

Supplementary material

Humoral response after a fourth “booster” dose of a Covid-19 vaccine following a 3-dose regimen of mRNA-based vaccination in dialysis patients

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Questionnaire on vaccine reactions and global tolerance after the fourth vaccine dose.

1. After the third vaccine injection, did you feel any of these side effects ?

- Pain at injection area
- Swelling at injection area
- Redness at injection area
- Headaches
- Diarrhea
- Fatigue
- Fever
- Chills
- Muscle pain

2. As compared to the third vaccine dose, would you say that side effects following the fourth injection were:

- Lower
- Similar
- Better

3. After the fourth vaccine dose, have you been hospitalized or did you visit Emergency Department for any reason? If yes, please indicate the reason.

Table S1. Characteristics of the study population

	Overall n = 45
Medical history	
Age, years	72 [56 ; 79]
Men, n(%)	26 (57.8)
Body mass index, kg/m ²	27.3 [23.8 ; 31.3]
Diabetes mellitus, n (%)	18 (40.0)
Hemopathy, n (%)	4 (8.9)
Immunosuppression, n (%)	5 (11.1)
Hemodialysis, n (%)	17 (37.8)
Dialysis vintage, years	3 [1 ; 6]
Kt/v	1.64 [1.29, 1.94]
Biological data	
Lymphocytes count, G/L	1.17 [0.93 ; 1.64]
Neutrophilic polynucleolar cells, G/L	4.10 [3.10 ; 5.26]
Gamma globulin, g/L	8.80 [7.20 ; 10.90]
Serum albumin, g/L	35.2 [33.4 ; 40.2]
Serum prealbumin, g/L	0.34 [0.30 ; 0.41]
C reactive protein, mg/L	1.9 [1.0 ; 3.8]
Humoral response to mRNA vaccine	
Anti-spike titer before the 3 rd dose, AU/mL	284 [85 ; 856]
Anti-spike titer 1 months after the 3 rd vaccine dose, AU/mL	956 [2268 ; 11801]
Anti-spike titer 3 months after the 3 rd vaccine dose, AU/mL	2032 [647 ; 4093]
Anti-spike titer 6 months after the 3 rd vaccine dose, AU/mL	923 [369 ; 2019]
Time between the 3 rd and the 4 th vaccine dose, days	229 [214 ; 236]
Time between M6 serology post 3 doses and the 4 th vaccine dose, days	49 [42 ; 60]
Time between the 4 th dose and serology, days	15 [14 ; 22]
Anti-spike titer after the 4 th vaccine dose, AU/mL	21883 [10234 ; 42870]
Ratio anti-spike post 4 doses / anti-spike M6 post 3 doses	18.9 [10.2 ; 46.7]

Results are shown as median [interquartile range] for continuous variables, or as number of patients and percentage for categorical variables. Ab: antibody; AU: arbitrary unit. Conversion factor : 1 AU/mL = 1.0288 BAU/mL.

Table S2. Characteristics of the patients with breakthrough Covid-19 after the third or the fourth vaccine dose during the fifth wave pandemic.

Age	Sex	Dialysis modality	Number of doses	Last serology available	Clinical symptoms	Outcome	Likely mode of contamination	Variant	Time between last dose and infection (days)
54	W	HD	3	1457	None	Favorable	HD Center***	-	- **
32	M	HD	3	1810	None	Favorable	HD Center***	-	- **
38	M	HD	3	1062	None	Favorable	HD Center***	Omicron	253
51	M	HD	3	9638	Mild	Favorable	Unknown***	Omicron	243
47	M	PD	4	57117	Mild	Favorable	Household	-	33
66	M	PD	3	53	Severe	Death	-	-	220
80	W	PD	3	0	Mild	Favorable *	-	Omicron	231
69	M	PD	3	5625	Mild	Favorable	-	-	202
83	W	PD	4	10234	None	Favorable	-	-	19

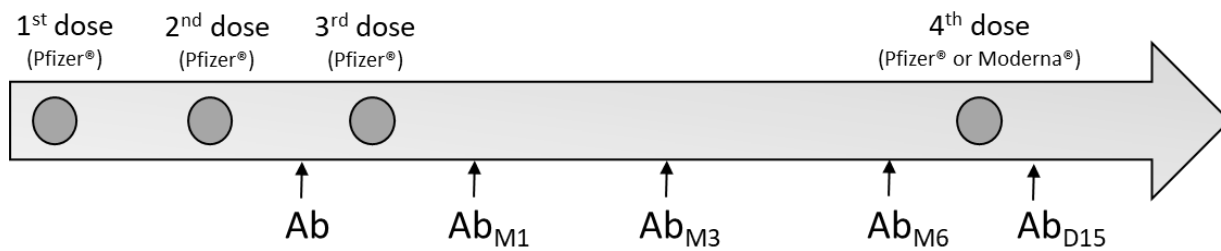
*After monoclonal antibody (Sotrovimab) treatment

**Diagnosis of asymptomatic infection was made on a seroconversion of anti-nucleocapsid

*** All four patients were dialyzed in a common room during the same dialysis session.

Because of PCR shortage or low viral load, some SARS-CoV-2 variants of concern remained unknown.

Figure S1. Vaccination strategy in dialysis patients



SARS-CoV-2 anti-spike antibody (Ab) titer was assessed before the third vaccine dose, at 1 (M1), 3 (M3), 6 (M6) months after the third dose, and 15 days (D15) after the fourth vaccine dose.

Figure S2. Flowchart.

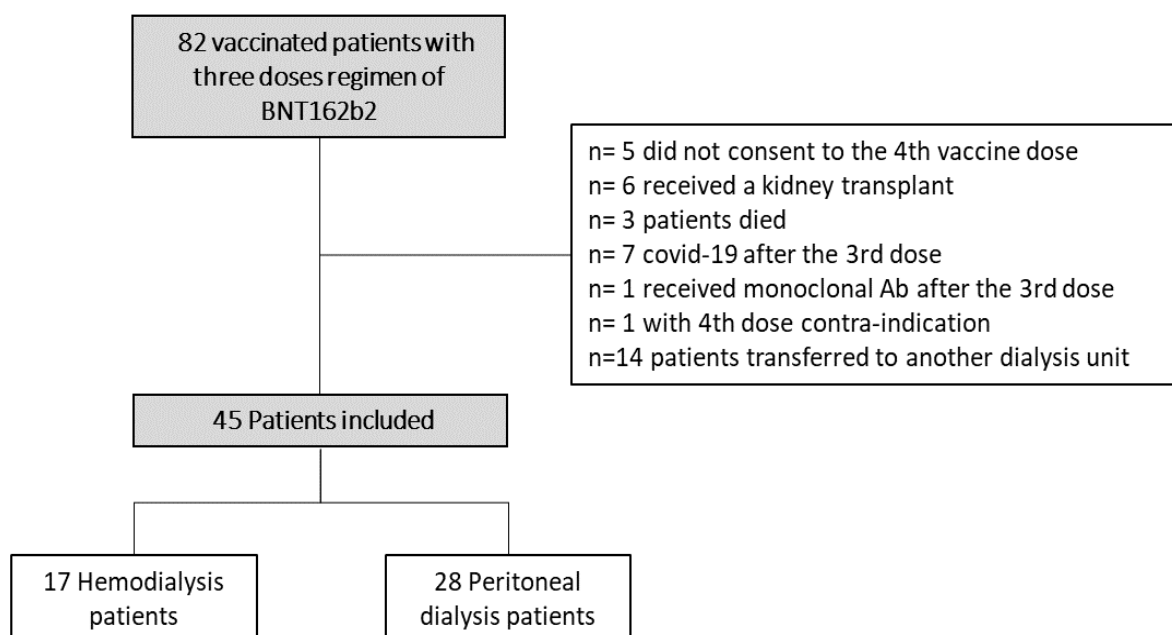


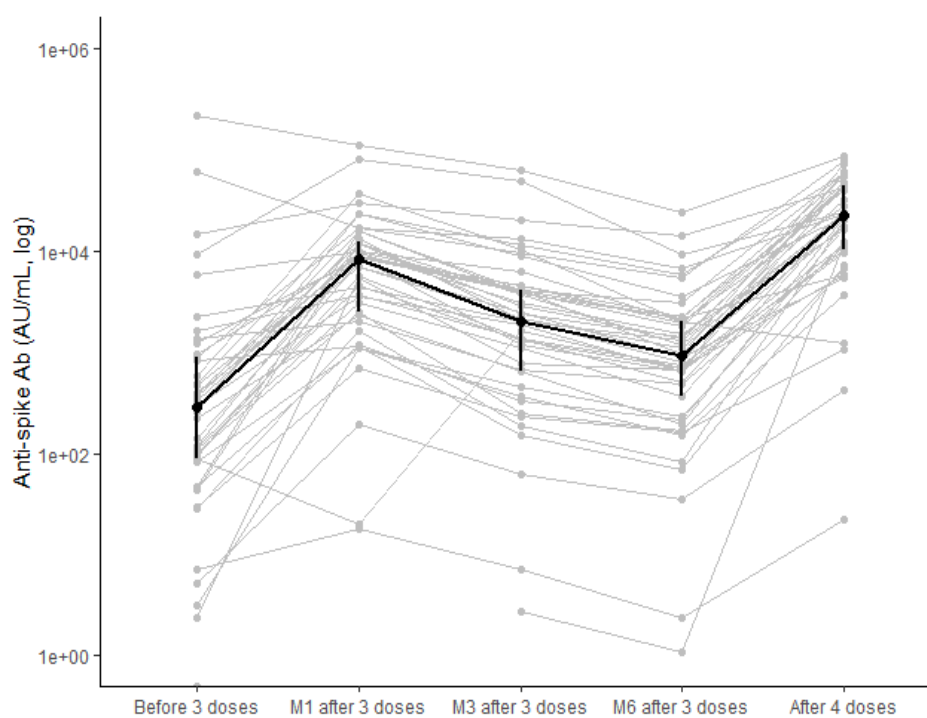
Figure S3. Kinetics of the anti-spike antibodies.

Figure shows the anti-spike antibody levels before, after the third dose of the mRNA BNT162b2 vaccine, and after the fourth vaccine dose (mRNA BNT162b2 Pfizer® or mRNA-1273 Moderna®) in dialysis patients. Grey points represent individual data, and black points represent median with interquartile range. Antibody titers lower than 1 cannot be plotted in the graphs, because of logarithm scale.

Figure S4. Self-reported tolerance.