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Racial Disparities Between C-Reactive Protein and COVID-19 In-Hospital Outcomes



To the Editor:

I recently read with great interest the article written by Dr Azam et al titled “Differences in inflammation, treatment, and outcomes in Black and non-Black patients hospitalized with COVID-19: A Prospective Cohort study” published on November 16, 2021.¹ This study shows that there are racial differences in the acute inflammatory response to coronavirus disease 2019 (COVID-19). They also found that Blacks hospitalized for COVID-19 were less likely to receive corticosteroids and remdesivir before Food and Drug Administration (FDA) emergency use of remdesivir and less likely to be enrolled in clinical trials. After adjusting for the use of remdesivir and corticosteroids, there was no significant difference in clinical outcomes between Blacks and non-Blacks. The study is impressive, and the findings will be of help to clarify potential mechanisms caused by racial disparities, possibly leading to better clinical practices.

In this study, the authors found that Black race was associated with lower C-reactive protein (CRP) levels among inflammatory markers, and Blacks were associated with an increased risk of death after adjustment for CRP, a confusing trend. Other researchers reported that Blacks were associated with higher CRP levels, leading to increased risk of mortality.² There may be several reasons for the difference between 2 studies.

First, in this prospective cohort study, is the baseline of the included patients comparable? The author mentioned Blacks had higher average body mass index (BMI) than non-Blacks. There is a significant positive correlation between increased BMI and poor outcome in patients with COVID-19 (eg, mortality and mechanical ventilation).³

Besides, CRP levels are strongly, positively correlated with BMI.⁴ Thus, BMI may have an effect on both inflammatory factors and clinical outcomes; therefore, adjusting the study's baseline levels may have a positive impact on the results. Furthermore, as shown in another study, low CRP levels may have little impact on the results, but CRP above the standard value may affect the clinical outcome. Therefore, stratified analysis of CRP may produce different findings. Lastly, some variables included in this study have mutual influences (eg, BMI and CRP), which may cause multicollinearity when using stepwise regression for regression analysis,⁵ thus, affecting the reliability of the results. In that way, the change in estimate method may be a better choice for selecting variables.

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