that Tang et al suggested to conduct internal validation. Firstly, an obvious limitation of this study is the relatively small sample size. In this instance, the data set is divided into smaller subsets, which raises the possibility of overfitting and creating inaccurate models. Furthermore, many academics are currently criticizing this approach, arguing that random

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segmentation produces varying results each time, which may cause researchers to repeat the analysis and selectively report only the most favorable outcomes.

In conclusion, our study provides a significant contribution to the early diagnosis of VAP in ICU patients. However we agree that addressing the problems stated will improve its clinical value. We appreciate the critical feedback and look forward to contribute to this vital study area.

Disclosure

The authors report no conflicts of interest in this communication.

References

1. Yang J, Bao W, Wang H, et al. A nomogram for diagnosing ventilator-associated pneumonia using circulating inflammation indicators in ICU patients. *J Inflamm Res*. 2025;18:4615–4625. doi:10.2147/jir.S512083
2. Zhuang D, Li T, Wu X, et al. Low serum calcium promotes traumatic intracerebral hematoma expansion by the response of immune cell: a multicenter retrospective cohort study. *Sci Rep*. 2025;15(1):8639. doi:10.1038/s41598-025-93416-4
3. Parmentier-Decrucq E, Nseir S, Makris D, et al. Accuracy of leptin serum level in diagnosing ventilator-associated pneumonia: a case-control study. *Minerva Anestesiol*. 2014;80(1):39–47.
4. Cui HT, Zhu QY, Zhao HW, Liu HL, Wang N. Pregnancy is associated with the prognosis of ovarian cancer patients with abdominal metastasis. *Am J Cancer Res*. 2025;15(1):168–181. doi:10.62347/jujq9225
5. Wang Y, Chen S, Tian C, et al. Association of systemic immune biomarkers with metabolic dysfunction-associated steatotic liver disease: a cross-sectional study of NHANES 2007-2018. *Front Nutr*. 2024;11:1415484. doi:10.3389/fnut.2024.1415484

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