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Low Prognostic Nutritional Index is associated with COVID-19 related Hospitalization in Peritoneal Dialysis patients

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Objectives : The Prognostic Nutritional Index (PNI), composed of serum albumin and total lymphocyte count, serves as a marker of nutritional and immune status. Low serum albumin and lymphopenia are known risk factors for the severity of COVID-19. This study aims to investigate the association between PNI and COVID-19 related hospitalization in Peritoneal Dialysis (PD) patients.
Methods : We retrospectively reviewed medical records of adult (aged>18 years) patients who underwent PD between January 2020 and May 2023 at the Soonchunhyang University Cheonan Hospital, Korea. A total of 127 patients were analyzed. Underlying disease and laboratory parameters were collected. PNI was calculated using the formula; PNI=(10×serum albumin [g/dL])+(5×total lymphocyte count [10^3/mL]).
Results : Thirty-nine (31%) patients were infected with SARS-CoV-2. Infected patients were significantly younger compared with uninfected patients. Of those infected, 9 (23%) required hospitalized, and 2 (5%) died due to COVID-19. Hospitalized patients were significantly older, had lower vaccination rate and had lower levels of serum albumin, blood urea nitrogen, lymphocytes, and PNI compared with non-hospitalized patients. Multivariate logistic regression model showed that each unit increase in PNI was associated with a 34.1% reduction in the risk of COVID-19 related hospitalization (OR=0.659, 95% CI: 0.436-0.996, p=0.048). The Receiver Operating Characteristic curve for PNI predicting COVID-19 related hospitalization had an area under the curve of 0.796 (95% CI, 0.655-0.938). The optimal cut-off value of the PNI for predicting COVID-19 related hospitalization was 47.5, yielding a sensitivity of 1.00 and a specificity of 0.667.
Conclusions : This study demonstrates that a low PNI is an independent risk factor for COVID-19 related hospitalization in PD patients. SARS-CoV-2 infected PD patients with a PNI below 47.5 should be closely monitored due to the risk of COVID-19 related hospitalization.