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LETTER TO THE EDITOR

Prognostic Value of Systemic Immune-Inflammatory Index in Hospitalized Adolescent COVID-19 Patients

Hastanede yatan adölesan COVID-19 hastalarında sistemik immün-inflamatuvar indeksin prognostik değeri

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Dear Editor,

I carefully read the article published in your General Medicine Journal (Volume 35/Issue 1, February, pp. 123-128) by Caglar et al. The study examines the prognostic role of the Systemic Immune-Inflammatory Index (SII) in adolescent COVID-19 patients and compares its effectiveness in predicting intensive care unit (ICU) admission risk with other biomarkers. While the study provides valuable data on the clinical significance of SII in the adolescent population, it also has certain methodological and interpretational limitations that need to be considered. Below, I have outlined the contributions, limitations, and some recommendations for the study, which I believe to be beneficial for future research.

Contributions and Strengths of the Study

The most notable aspect of the study is that it is one of the first systematic investigations into the prognostic value of SII in adolescent COVID-19 patients. Although COVID-19 tends to follow a milder course in children and adolescents compared to adults, severe outcomes can still occur, particularly in individuals with comorbidities (1). In this context, the success of SII—a simple and cost-effective biomarker—in predicting ICU admission risk (AUC: 0.768, p <0.001) makes a significant contribution to developing early intervention strategies in clinical practice (2). The fact that SII is calculated from neutrophil, lymphocyte, and platelet counts aligns well with the routine clinical use of peripheral blood measurements, enhancing its practical applicability.

Additionally, the comparison of SII with other parameters, such as the CRP/Alb ratio and lactate, broadens the scope of the study. The finding that SII was significantly superior to lactate (p = 0.03) underscores the central role of inflammation in disease progression (3,4). The use of ROC curves and Youden's index to determine cutoff values (SII ≥1111) further strengthens the methodological reliability of the study (5,6).

Limitations and Suggestions for Improvement

One of the key limitations of the study is the small number of ICU-admitted patients (n=14). This may affect the statistical significance of parameters such as the neutrophil-to-lymphocyte ratio (NLR) and limit the generalizability of the results (7).

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Given that similar studies have included larger ICU cohorts (8), multicenter studies with larger sample sizes are needed to validate these findings.

Moreover, due to the retrospective design, the study could not analyze certain prognostic factors, such as obesity, time of admission, and SARS-CoV-2 variants (9,10). For instance, while there is evidence that the Delta variant increases disease severity in adolescents (11), the lack of information on dominant variants in the study limits the interpretation of the findings. Future prospective studies incorporating these variables would help clarify SII's independent prognostic value.

Another notable limitation is the absence of longitudinal monitoring of laboratory parameters. The failure to assess how SII changes throughout the disease and its correlation with prognosis leaves unanswered questions about its clinical utility (12). Studies incorporating serial measurements could elucidate the prognostic significance of SII's dynamic changes.

Finally, the extremely low mortality rate (n=1) prevented an assessment of the relationship between SII and mortality. This poses a challenge in understanding SII's role in critically ill patients.

Conclusion and Future Perspectives

This study makes a significant contribution to the literature by demonstrating the role of SII in predicting ICU admission risk in adolescent COVID-19 patients. However, due to its retrospective design and small sample size, the findings need validation in larger populations. Multicenter prospective cohort studies and analyses considering the impact of SARS-CoV-2 variants would provide further evidence supporting SII's clinical utility. Additionally, investigating the relationship between SII and treatment response could enhance its value as a dynamic prognostic marker.

Notably, the prognostic value of SII is not limited to COVID-19; it is effective in predicting mortality in acute cholecystitis (AUC: 0.78) (13), diagnosing complicated appendicitis (AUC: 0.742) (14), and distinguishing testicular torsion (AUC: 0.77) (15). Therefore, integrating SII into routine clinical practice may improve early risk stratification and resource optimization in adolescent patients.

Sincerely,

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