

Abstract Type : Oral

Abstract Submission No. : 1847

The comparison of humoral response between third and fourth doses of COVID-19 vaccines in end-stage renal disease on hemodialysis

Dae Kyu Kim¹, Su Woong Jung¹, Jin Sug Kim², Hyeon Seok Hwang², Ju-Young Moon¹, Kyung Hwan Jeong², Sang-Ho Lee¹, Yang Gyun Kim¹

¹Department of Internal Medicine-Nephrology, Kyung Hee University Hospital at Gangdong, Korea, Republic of

²Department of Internal Medicine-Nephrology, Kyung Hee University Medical Center, Korea, Republic of

Objectives: The humoral response of the COVID-19 vaccine in hemodialysis (HD) patients decreases substantially over time compared to the general population, thus experts recommend the booster shots. However, the effectiveness of booster vaccine is unclear in HD patients. This study was purposed to assess the humoral response after three or four shots of COVID-19 vaccine.

Methods: Eighty-six HD patients who completed three or four doses of COVID-19 vaccine were included. Serum IgG to receptor-binding domain (RBD) of the S1 subunit of the spike protein of SARS-CoV-2 was measured at 1 month after the first dose (T1), 2 months (T2) and 4 months after the second dose (T3), 4 months after the third dose (T4), and 4-7 month after the fourth dose or 11 months after the third dose (T5). The neutralizing antibody was measured at T3 and T4 in 15 COVID-19 naïve patients.

Results: 28 and 28 patients finished 3rd and 4th doses of vaccine, respectively. 34 patients were infected with COVID-19. In COVID-19 naïve patients (n=52), anti-RBD titers rapidly decreased from 2605.6[1529.5,6064.3]AU/ml at T2 to 1255.7[642.0,2337.1]AU/ml at T3, but elevated to 3979.1[1966.1,17098.1]AU/ml after third shots (T4). The anti-RBD titers at T5 were significantly higher in the patients who completed 4th doses than in those who completed 3rd doses (14075.3[4527.1,30460.0] vs. 2492.5[851.2,17086.3]AU/ml, P<0.001) in COVID-19 naïve patients. However, anti-RBD titer between the 3rd and 4th doses was not different in the COVID-19-infected patients. Anti-RBD titers were well correlated with neutralizing antibodies against omicron and delta at T3 and T4 (P<0.001). Six patients who experienced severe COVID-19 infection (4 hospitalizations, 2 death) tended to have a low antibody titer. In particular, 2 deceased patients showed markedly low levels of anti-RBD IgG (342, 317 AU/ml) at T3.

Conclusions: In COVID-19 naïve HD patients, four doses of COVID-19 vaccines were better humoral response than three doses.