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Potential Clinical Significance of Neutrophil-Lymphocyte-Monocyte Ratio in Predicting Mortality Risk in Septic Shock Patients

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Introduction

Sepsis is a systemic inflammatory response syndrome caused by infection that can lead to multiple organ dysfunction. Septic shock is an extreme form of sepsis and is associated with circulatory system dysfunction, cell metabolism disorders and organ failure. Although significant progress has been made through the implementation of the sepsis bundle strategy in the treatment of sepsis strategy, the mortality rate of sepsis is still high. There are currently many indicators and scoring systems for predicting the progression of septic shock. In order to be more timely, to more accurately predict the risk of septic shock, we developed a new assessment tool.

This study retrospectively collected the clinical data of 112 adult septic shock patients admitted to the hospital from January 1, 2018 to December 31, 2022. The study established a training set and a verification set, including 84 cases in the training set and 28 cases in the verification set. The patients were divided into two groups: "survival" and "death" based on their survival status during the 28-day hospitalization. Through multivariable binary logistic regression analysis, the Neutrophil-to-Lymphocyte-to-Monocyte Ratio (NLMR) was determined, a model was established through the training set and then validated through the model and a risk model was developed aimed at predicting pus in adults. Early mortality risk in patients with toxic shock.

Description

Multiple previous studies have shown that neutrophils and monocytes play a key role in establishing an effective innate immune response and that T and B lymphocytes play a role in the adaptive immune response in septic shock. Neutrophil, monocyte and lymphocyte counts are independent risk factors for 28-day mortality in adults with septic shock. Multivariable binary logistic regression analysis in this study showed that neutrophil, lymphocyte and monocyte counts independently affected the risk of death. NLMR showed a higher ROC-AUC value in the internal validation of the training set and the external validation of the validation set; the ROC-AUC value of NLMR was higher than the fast SOFA, SOFA and APACHE II scores and the sensitivity and specificity of NLMR All are higher than the other three scoring systems, indicating that NLM may be a well-performing risk assessment model and a clinically practical scoring tool.

NLMR may be a potential marker for predicting early mortality risk in adult septic shock patients and deserves further exploration and validation.

Based on the distinct roles of neutrophils, lymphocytes and monocytes in the inflammatory response, the neutrophil-lymphocyte-monocyte ratio holds potential for clinical application in predicting the mortality risk in adult patients with septic shock. This cell ratio could serve as a straightforward, cost-effective biomarker, aiding in the assessment of prognosis for septic shock patients and guiding clinical decision-making.

Conclusion

Looking ahead, the future application prospects of this biomarker may encompass several aspects: Firstly, serving as a tool to aid clinical judgment, facilitating the early identification of high risk septic shock patients and the implementation of corresponding treatment measures; secondly, when combined with other clinical indicators and imaging studies, it could further enhance the accurate assessment of septic shock patient prognosis; finally, it may contribute to the development of individualized treatment strategies, ultimately improving patient treatment outcomes.

Nevertheless, future applications will require additional prospective studies to validate the predictive value of this biomarker across different populations and to delve further into its specific role in clinical decision-making.

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