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Effect of mRNA COVID-19 booster vaccination on hemodialysis patients in the Omicron era

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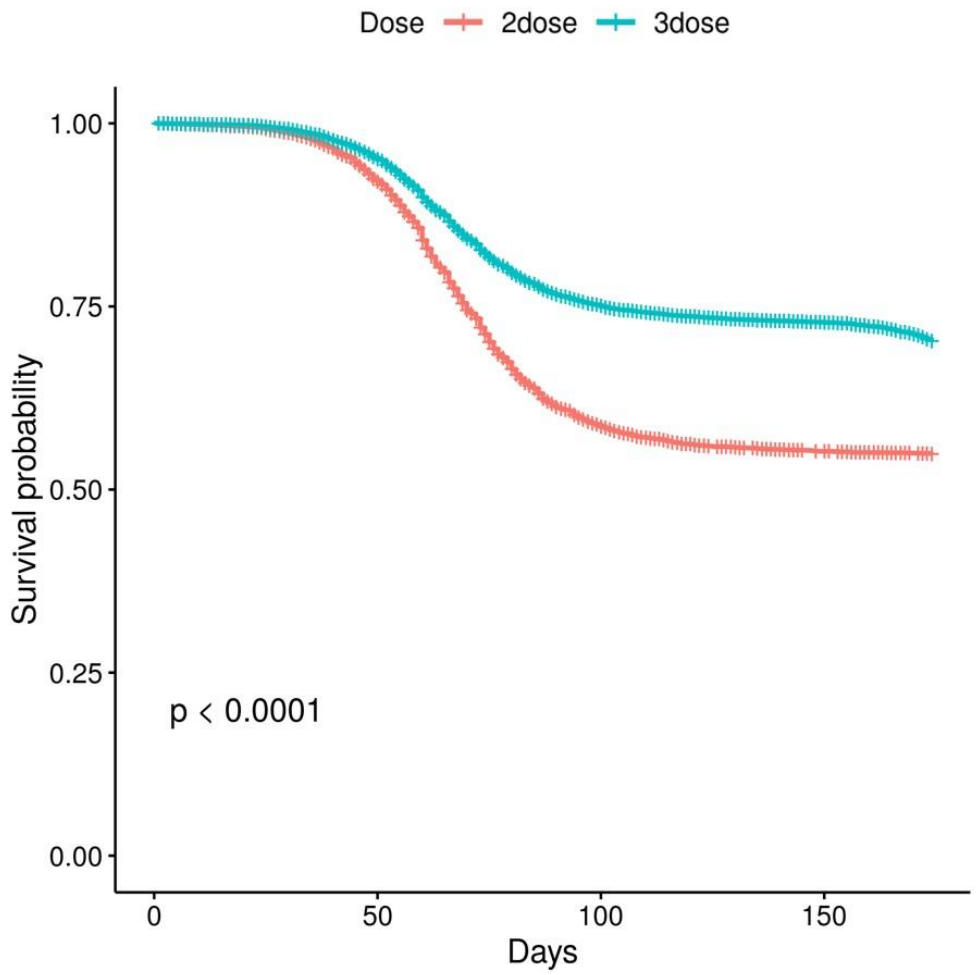
Objectives : Previous studies on vaccine efficacy in hemodialysis patients mainly focused on the Alpha and Delta variants, showing that two doses of mRNA COVID-19 vaccines provided substantial protection. However, data on the effectiveness of three doses in hemodialysis patients during the Omicron period remain limited.
Methods : A retrospective cohort study was conducted on Korean hemodialysis patients vaccinated with two or three doses before January 16, 2022, the start of the Omicron pandemic. Data on vaccination status, SARS-CoV-2 infections, COVID-19–related hospitalizations, and deaths were collected from the National Health Insurance Service. Cox proportional hazards models were used to estimate hazard ratios (HR) and 95% confidence intervals (CI), adjusting for demographic and clinical factors.
Results : A total of 66,389 individuals (mean age 65.7±12.9 years; 60.5% male) were included. At baseline, 11,264 subjects (17%) had completed two doses of vaccine and 55,215 subjects (83%) had completed three doses. During the six-month observation period, 17,886 patients (26.9%) were infected with COVID-19, 6,739 patients (10.2%) were hospitalized for COVID-19, and 280 patients (0.4%) died. Compared to those who received two doses, those who received three doses had a 42% lower risk of SARS-CoV-2 infection (HR 0.58, 95% CI 0.56–0.60, Figure 1A), a 35% reduction in COVID-19–related hospitalization (HR 0.65, 95% CI 0.62–0.70). And the 30-day mortality rate after COVID-19 infection was reduced by 65% (HR 0.35, 95% CI 0.30–0.41, Figure 1B). Regardless of vaccine type, a third booster vaccine significantly reduced the risk of SARS CoV-2 infection, COVID-19 related hospitalization, and mortality.
Conclusions : Three-dose mRNA COVID-19 vaccination provided better protection against infection and severe outcomes in hemodialysis patients during the Omicron period. These results highlight the need for continued booster vaccination strategies to mitigate COVID-19-related morbidity and mortality in hemodialysis patients.

COVID-19 Figure 1A.jpg

Figure 1A: Kaplan-Meier curves for COVID-19 infection by two and three dose



COVID-19 Figure 1A.jpg

Figure 1B: Kaplan-Meier curves for COVID-19 mortality by two and three dose