Role of platelet-to-Lymphocyte ratio and other markers in predicting severity and prognosis in COVID-19 patients

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Abstract

Background: COVID-19 is a pandemic respiratory tract disease caused by Severe acute respiratory syndrome coronavirus 2 **(SARS-COV2).** Its clinical manifestations range from asymptomatic to acute respiratory failure, multi-organ dysfunction, and death. **Purpose:** This study revealed the utility of platelet-lymphocyte ratio (PLR) as a severity and mortality marker in COVID-19 infection, as well as its connection with other inflammatory indicators such as C-reactive protein (CRP) and neutrophil-lymphocyte ratio (NLR). **Methods:** A total of 400 patients (206 males and 104 females; mean age: 64.5 ± 17.1, years; range, 20-100 years) were hospitalized with COVID-19 between April 2020 and December 2021. The patient's demographic and clinical information, including ward and critical care data, were gathered from their medical records. On the first and last days, the CRP, NLR, and PLR values of the patients, who were divided into groups based on their hospitalization and outcomes, were analyzed. **Results:** The results showed that the PLR had statistically significant (P value=0.012) elevation, at the beginning of the hospitalization period it was 245 ± 160, while at the end of the period it had increased to 341 ± 747 (P value = 0.012). there was a significant association between PLR and length of hospital stay and mortality, there was also a substantial correlation between PLR and the last status of the participants, these analyses showed that the mean PLR in the dead group was 445 ± 590, whereas 304 ± 795 in the survived group which is statistically significant with P value=0.007, that supports our hypothesis that there is a correlation between higher PLR and severity of COVID-19 infection and mortality rate. **Conclusion:** In patients hospitalized with COVID-19, the specificity of PLR values at the point of severity and outcome was shown to be as CRP and NLR values, this demonstrates that there is a significant association between these markers and length of hospital stay and mortality. The higher NLR, the longer the hospital stays and the worse the prognosis, there was a significant correlation between age, days of admission and mortality.

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