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The Predictors for severe Omicron-infected kidney transplant recipients: A nationwide study

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Introduction: The number of infected kidney transplant recipients (KTRs) has sharply increased since the Omicron emerged. The risk factor of developing severe Coronavirus disease 2019 (COVID-19) among KTRs in the Omicron period has been not evaluated.

Methods: A nationwide prospective cohort study of SARS-CoV-2-infected KTRs was conducted between March 2020 and August 2022 in Thailand. Predictive factors for developing pneumonia defined as moderate to critical illness as per the National Institutes of Health and disease progression were evaluated. The KTRs who were fully vaccinated were adjusted. Variables with $p < 0.10$ in the univariate were selected for multivariate analysis.

Results: There were 369 KTRs developed COVID-19; 108 (29.3%) KTRs and 261 (70.7%) KTRs were infected with SARS-CoV-2 during the pre-Omicron and Omicron periods, respectively. The mortality rate was 15.7% in pre-Omicron and 1.5% in Omicron period; $p < 0.001$. Sixty-three (58.3%) pre-Omicron-infected KTRs and fifteen (5.8%) Omicron-infected KTRs developed pneumonia; $p < 0.001$. From multivariate logistic regression, the predicting factors for developing pneumonia were infection with pre-Omicron variants (adjusted odds ratio (OR) 11.63 [95%CI 3.60-37.57]; $p < 0.001$), increasing age (adjusted OR 1.08 [95%CI 1.03-1.12] per 1 year; $p < 0.01$), presenting with cough (adjusted OR 4.05 [95%CI 1.61-10.22]; $p = 0.003$), and presenting with diarrhea (adjusted OR 3.87 [95%CI 1.42-10.52]; $p = 0.008$). We found no admission investigation (cycle threshold of Real Time Polymerase Chain Reaction, serum creatinine, interleukin-6, C-reactive protein, and D-dimer) that could predict the disease progression.

Conclusion: The Omicron variant of SARS-CoV-2, though highly transmissible, caused less severe symptoms compared to previous variants in infected KTRs. During the Omicron period and the vaccination era, the elderly and KTRs presented with cough or diarrhea remain at high risk of developing pneumonia; thus they should be hospitalized and receive high-efficacy medications in a setting where there were medication shortages.