

Abstract Submission No. : 2543

Influences of ChAdOx1 nCov-19 (AstraZeneca) vaccination on platelet and coagulation factors in hemodialysis patients

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Objectives: The COVID-19 pandemic is more lethal for patients with underlying disease, so it is necessary for hemodialysis patients to get vaccinated. We observed the changes of platelet and coagulation factors in hemodialysis patients who received ChAdOx1 nCov-19 vaccine.

Methods: We reviewed the clinical data of 78 patients who underwent maintenance hemodialysis in Asan Medical Center from April 1 to May 31, 2021. We retrospectively collected demographic and laboratory results including platelet, prothrombin time, activated partial thromboplastin time, fibrinogen, d-dimer, and anti-PF4 antibody.

Results: Twenty patients (25.6%) were vaccinated with ChAdOx1 nCov-19. Baseline platelet count of the vaccinated patients was $148.40 \pm 49.61 \times 10^3/\text{mm}^3$, and it slightly increased to $156.90 \pm 48.63 \times 10^3/\text{mm}^3$ three weeks after the vaccination ($p=0.199$). In patients with baseline platelet count $< 150 \times 10^3/\text{mm}^3$ ($n=9$), platelet count increased by 19% on average from baseline to three week after vaccination, from $100 \times 10^3/\text{mm}^3$ to $119 \times 10^3/\text{mm}^3$. However, there was no change of platelet counts in patients with baseline platelet count $> 150 \times 10^3/\text{mm}^3$ after vaccination or the unvaccinated patients. (table 1) The PT, fibrinogen and d-dimer in the vaccinated patients did not show significant differences, and aPTT was slightly decreased but in normal range, when we compared the figures of one week and three weeks following the vaccination. (Table 2) When the vaccinated patients were divided by baseline platelet count (more or less than $150 \times 10^3/\text{mm}^3$), there was no difference for coagulation factors between divided groups. Anti-PF4 antibody tests, which were performed three weeks after the vaccination, were negative in the all vaccinated patients.

Conclusions: The vaccination with ChAdOx1 nCov-19 did not cause significant influence on platelet and coagulation factors in hemodialysis patients. The results for anti-PF4 antibody tests also did not show the risk and possibility of VITT. The vaccination for hemodialysis patients would be safe modality to prevent COVID-19 infection.

Table 1



KSN 2021

FULLY VIRTUAL MEETING

 September 02 (Thu) - 05 (Sun)

Table 1. Platelet count in vaccinated and unvaccinated group

	Baseline	Post vaccination ^{a,b}	P value
Vaccinated group	148.40±49.61	156.90±48.63	0.199
Platelet < 150 (x10 ³ /mm ³)	100.11±15.82	119.11±31.13	0.077
Platelet ≥ 150 (x10 ³ /mm ³)	187.91±25.70	187.82±37.18	0.991
Unvaccinated group	184.28±79.383	178.14±70.909	0.158

^a post vaccination data evaluated 3weeks after vaccination in vaccinated group

^b post vaccination data evaluated 1month after baseline evaluation in unvaccinated group

Table 2

Table 2. Results of platelet, coagulation factors in vaccinated group

	1week	3weeks	P value
Platelet(x10 ³ /mm ³)	145.78±43.23	151.56±42.39	0.357
Activated partial thromboplastin time(sec)	29.24±6.29	28.23±5.09	0.036
Prothrombin time(INR)	1.08±0.45	1.08±0.46	0.283
Fibrinogen(mg/dL)	290.81±48.77	297.50±57.43	0.655
D-dimer(μg/ml FEU)	1.19±0.86	1.03±0.73	0.124
Anti platelet factor 4 antibody(U/mL)		negative	