

Prognostic Value of C-Reactive Protein (CRP) in SARS-CoV-2 Infection: A Simplified Biomarker of COVID-19 Severity in Sub-Saharan Africa

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Abstract : Background: C-reactive protein (CRP) levels are a reliable surrogate for interleukin-6 bioactivity that plays a pivotal role in the pathogenesis of cytokine storm associated with severe COVID-19. There is a lack of data on the role of CRP as a determinant of COVID-19 severity status in the African context. Methods: We determined the longitudinal kinetics of CRP levels on 78 RT-PCR-confirmed COVID-19 patients (49 non-severe and 29 severe cases) and 50 PCR-negative controls. Results: COVID-19 patients had overall significantly elevated CRP at baseline when compared to PCR-negative controls [median 11.1 (IQR: 2.0-127.8) mg/L vs. 0.9 (IQR: 0.5-1.9) mg/L; $p=0.0004$]. Moreover, severe COVID-19 patients had significantly higher median CRP levels than non-severe cases [166.1 (IQR: 48.6-332.5) mg/L vs. 2.4 (IQR: 1.2-7.6) mg/L; $p<0.00001$]. In addition, persistently elevated levels of CRP were exhibited among those with comorbidities and higher age groups. Area under receiver operating characteristic curve (AUC) analysis of CRP levels distinguished PCR-confirmed COVID-19 patients from the ones with PCR-negative non-COVID-19 individuals, with an AUC value of 0.77 (95% CI: 0.68-0.84; $p=0.001$). Moreover, it clearly distinguished severe from non-severe COVID-19 patients, with an AUC value of 0.83 (95% CI: 0.73-0.91). After adjusting for age and the presence of comorbidities, CRP levels above 30 mg/L were significantly associated with an increased risk of developing severe COVID-19 (adjusted relative risk 3.99 (95%CI: 1.35-11.82; $p=0.013$). Conclusions: Determining CRP levels in COVID-19 patients in African settings may provide a simple, prompt, and inexpensive assessment of the severity status at baseline and monitoring of treatment outcomes.

Keywords : CRP, COVID-19, SARS-CoV-2, biomarker

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