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Comparative Study of Some Laboratory Indicators of Blood Cells at the Time of Admission of Patients with Covid-19 to the Hospital in Birjand

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Background and Aim: COVID-19 is a pandemic and life-threatening disease worldwide now. The study aimed to analyze blood cells of blood laboratory results for patients diagnosed with COVID-19.

Methods: Between 2020-02-21 and 2021-02-14 in Birjand, Iran, 2511 of 3041 suspected Covid-19 patients were confirmed positive by RT-PCR test. We compared the demographic, clinical, laboratory findings, and outcome data of cases between 50 and 70 years old. Patients with underlying diseases were excluded from the study.

Results: The mean (range) duration of hospitalization was 6 (0-47) days. Of the 963 patients, 491 (50.99%) patients were male. As of the final follow-up date of this study, 825 (85.67%) patients were discharged from the hospital and 138 (14.33%) patients died. Died patients had significantly higher white blood cell count (mean = 8.67, SEM = 0.39, $P < 0.001$), neutrophils (mean = 80.14, SEM = 0.88, $P < 0.001$), platelet-to-lymphocyte ratio (PLR) (mean = 18.03, SEM = 1.20, $P < 0.001$), monocyte to lymphocyte ratio (MLR) (mean = 0.57, SEM = 0.03, $P < 0.001$) and neutrophil to lymphocyte ratio (NLR) (mean = 7.345, SEM = 0.44, $P < 0.001$) compared to survivor patients on admission and these indicators also increased over their typical range. Also died patients had significantly lower red blood cell count (mean = 4.41, SEM = 0.07, $P < 0.001$), hemoglobin level (mean = 12.28, SEM = 0.25, $P < 0.001$) and lymphocyte count (mean = 12.79, SEM = 0.71, $P < 0.001$) compared to survivor patients on admission and these indicators also decreased over their typical range.

Conclusion: Patients with covid19, neutrophil count, NLR ratio, PLR ratio higher than the normal range also lymphocyte count and RBC lower than the normal range are associated with worse prognosis and an increased risk of death. Clinical outcomes show that males experience both higher severity and fatality from COVID-19 infection.

Keywords: COVID-19, SARS-CoV-2, CBC, NLR, laboratory indicators of blood cells