PO0140
Time-Dependent Evolution of IgG Antibody Levels After First and Second Dose of mRNA-based SARS-CoV-2 Vaccination in Hemodialysis Patients: A Multicenter Study
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Background: Vaccination programs are essential for the containment of the COVID-19 pandemic, which has affected significantly the hemodialysis population. Early reports suggest a reduced immunologic response to COVID-19 vaccines in dialysis patients, in spite of a high degree of seroconversion. We aimed to identify risk factors for a reduced efficacy of an mRNA vaccine in a cohort of hemodialysis patients.

Methods: In a multicenter study, including 294 Portuguese hemodialysis patients from multiple centers who had received 2 doses of BNT162b2 with a three week interval, IgG-class antibodies against SARS-CoV-2 spike protein were determined 3 weeks after the first dose (M1) and 6 weeks after the second dose (M2). The threshold for seroconversion was 10IU/mL. Demographic and clinical data was retrieved from a quality registry. Adverse events were registered using a questionnaire.

At M2, seroconversion was 93.3%, with a median antibody level of 197.5U/mL (1.2-3237.0) and a median increase of 180.0U/mL (82.9-2244.6) from M1. Age (beta -8.9; 95%CI: -12.88 to -4.91; p<0.0001), ferritin >600ng/mL (beta 183.93; 95%CI: 37.75 to 329.10; p<0.001) and physical activity (beta 265.79; 95%CI: 10.27 to 531.31; p=0.040) were independent predictors of SARS-CoV-2 antibody levels after two vaccine doses. Plasma albumin >3.5g/dL independently predicted the increase of antibody levels between both doses (OR 14.72; 95%CI: 1.38 to 157.45; p=0.030). Only mild adverse reactions were observed in 10.9% of patients.

The COVID-19 vaccine BNT162b2 is safe and effective in hemodialysis patients. Besides age, iron status and nutrition are possible modifiable modulators of the immunologic response to COVID-19 mRNA vaccines.

Results: In conclusion, the vast majority of patients on PD developed positive Ab response to COVID-19 vaccine. While a small sample size limited statistical power, our results show promising COVID-19 vaccine effectiveness among patients on PD.

PO0142
Breakthrough COVID-19 Infection in Hemodialysis Patients Following mRNA-1273 (Moderna) Vaccine Administration
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Background: Patients on maintenance hemodialysis are highly susceptible to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection. To date, these studies reported that 95% (58/61) hemodialysis patients developed anti-receptor binding domain (RBD) IgG antibody following the 2-dose Moderna vaccine administration. The incidence of breakthrough COVID-19 infection in hemodialysis patients following vaccination is not known.

Methods: All hemodialysis patients (n=61) received the 2-dose Moderna series vaccine. Anti-RBD IgG titer was measured at 1-, 2-, 4-, 8-weeks after the 1st vaccine dose. The 2nd vaccine dose was administered 29±3.9 days after the 1st dose. Anti-RBD IgG titer was measured at 1-week following the 2nd vaccine dose. Nasal swabs were performed every 2-weeks to detect SARS-CoV-2 RNA as part of routine surveillance. Additionally, rapid antigen tests were performed if patients exhibited signs or symptoms suggestive of COVID-19. Patients were followed for 2-months following the 2nd vaccine dose administration.

Results: Three patients tested positive for SARS-CoV-2 RNA following vaccination. Of these 3 patients, 2 patients tested positive at day-7 and at day-12 following the 1st vaccine dose respectively. Both these patients presented with symptoms of fever and dyspnea, and both had undetectable anti-RBD IgG titer at the time of COVID-19 diagnosis. A third patient tested positive for SARS-CoV-2 RNA on routine nasal swab surveillance test at day-40 following the 2nd vaccine dose administration. At the time of testing, the patient had a positive anti-RBD IgG titer. The patient remained asymptomatic and had an uneventful course. Viral genome analysis revealed that the infection was due to the B.1.526 SARS-CoV-2 variant, also known as the New York variant.

Conclusions: Breakthrough COVID-19 infections were rare in fully vaccinated hemodialysis patients up to 2-months following the Moderna vaccine administration. One case of SARS-CoV-2 breakthrough infection was due to the B.1.526 variant.