

154. Humoral immune response after SARS-CoV-2 vaccination in systemic vasculitis - a Target to B cell sub study

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Background: Vasculitis patients are at increased risk of negative outcome of a COVID-19 infection, both due to their disease and due the immunosuppressive treatments used. The aim of this study was to investigate the effect of various immunosuppressive therapies on the humoral immune responses after vaccination against SARS-CoV-2 in patients with systemic vasculitis.

Methods: The Target to B! SARS-CoV-2 study is a multicentre study, taking place in 7 Dutch academic hospitals. We present the data of 84 patients with systemic vasculitis (including large vessel vasculitis and ANCA-associated vasculitis) with various treatment regimens. SARS-CoV-2 receptor binding domain (RBD) antibodies were measured 28 days after completed SARS-CoV-2 vaccination.

Results: The results are demonstrated in table 1. Seven patients had prior SARS-CoV-2 infections, two of these were treated with rituximab (RTX). Six of these patients were seropositive after SARS-CoV-2 vaccination, except for one of the RTX treated patients. The seroconversion rate for the SARS-CoV-2 naive patients were high in patients without immunosuppression (8/8; 100%), whereas patients using immunosuppressive treatment other than RTX exhibited reduced seroconversion rate (30/38 78.9%) and this was even lower in patients using RTX (10/31; 32.3%). The effects of an additional, third vaccination and the B cell number at time of third vaccination on humoral immune responses is under current investigation.

Conclusions: RTX based immunosuppression in systemic vasculitis patients is associated with reduced, but not absent seroconversion rate after SARS-CoV-2 vaccination. Third or booster vaccinations might be beneficial for these patients,

although they might have to be timed properly in relation to RTX administration and B cell recovery.

Disclosures: *Funding by ZonMw* (The Netherlands Organization for Health Research and Development). On behalf of the T2B! immunity against SARS-CoV-2 study group

Table 1

| | anti-CD20(+other(s)) | | corticosteroids | | corticosteroids(+other(s)) | | MTX/MMF/PA/TOC | no systemic immunosuppression | Overall | |
|---------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------------------------|-------------------------------|-----------------------------|-------------------------|
| | no previous COVID-19 (N=31) | previous COVID-19 (N=2) | no previous COVID-19 (N=13) | previous COVID-19 (N=3) | no previous COVID-19 (N=18) | previous COVID-19 (N=2) | no previous COVID-19 (N=7) | no previous COVID-19 (N=8) | no previous COVID-19 (N=77) | previous COVID-19 (N=7) |
| AGE | | | | | | | | | | |
| Mean (SD) | 58.6 (14.0) | 66.0 (9.90) | 66.5 (7.49) | 60.0 (9.54) | 60.6 (8.25) | 48.0 (15.6) | 53.0 (13.9) | 68.4 (9.55) | 60.9 (12.0) | 58.3 (12.0) |
| Median [Q1,Q3] | 59.0 [52.5,67.5] | 66.0 [62.5,69.5] | 66.0 [61.0,72.0] | 55.0 [54.5,63.0] | 60.5 [56.3,67.0] | 48.0 [42.5,53.5] | 54.0 [47.5,60.0] | 68.5 [64.0,75.0] | 62.0 [55.0,69.0] | 59.0 [54.5,65.0] |
| SEX | | | | | | | | | | |
| Male | 18 (58.1%) | 2 (100%) | 10 (76.9%) | 2 (66.7%) | 6 (33.3%) | 1 (50.0%) | 3 (42.9%) | 6 (75.0%) | 43 (55.8%) | 5 (71.4%) |
| Female | 13 (41.9%) | 0 (0%) | 3 (23.1%) | 1 (33.3%) | 12 (66.7%) | 1 (50.0%) | 4 (57.1%) | 2 (25.0%) | 34 (44.2%) | 2 (28.6%) |
| vaccin | | | | | | | | | | |
| Moderna | 5 (16.1%) | 0 (0%) | 1 (7.69%) | 0 (0%) | 2 (11.1%) | 0 (0%) | 1 (14.3%) | 1 (12.5%) | 10 (13.0%) | 0 (0%) |
| AZ | 5 (16.1%) | 0 (0%) | 3 (23.1%) | 0 (0%) | 4 (22.2%) | 0 (0%) | 3 (42.9%) | 1 (12.5%) | 16 (20.8%) | 0 (0%) |
| Pfizer/BioNTech | 21 (67.7%) | 2 (100%) | 9 (69.2%) | 3 (100%) | 12 (66.7%) | 2 (100%) | 3 (42.9%) | 6 (75.0%) | 51 (66.2%) | 7 (100%) |
| ISP | | | | | | | | | | |
| no ISP | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 8 (100%) | 8 (10.4%) | 0 (0%) |
| ISP | 31 (100%) | 2 (100%) | 13 (100%) | 3 (100%) | 18 (100%) | 2 (100%) | 7 (100%) | 0 (0%) | 69 (89.6%) | 7 (100%) |
| diagnosis_VAS | | | | | | | | | | |
| ANCA-vasculitis | 29 (93.5%) | 2 (100%) | 5 (38.5%) | 1 (33.3%) | 14 (77.8%) | 2 (100%) | 3 (42.9%) | 7 (87.5%) | 58 (75.3%) | 5 (71.4%) |
| other vasculitis | 2 (6.45%) | 0 (0%) | 0 (0%) | 0 (0%) | 4 (22.2%) | 0 (0%) | 2 (28.6%) | 0 (0%) | 4 (5.19%) | 0 (0%) |
| large vessel vasculitis | 0 (0%) | 0 (0%) | 8 (61.5%) | 2 (66.7%) | 4 (22.2%) | 0 (0%) | 2 (28.6%) | 1 (12.5%) | 15 (19.5%) | 2 (28.6%) |
| seroconversion_VD1 | | | | | | | | | | |
| seroconversion | 2 (7.69%) | 0 (0%) | 6 (60.0%) | 3 (100%) | 3 (20.0%) | 1 (50.0%) | 1 (16.7%) | 3 (50.0%) | 15 (23.8%) | 4 (57.1%) |
| no seroconversion | 24 (82.3%) | 2 (100%) | 4 (40.0%) | 0 (0%) | 12 (80.0%) | 1 (50.0%) | 5 (83.3%) | 3 (50.0%) | 48 (76.2%) | 3 (42.9%) |
| Missing | 5 (16.1%) | 0 (0%) | 3 (23.1%) | 0 (0%) | 3 (16.7%) | 0 (0%) | 1 (14.3%) | 2 (25.0%) | 14 (18.2%) | 0 (0%) |
| seroconversion_VD2 | | | | | | | | | | |
| seroconversion | 10 (32.3%) | 1 (50.0%) | 11 (84.6%) | 3 (100%) | 13 (72.2%) | 1 (100%) | 6 (85.7%) | 8 (100%) | 48 (62.3%) | 5 (83.3%) |
| no seroconversion | 21 (67.7%) | 1 (50.0%) | 2 (15.4%) | 0 (0%) | 5 (27.8%) | 0 (0%) | 1 (14.3%) | 0 (0%) | 29 (37.7%) | 1 (16.7%) |
| Missing | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 1 (50.0%) | 0 (0%) | 0 (0%) | 0 (0%) | 1 (14.3%) |