**Supplementary appendix Table S1. Univariate and multivariate analysis of factors contributing to cellular immune response after SARS-CoV-2 vaccination in patients with common variable immunodeficiency phenotype.**

| Variable | Cellular immune response present (*n*=20) | Deficient cellular immune response (*n*=8) | Univariate analysis | | Multivariate analysis | |
|---|---|---|---|---|---|---|
| | | | OR | *p* | $e^{\beta}$ | *p* |
| Age, yr; median (IQR) | 48.5 (40.5–70.5) | 61.5 (42–65) | n.a. | 0.709 | n.i. | 0.547 |
| Lymphocytes, $x10^9$ cells/L; median (IQR) | 1.43 (1.07–2.44) | 1.27 (0.90–2.00) | n.a. | 0.354 | n.i. | 0.415 |
| Albumin, g/L; median (IQR) | 45.3 (42.5–48.2) | 45.2 (42.5–46.2) | n.a. | 0.784 | n.i. | 0.601 |
| Creatinine, μmol/L; median (IQR) | 70.5 (56–77) | 77 (63–101) | n.a. | 0.258 | n.i. | 0.062 |
| Immunoglobulin G, mg/L; median (IQR) | 8602 (6339–10743) | 7498 (7004–9950) | n.a. | 1.000 | n.i. | 0.794 |
| Immunoglobulin M, mg/L; median (IQR) | 207 (50–374) | 257 (102–743) | n.a. | 0.304 | n.i. | 0.106 |
| Immunoglobulin A, mg/L; median (IQR) | 50 (50–725) | 68.5 (50–717) | n.a. | 0.901 | n.i. | 0.952 |
| CD3+, $x10^6$/L; median (IQR) | 1063 (856–1940) | 1098 (657–1699) | n.a. | 0.438 | Ex.col. | Ex.col. |
| CD3+, %; median (IQR) | 79.5 (76.5–83.5) | 85.0 (76.5–91.0) | n.a. | 0.354 | n.i. | 0.185 |
| CD3+CD4+, $x10^6$/L; median (IQR) | 648 (467–971) | 408 (349–920) | n.a. | 0.304 | n.i. | 0.725 |
| CD3+CD4+, %; median (IQR) | 42.0 (32.0–46.5) | 43.0 (32.5–53.0) | n.a. | 0.533 | Ex.col. | Ex.col. |
| CD3+CD4+, < $200x10^6$/L; *n* (%) | 1 (5.0) | 0 (0.0) | n.a. | 1.000 | Ex.col. | Ex.col. |
| CD3+CD4+CD45RA, < 10%; *n* (%) | 9 (45.0) | 5 (62.5) | 0.491 (0.091–2.636) | 0.678 | n.i. | 0.472 |
| CD3+CD8+, $x10^6$/L; median (IQR) | 410 (267–861) | 526 (240–782) | n.a. | 1.000 | Ex.col. | Ex.col. |

| | | | | | | |
|---|---|---|---|---|---|---|
| CD3+CD8+, %; median (IQR) | 30.5 (18.5–48.0) | 31.0 (22.0–47.0) | n.a. | 0.862 | n.i. | 0.866 |
| (CD3+CD4+) / (CD3+CD8+), 1; median (IQR) | 1.41 (0.64–2.44) | 1.33 (0.73–2.46) | n.a. | 1.000 | Ex.col. | Ex.col. |
| NK (CD3-CD16+CD56+), x$10^6$/L; median (IQR) | 150 (79–196) | 85 (23–132) | n.a. | 0.136 | n.i. | 0.351 |
| NK (CD3-CD16+CD56+), %; median (IQR) | 7.0 (6.0–13.5) | 4.5 (3.0–14.5) | n.a. | 0.354 | Ex.col. | Ex.col. |
| CD19+, x$10^6$/L; median (IQR) | 145 (40.5–266) | 72 (39–153) | n.a. | 0.258 | Ex.col. | Ex.col. |
| CD19+, %; median (IQR) | 10.5 (2.3–13.0) | 8.0 (2.0–13.5) | n.a. | 0.672 | Ex.col. | Ex.col. |
| CD19+, ≤ 1%; *n* (%) | 3 (15.0) | 2 (25.0) | 0.529 (0.070–3.978) | 0.938 | n.i. | 0.574 |
| Switched memory B cells (CD19+CD27+IgD-IgM-), ≤ 2%; *n* (%) | 10 (50.0) | 5 (62.5) | 0.600 (0.112–3.214) | 0.857 | n.i. | 0.637 |
| Transitional B cells (CD19+CD24hiCD27-CD38hi), < 9 %; *n* (%) | 19 (95.0) | 6 (75.0) | 6.333 (0.485–82.75) | 0.385 | n.i. | 0.136 |
| Activated B cells (CD19+CD21loCD38lo), > 10%; *n* (%) | 0 (0.0) | 1 (12.5) | n.a. | 0.629 | n.i. | 0.116 |
| Absent haemagglutinins; *n* (%) | 6 (31.6) | 2 (25.0) | 1.385 (0.213–8.983) | 1.000 | n.i. | 0.732 |
| *Salmonella Typhi M* vaccine, deficient response; *n* (%) | 17 (85.0) | 7 (87.5) | 0.810 (0.071–9.180) | 1.000 | n.i. | 0.882 |
| Number of days between the vaccine second dose and blood extraction for analysis; median (IQR) | 28 (28–34) | 30 (28–33.5) | n.a. | 0.409 | n.i. | 0.527 |
| Immunoglobulin Replacement Therapy, yes; *n* (%) | 16 (80.0) | 7 (87.5) | 0.571 (0.054–6.079) | 1.000 | n.i. | 0.601 |

IQR; interquartile range; OR, odds ratio; $e^{\beta}$, multivariate odds ratio; n.a, not applicable; n.i., not included in the binary logistic regression equation; Ex.col.; variable excluded in the multivariate analysis to avoid multicollinearity.

**Supplementary appendix Table S2. Univariate and multivariate analysis of factors contributing to cellular and humoral immune response after SARS-CoV-2 vaccination in patients with common variable immunodeficiency phenotype.**

| Variable | Present Cellular and Humoral immune response (*n*=16) | Deficient Cellular or Humoral immune response (*n*=12) | Univariate analysis | | Multivariate analysis | |
|---|---|---|---|---|---|---|
| | | | OR | *p* | $e^{\beta}$ | *p* |
| Age, yr; median (IQR) | 48.5 (39–69) | 61.5 (42–67.5) | n.a. | 0.371 | n.i. | 0.973 |
| Lymphocytes, $x10^9$ cells/L; median (IQR) | 1.43 (1.07–2.44) | 1.38 (0.90–2.35) | n.a. | 0.478 | n.i. | 0.823 |
| Albumin, g/L; median (IQR) | 45.3 (43.3–48.2) | 45.2 (41.8–46.9) | n.a. | 0.507 | n.i. | 0.234 |
| Creatinine, μmol/L; median (IQR) | 70.5 (56–77) | 71 (62.5–84.5) | n.a. | 0.599 | n.i. | 0.256 |
| Immunoglobulin G, mg/L; median (IQR) | 8853 (6011–10743) | 7498 (7150–9950) | n.a. | 0.873 | n.i. | 0.857 |
| Immunoglobulin M, mg/L; median (IQR) | 272 (59–436) | 106 (50–393) | n.a. | 0.631 | n.i. | 0.922 |
| Immunoglobulin A, mg/L; median (IQR) | 135 (50–909) | 50 (50–272) | n.a. | 0.302 | n.i. | 0.766 |
| CD3+, $x10^6$/L; median (IQR) | 1016 (856–1615) | 1204 (656–2005) | n.a. | 0.698 | Ex.col. | Ex.col. |
| CD3+, %; median (IQR) | 79.0 (72.5–82.5) | 83.0 (78.0–91.0) | n.a. | 0.110 | n.i. | 0.393 |
| CD3+CD4+, $x10^6$/L; median (IQR) | 648 (495–996) | 443 (349–680) | n.a. | 0.159 | n.i. | 0.790 |
| CD3+CD4+, %; median (IQR) | 42.5 (36.5–47.5) | 35.5 (28.5–50.0) | n.a. | 0.324 | Ex.col. | Ex.col. |
| CD3+CD4+, < $200x10^6$/L; *n* (%) | 0 (0.0) | 1 (8.3) | n.a. | 0.883 | Ex.col. | Ex.col. |
| CD3+CD4+CD45RA, < 10%; *n* (%) | 7 (58.3) | 7 (43.8) | 1.800 (0.396–8.182) | 0.445 | n.i. | 0.890 |
| CD3+CD8+, $x10^6$/L; median (IQR) | 385 (250–510) | 563 (300–946) | n.a. | 0.347 | Ex.col. | Ex.col. |

| | | | | | | |
|---|---|---|---|---|---|---|
| CD3+CD8+, %; median (IQR) | 25.0 (16.5–40.5) | 42.0 (27.5–51.0) | n.a. | 0.100 | n.i. | 0.958 |
| (CD3+CD4+) / (CD3+CD8+), 1; median (IQR) | 1.80 (0.97–2.69) | 0.82 (0.52–1.84) | n.a. | 0.114 | Ex.col. | Ex.col. |
| NK (CD3-CD16+CD56+), x$10^6$/L; median (IQR) | 150 (68.5–196) | 90 (54.6–159) | n.a. | 0.423 | n.i. | 0.479 |
| NK (CD3-CD16+CD56+), %; median (IQR) | 6.0 (6.0–12.5) | 10.0 (3.0–15.5) | n.a. | 0.873 | Ex.col. | Ex.col. |
| CD19+, x$10^6$/L; median (IQR) | 184 (105–297) | 47.4 (2.7–108) | n.a. | **0.001** | Ex.col. | Ex.col. |
| CD19+, %; median (IQR) | 11.0 (9.0–13.5) | 2.0 (0.5–10.5) | n.a. | **0.013** | Ex.col. | Ex.col. |
| CD19+, ≤ 1%; *n* (%) | 0 (0.0) | 5 (41.7) | n.a. | **0.019** | n.i. | 1.000 |
| Switched memory B cells (CD19+CD27+IgD-IgM-), ≤ 2%; *n* (%) | 6 (37.5) | 9 (75.0) | 0.200 (0.038–1.044) | **0.049** | n.i. | 0.452 |
| Transitional B cells (CD19+CD24hiCD27-CD38hi), < 9 %; *n* (%) | 15 (93.8) | 10 (83.3) | 3.003 (0.239–37.04) | 0.791 | n.i. | 0.163 |
| Activated B cells (CD19+CD21loCD38lo), > 10%; *n* (%) | 0 (0.0) | 1 (8.3) | n.a. | 0.883 | n.i. | 0.134 |
| Absent haemagglutinins; *n* (%) | 4 (26.7) | 4 (33.3) | 0.881 (0.139–3.817) | 1.000 | n.i. | 0.448 |
| *Salmonella Typhi M* vaccine, deficient response; *n* (%) | 14 (87.5) | 11 (91.7) | 0.635 (0.051–7.937) | 1.000 | n.i. | 0.952 |
| Number of days between the vaccine second dose and blood extraction for analysis; median (IQR) | 28 (28–34) | 29 (28–33) | n.a. | 0.664 | n.i. | 0.495 |
| Immunoglobulin Replacement Therapy, yes; *n* (%) | 11 (68.8) | 11 (91.7) | 0.200 (0.020–2.004) | 0.319 | n.i. | 0.519 |

IQR, interquartile range; OR, odds ratio; eβ, multivariate odds ratio; n.a, not applicable; n.i., not included in the binary logistic regression equation; Ex.col.; variable excluded in the multivariate analysis to avoid multicollinearity.

**Supplementary appendix Table S3. Univariate and multivariate analysis of factors contributing to humoral immune response after SARS-CoV-2 vaccination in patients with B-cell depleting therapy.**

| Variable | Present Humoral immune response (*n*=11) | Humoral immune response deficient (*n*=13) | Univariate analysis | | Multivariate analysis | |
|---|---|---|---|---|---|---|
| | | | OR | *p* | $e^{\beta}$ | *p* |
| Age, yr; median (IQR) | 47 (44–55) | 52 (47–56) | n.a. | 0.277 | n.i. | 0.113 |
| Lymphocytes, $x10^9$ cells/L; median (IQR) | 1.42 (1.16–1.65) | 1.57 (1.13–1.99) | n.a. | 0.531 | n.i. | 0.161 |
| Albumin, g/L; median (IQR) | 46.4 (44.0–47.1) | 47.1 (44.3–48.1) | n.a. | 0.207 | n.i. | 0.434 |
| Creatinine, μmol/L; median (IQR) | 59 (54–74) | 58 (53–67) | n.a. | 0.608 | n.i. | 0.810 |
| Immunoglobulin G, mg/L; median (IQR) | 7283 (6275–9383) | 7849 (7253–8522) | n.a. | 1.000 | n.i. | 0.970 |
| Immunoglobulin M, mg/L; median (IQR) | 662 (349–971) | 608 (231–706) | n.a. | 0.277 | n.i. | 0.176 |
| Immunoglobulin A, mg/L; median (IQR) | 1731 (1563–2023) | 1478 (1398–3154) | n.a. | 0.569 | n.i. | 0.485 |
| CD3+, $x10^6$/L; median (IQR) | 1132 (902–1269) | 1386 (974–1518) | n.a. | 0.331 | n.i. | 0.216 |
| CD3+, %; median (IQR) | 88.0 (77.5–91.0) | 87.0 (79.0–91.0) | n.a. | 1.000 | Ex.col. | Ex.col. |
| CD3+CD4+, $x10^6$/L; median (IQR) | 733 (683–928) | 816 (689–1274) | n.a. | 0.649 | Ex.col. | Ex.col. |
| CD3+CD4+, %; median (IQR) | 61.0 (54.0–65.5) | 54.0 (49.0–64.0) | n.a. | 0.424 | n.i. | 0.154 |
| CD3+CD4+, < $200x10^6$/L; *n* (%) | 0 (0.0) | 0 (0.0) | n.a. | n.a. | Ex.col. | Ex.col. |
| CD3+CD4+CD45RA, < 10%; *n* (%) | 1 (7.7) | 1 (9.1) | 1.000 (0.055–18.09) | 1.000 | n.i. | 0.467 |
| CD3+CD8+, $x10^6$/L; median (IQR) | 276 (179–482) | 339 (213–557) | n.a. | 0.303 | Ex.col. | Ex.col. |

| | | | | | | |
|---|---|---|---|---|---|---|
| CD3+CD8+, %; median (IQR) | 20.0 (14.0–27.0) | 59 (54–74) | n.a. | 0.361 | n.i. | 0.181 |
| (CD3+CD4+) / (CD3+CD8+), 1; median (IQR) | 2.95 (2.00–3.93) | 2.03 (1.46–3.25) | n.a. | 0.339 | Ex.col. | Ex.col. |
| NK (CD3-CD16+CD56+), x$10^6$/L; median (IQR) | 204 (92.1–271) | 230 (116–300) | n.a. | 0.776 | n.i. | 0.276 |
| NK (CD3-CD16+CD56+), %; median (IQR) | 10.0 (6.5–22.0) | 11.0 (7.0–19.0) | n.a. | 0.955 | Ex.col. | Ex.col. |
| CD19+, x$10^6$/L; median (IQR) | 0 (0.0) | 0 (0.0) | n.a. | 1.000 | Ex.col. | Ex.col. |
| CD19+, %; median (IQR) | 0.0 (0.0–0.0) | 0.0 (0.0–0.0) | n.a. | 1.000 | Ex.col. | Ex.col. |
| CD19+, ≤ 1%; *n* (%) | 11 (100.0) | 13 (100.0) | n.a. | n.a. | n.a | n.a |
| Switched memory B cells (CD19+CD27+IgD-IgM-), ≤ 2%; *n* (%) | 11 (100.0) | 13 (100.0) | n.a. | n.a. | n.a | n.a |
| Transitional B cells (CD19+CD24hiCD27-CD38hi), < 9 %; *n* (%) | 11 (100.0) | 13 (100.0) | n.a. | n.a. | n.a | n.a |
| Activated B cells (CD19+CD21loCD38lo), > 10 %; *n* (%) | 0 (0.0) | 0 (0.0) | n.a. | n.a. | n.a | n.a |
| Absent haemagglutinins; *n* (%) | 4 (36.4) | 1 (8.3) | 6.286 (0.577–68.42) | 0.262 | n.i. | 0.596 |
| *Salmonella Typhi M* vaccine, deficient response; *n* (%) | 5 (83.3) | 13 (100.0) | n.a. | 0.684 | n.i. | 0.146 |
| Number of days between the vaccine second dose and blood extraction for analysis; median (IQR) | 30 (29–33.5) | 29 (28–34) | n.a. | 0.874 | n.i. | 0.692 |
| Number of days between the rituximab/ocrelizumab therapy and the first dose of the vaccine; median (IQR) | 116 (92–125) | 121 (95–149) | n.a. | 0.681 | n.i. | 0.405 |
| Rituximab, yes; *n* (%) | 2 (18.2) | 5 (38.5) | 0.356 (0.053–2.368) | 0.523 | n.i. | 0.732 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Ocrelizumab, yes; *n* (%) | 9 (81.8) | 8 (61.5) | 2.813 (0.422–18.74) | 0.523 | n.i. | 0.732 |

IQR, interquartile range; OR, odds ratio; $e^{\beta}$, multivariate odds ratio; n.a, not applicable; n.i., not included in the binary logistic regression equation; Ex.col.; variable excluded in the multivariate analysis to avoid multicollinearity.

**Supplementary appendix Table S4. Univariate and multivariate analysis of factors contributing to cellular immune response after SARS-CoV-2 vaccination in patients with B-cell depleting therapy.**

| Variable | Cellular immune response present (*n*=23) | Deficient cellular immune response (*n*=1) | Univariate analysis | | Multivariate analysis | |
|---|---|---|---|---|---|---|
| | | | OR | *p* | $e^{\beta}$ | *P* |
| Age, yr; median (IQR) | 50 (46–55.5) | 59 | n.a. | 0.333 | n.i. | 0.345 |
| Lymphocytes, $x10^9$ cells/L; median (IQR) | 1.48 (1.18–1.78) | 1.07 | n.a. | 0.417 | n.i. | 0.485 |
| Albumin, g/L; median (IQR) | 46.8 (44.0–47.6) | 47.4 | n.a. | 0.583 | n.i. | 0.437 |
| Creatinine, μmol/L; median (IQR) | 59 (54.5–71.5) | 47 | n.a. | 0.167 | n.i. | 0.299 |
| Immunoglobulin G, mg/L; median (IQR) | 7822 (6759–9019) | 7849 | n.a. | 1.000 | n.i. | 0.921 |
| Immunoglobulin M, mg/L; median (IQR) | 609 (291–781) | 436 | n.a. | 0.833 | n.i. | 0.649 |
| Immunoglobulin A, mg/L; median (IQR) | 1674 (1432–2503) | 1603 | n.a. | 1.000 | n.i. | 0.851 |
| CD3+, $x10^6$/L; median (IQR) | 1265 (940–1474) | 974 | n.a. | 0.667 | Ex.col. | Ex.col. |
| CD3+, %; median (IQR) | 87.0 (291–781) | 91.0 | n.a. | 0.500 | n.i. | 0.586 |
| CD3+CD4+, $x10^6$/L; median (IQR) | 787 (691–1133) | 514 | n.a. | 0.333 | n.i. | 0.241 |
| CD3+CD4+, %; median (IQR) | 60.0 (50.5–65.0) | 48.0 | n.a. | 0.417 | Ex.col. | Ex.col. |
| CD3+CD4+, < $200x10^6$/L; *n* (%) | 0 (0.0) | 0 (0.0) | n.a. | n.a. | Ex.col. | Ex.col. |
| CD3+CD4+CD45RA, < 10%; *n* (%) | 2 (8.7) | 0 (0.0) | n.a. | 1.000 | n.i. | 0.803 |
| CD3+CD8+, $x10^6$/L; median (IQR) | 279 (202–537) | 417 | n.a. | 0.833 | Ex.col. | Ex.col. |
| CD3+CD8+, %; median (IQR) | 23.0 (14.0–30.5) | 39.0 | n.a. | 0.083 | n.i. | 0.115 |

| | | | | | | |
|---|---|---|---|---|---|---|
| (CD3+CD4+) / (CD3+CD8+), 1; median (IQR) | 2.85 (1.63–3.93) | 1.23 | n.a. | 0.129 | Ex.col. | Ex.col. |
| NK (CD3-CD16+CD56+), x$10^6$/L; median (IQR) | 230 (113–295) | 75 | n.a. | 0.417 | n.i. | 0.328 |
| NK (CD3-CD16+CD56+), %; median (IQR) | 11.0 (7.0–22.0) | 7.0 | n.a. | 0.583 | Ex.col. | Ex.col. |
| CD19+, x$10^6$/L; median (IQR) | 0 (0–0) | 0 (0.0) | n.a. | 1.000 | Ex.col. | Ex.col. |
| CD19+, %; median (IQR) | 0.0 (0.0–0.0) | 0.0 | n.a. | 1.000 | Ex.col. | Ex.col. |
| CD19+, ≤ 1%; *n* (%) | 23 (100.0) | 1 (100.0) | n.a. | n.a. | n.a | n.a |
| Switched memory B cells (CD19+CD27+IgD-IgM-), ≤ 2%; *n* (%) | 23 (100.0) | 1 (100.0) | n.a. | n.a. | n.a | n.a |
| Transitional B cells (CD19+CD24hiCD27-CD38hi), < 9 %; *n* (%) | 23 (100.0) | 1 (100.0) | n.a. | n.a. | n.a | n.a |
| Activated B cells (CD19+CD21loCD38lo), > 10%; *n* (%) | 0 (0.0) | 0 (0.0) | n.a. | n.a. | n.a | n.a |
| Absent haemagglutinins; *n* (%) | 5 (22.7) | 0 (0.0) | n.a. | 1.000 | n.i. | 0.716 |
| *Salmonella Typhi M* vaccine, deficient response; *n* (%) | 17 (94.4) | 1 (100.0) | n.a. | 1.000 | n.i. | 0.803 |
| Number of days between the vaccine second dose and blood extraction for analysis; median (IQR) | 29 (28–33.5) | 34 | n.a. | 0.833 | n.i. | 0.556 |
| Number of days between the rituximab/ocrelizumab therapy and the first dose of the vaccine; median (IQR) | 118 (96–139) | 114 | n.a. | 0.875 | n.i. | 0.699 |
| Rituximab, yes; *n* (%) | 6 (26.1) | 1 (100.0) | n.a. | 0.640 | n.i. | 0.197 |
| Ocrelizumab, yes; *n* (%) | 17 (73.9) | 0 (0.0) | n.a. | 0.640 | n.i. | 0.197 |

IQR, interquartile range; OR, odds ratio; $e^{\beta}$, multivariate odds ratio; n.a, not applicable; n.i., not included in the binary logistic regression equation; Ex.col.; variable excluded in the multivariate analysis to avoid multicollinearity.

**Supplementary appendix Table S5. Univariate and multivariate analysis of factors contributing to cellular and humoral immune response after SARS-CoV-2 vaccination in patients with B-cell depleting therapy.**

| Variable | Present Cellular and Humoral immune response (*n*=11) | Deficient Cellular or Humoral immune response (*n*=13) | Univariate analysis | | Multivariate analysis | |
|---|---|---|---|---|---|---|
| | | | OR | *p* | $e^{\beta}$ | *p* |
| Age, yr; median (IQR) | 47 (44–55) | 52 (47–56) | n.a. | 0.277 | n.i. | 0.113 |
| Lymphocytes, $x10^9$ cells/L; median (IQR) | 1.42 (1.16–1.65) | 1.57 (1.13–1.99) | n.a. | 0.531 | n.i. | 0.161 |
| Albumin, g/L; median (IQR) | 46.4 (44.0–47.1) | 46.4 (44.0–48.1) | n.a. | 0.207 | n.i. | 0.434 |
| Creatinine, μmol/L; median (IQR) | 59 (54–74) | 58 (53–67) | n.a. | 0.608 | n.i. | 0.810 |
| Immunoglobulin G, mg/L; median (IQR) | 7283 (6275–9383) | 7849 (7253–8522) | n.a. | 1.000 | n.i. | 0.970 |
| Immunoglobulin M, mg/L; median (IQR) | 662 (349–971) | 608 (231–706) | n.a. | 0.277 | n.i. | 0.176 |
| Immunoglobulin A, mg/L; median (IQR) | 1731 (1563–2023) | 1478 (1397–3154) | n.a. | 0.569 | n.i. | 0.485 |
| CD3+, $x10^6$/L; median (IQR) | 1132 (902–1269) | 1386 (974–1518) | n.a. | 0.331 | n.i. | 0.216 |
| CD3+, %; median (IQR) | 88.0 (77.5–91.0) | 87.0 (79.0–91.0) | n.a. | 1.000 | Ex.col. | Ex.col. |
| CD3+CD4+, $x10^6$/L; median (IQR) | 733 (683–928) | 816 (689–1274) | n.a. | 0.649 | Ex.col. | Ex.col. |
| CD3+CD4+, %; median (IQR) | 61.0 (54.0–65.5) | 54.0 (49.0–64.0) | n.a. | 0.424 | n.i. | 0.154 |
| CD3+CD4+, < $200x10^6$/L; *n* (%) | 0 (0.0) | 0 (0.0) | n.a. | n.a. | Ex.col. | Ex.col. |
| CD3+CD4+CD45RA, < 10%; *n* (%) | 1 (9.1) | 1 (7.7) | 1.200 (0.066–21.74) | 1.000 | n.i. | 0.467 |
| CD3+CD8+, $x10^6$/L; median (IQR) | 276 (179–482) | 339 (213–557) | n.a. | 0.303 | n.i. | 0.181 |

| | | | | | | |
|---|---|---|---|---|---|---|
| CD3+CD8+, %; median (IQR) | 20.0 (14.0–27.0) | 28.0 (16.0–32.0) | n.a. | 0.361 | Ex.col. | Ex.col. |
| (CD3+CD4+) / (CD3+CD8+), 1; median (IQR) | 2.03 (1.46–3.25) | 2.95 (2.43–3.93) | n.a. | 0.339 | Ex.col. | Ex.col. |
| NK (CD3-CD16+CD56+), x$10^6$/L; median (IQR) | 204 (92–271) | 230 (116–300) | n.a. | 0.776 | n.i. | 0.276 |
| NK (CD3-CD16+CD56+), %; median (IQR) | 10.0 (6.5–22.0) | 11.0 (7.0–19.0) | n.a. | 0.955 | Ex.col. | Ex.col. |
| CD19+, x$10^6$/L; median (IQR) | 0 (0–0) | 0 (0.0) | n.a. | 1.000 | Ex.col. | Ex.col. |
| CD19+, %; median (IQR) | 0.0 (0.0–0.0) | 0.0 (0.0–0.0) | n.a. | 1.000 | Ex.col. | Ex.col. |
| CD19+, ≤ 1%; *n* (%) | 11 (100.0) | 13 (100.0) | n.a. | n.a. | n.a | n.a |
| Switched memory B cells (CD19+CD27+IgD-IgM-), ≤ 2%; *n* (%) | 11 (100.0) | 13 (100.0) | n.a. | n.a. | n.a | n.a |
| Transitional B cells (CD19+CD24hiCD27-CD38hi), < 9 %; *n* (%) | 11 (100.0) | 13 (100.0) | n.a. | n.a. | n.a | n.a |
| Activated B cells (CD19+CD21loCD38lo), > 10%; *n* (%) | 0 (0.0) | 0 (0.0) | n.a. | n.a. | n.a | n.a |
| Absent haemagglutinins; *n* (%) | 4 (36.4) | 1 (8.3) | 6.289 (0.577–66.66) | 0.262 | n.i. | 0.596 |
| *Salmonella Typhi M* vaccine, deficient response; *n* (%) | 5 (83.3) | 13 (100.0) | n.a. | 0.684 | n.i. | 0.146 |
| Number of days between the vaccine second dose and blood extraction for analysis; median (IQR) | 30 (29–33.5) | 29 (28–34) | n.a. | 0.691 | n.i. | 0.692 |
| Number of days between the rituximab/ocrelizumab therapy and the first dose of the vaccine; median (IQR) | 115 (97–125) | 122 (96–147) | n.a. | 0.705 | n.i. | 0.689 |
| Rituximab, yes; *n* (%) | 2 (18.2) | 5 (38.5) | 0.355 (0.053–2.369) | 0.523 | n.i. | 0.732 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Ocrelizumab, yes; *n* (%) | 9 (91.8) | 8 (61.5) | 2.809 (0.422–18.87) | 0.523 | n.i. | 0.732 |

IQR, interquartile range; OR, odds ratio; $e^{\beta}$, multivariate odds ratio; n.a, not applicable; n.i., not included in the binary logistic regression equation; Ex.col.; variable excluded in the multivariate analysis to avoid multicollinearity.

**Supplementary appendix Table S6. Adverse events related to SARS-CoV-2 vaccine administration.**

| Total Adverse Events | Number | Adverse Events After 1st Dose | Number | Adverse Events After 2nd Dose | Number |
|---|---|---|---|---|---|
| Pain/redness/swelling at the injection site | 38 | Pain/redness/swelling at the injection site | 17 | Pain/redness/swelling at the injection site | 21 |
| General discomfort | 30 | General discomfort | 5 | General discomfort | 25 |
| Fever | 21 | Fever | 1 | Fever | 20 |
| Arthromyalgia | 10 | Arthromyalgia | 3 | Arthromyalgia | 7 |
| Headache | 8 | Headache | 2 | Headache | 6 |
| Low-grade fever | 8 | Low-grade fever | 0 | Low-grade fever | 8 |
| Asthenia/weakness | 8 | Asthenia/weakness | 0 | Asthenia/weakness | 8 |
| Dysthermia | 5 | Dysthermia | 2 | Dysthermia | 3 |
| Shortness of breath | 2 | Shortness of breath | 1 | Shortness of breath | 1 |
| Cough | 2 | Cough | 1 | Cough | 1 |
| Paraesthesia | 2 | Paraesthesia | 1 | Paraesthesia | 1 |
| Sickness/Nausea | 2 | Sickness/Nausea | 0 | Sickness/Nausea | 2 |
| Chills | 2 | Chills | 0 | Chills | 2 |
| Temporal worsening of neurological focality | 2 | Temporal worsening of neurological focality | 0 | Temporal worsening of neurological focality | 2 |
| Dizziness | 1 | Dizziness | 1 | Dizziness | 0 |
| Itching/pruritus | 1 | Itching/pruritus | 0 | Itching/pruritus | 1 |
| Total AE Number | 142 | Total AE after 1$^{st}$ Dose | 34 | Total AE After 2$^{nd}$ Dose | 108 |

AE, adverse event.

**Supplementary figure 1.** IgG anti-S titers (A) and percentage of humoral response (B) depending on the CD3+ cells in patients with common variable immunodeficiency phenotype.