Journal of Inflammation Research

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LETTER

Sepsis Heterogeneity and Progression: Appraisal of Scoring System [Letter]

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Dear editor

We read with great interest of this study[1] titled "Establishment and Effectiveness Evaluation of a Scoring System-RAAS (RDW, AGE, APACHE II, SOFA) for Sepsis by a Retrospective Analysis". This study established a RAAS score system as a novel and reliable indicator to predict the short-term and medium-term mortality of patients with sepsis.

Sepsis is one of the important causes of death in critically ill patients in the intensive care unit (ICU) and emergency departments. Existing studies[2] have shown that the fatality rate of patients with severe sepsis and septic shock is as high as 20%~ 54%.

Herein, we have several thoughts we wanted to discuss regarding this study.

1. The heterogeneity of sepsis

The RAAS scoring might be improved in prediction if sepsis patients were stratified. The morbidity of sepsis is heterogeneous[3] and systemic. In the Molecular Diagnosis and Risk Stratification of Sepsis (MARS) prospective cohort, the patients with sepsis were divided based on source of infection. Stratification of sepsis source of infection is part of the regulation of host immune response. This is the reason the heterogeneity should be considered when predicting the prognosis.

2. The rationale of parameter selection

(a) The pathogenesis of sepsis and selection of RDW

Sepsis mainly invades the vascular endothelial system, and the microvascular endothelium is the main target of sepsis, which is characterized by vascular microcirculation dysfunction. Red cell distribution width (RDW) describes the variation in the size of red blood cells. RDW can be a valuable test estimating mortality or cancer risks.[4] We agree with the authors in choosing RDW as a parameter in prediction.

(b) The scoring system constituent's comparison

The APACHE II score is composed of acute physiological score, age score and chronic health score. Since APACHE II already recruited age as a parameter, the logic of using age as another independent factor besides APACHE II needs to be considered.

The SOFA score uses six criteria to reflect the function of organ systems (respiratory, blood, liver, cardiovascular, nervous, and renal systems) and assigns each item a score of 0–4. The blood parameters of SOFA overlap with the APS score inside APACHE II.

Received: 28 January 2022
Accepted: 10 February 2022
Published: 25 February 2022

(c) The relationship between dynamic changes of the score monitoring and disease progression

Considering the parameter age included in this scoring system is constant, the progression of sepsis might be better adjusted to overcome this issue.

3. Nonsuperiority comparison of the RAAS scoring of current best practice

In the latest study[5] comparing several scoring systems, the National Early Warning Score (NEWS) was discovered to be a idealistic one in clinical practice with better sensitivity and specificity than SOFA alone.

We are interested in the comparison of RAAS and NEWS, partly due to the reason NEWS has been already applied in clinical practice in the UK.

After all, we congratulate the authors for successfully establishing the RAAS system for the assisted prediction model. We look forward to their future applications and trials.

Disclosure

The authors report no conflicts of interest in this communication.

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https://doi.org/10.2147/JIR.S360373