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Comparative Study of Some Laboratory Indicators of Renal Function 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 kidney-related 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 chronic kidney disease and with other underlying diseases that potentially affect renal parameters and kidney functions 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 serum urea (Mean=76.43, SEM= 5.68, $P < 0.001$), creatinine (Mean=1.63, SEM= 0.14, $P < 0.001$) and the blood urea nitrogen (BUN)/creatinine ratio (Mean=24.86, SEM= 1.24, $P < 0.001$) compared to survivor patients on admission and these indicators also increased over their typical range. Serum potassium (K+) concentration showed a slight decrease in survivors ($P < 0.003$) but was within the normal range in both dying and surviving patients. Serum sodium (Na+) and chloride (Cl-) levels did not differ significantly across groups.

Conclusion: Patients with covid19, urea, creatinine, and BUN/creatinine higher than the normal range are associated with a worse prognosis and an increased risk of death. Hypokalemia and hyponatremia were not common in patients with COVID-19. Clinical outcomes show that males experience both higher severity and fatality from COVID-19 infection. The results suggest that the kidney may be one of the primary targets of attack for SARS-CoV-2 and early detection of evidence of renal injury, so timely effective interventions are of great significance for reducing complications and improving prognosis.

Keywords: COVID-19, SARS-CoV-2, Creatinine, Urea, Renal laboratory parameters