

## CORRESPONDENCE

## Antibody response to BNT162b2 SARS-CoV-2 mRNA vaccine is not influenced by AB0 blood group in subjects with transfusion-dependent thalassemia

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To the Editor,

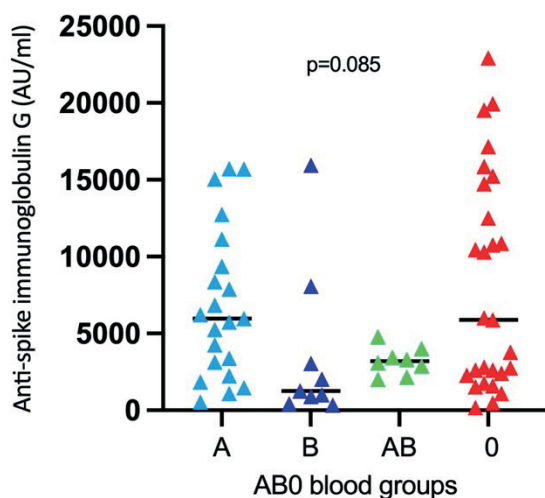
Studies have investigated a possible relationship between AB0 blood groups and susceptibility to SARS-CoV-2 infection or poor outcome due to coronavirus disease 2019 (COVID-19). Particularly, blood group 0 has been reported as a potential protective factor (1), but results are indeed controversial (2). Interestingly, two papers recently published also speculated about the correlation between AB0 blood group and levels of antibodies after SARS-CoV-2 infection. In the first article, lower titers of anti-nucleocapsid and neutralizing antibodies were reported in 430 subjects with COVID-19 (268 convalescent plasma donors and 162 inpatients) from types 0 and B than the types A and AB (3); in the latter, based on 202 eligible convalescent plasma donors, individuals with blood group B showed higher neutralizing antibodies levels against SARS-CoV-2 compared with subjects of other blood groups, particularly blood group 0 (4).

Aiming to explore possible differences in antibody levels among AB0 blood groups after anti SARS-CoV-2 vaccination, rather than after infection, Vicentini et al. (5) conducted a cross-sectional study among 85 medical students at the University of Turin. Evaluation of anti-spike IgG antibody titers was performed 2 weeks after two doses of BNT162b2 SARS-CoV-2 mRNA vaccine and no significant differences

in antibody levels were reported according to AB0 blood groups.

We wish to report here briefly our experience on this last topic, but regarding transfusion-dependent subjects with thalassemia (TDT), within the context of a case-control study of serological response after two doses of BNT162b2 anti-SARS-CoV-2 mRNA vaccine study we conducted in TDT patients, to evaluate possible differences with healthy controls (Sgherza et al., manuscript in preparation). TDT patients received two doses of COVID-19 mRNA vaccine (Pfizer-BioNTech) on days 1 and 21 between 1 April and 15 May 2021. Subjects with previous SARS-CoV-2 infection were excluded. Quantitative determination of anti-spike IgG antibodies was performed four weeks after the second dose of vaccine using a commercially available Abbott immunoassay. Results were reported as arbitrary units (AU)/ml. Comparisons between AB0 blood groups were performed using Kruskal-Wallis test. Statistical analyses were carried out using GraphPad Prism version 9.3.1 (GraphPad Software Inc., San Diego, CA, USA). Informed consent was obtained prior to the collection of data and specimens.

Overall, 65 TDT patients [mean (range) age 43.7 (19–77) years] were enrolled, 21 of whom (32.3%) having blood group A, 9 (13.8%) group B, 8 (12.3%) group AB, 27 (41.6%) group 0. All subjects achieved a titer greater than 50 AU/mL and were therefore all



**Figure 1.** Anti-Spike IgG antibodies (AU/ml) titers measured 4 weeks after the second dose of BNT162b2 SARS-CoV-2 mRNA vaccine, according to ABO blood groups. No significant differences were identified (Kruskal–Wallis test).

considered “responders”, according to the manufacturer’s indication. Median antibody titers were heterogeneous among ABO blood groups [A: 5,971 (range: 528–15,710); B: 1,263 (341–15,940); AB: 3,207 (2,000–4,787); O: 5,894 (181–22,930)]. However, no statistically significant differences were identified (Figure 1).

Moreover, we did not find any correlation between some patients’ features, such as age ( $r=0.108$ ,  $p=0.392$ ) and serum ferritin levels ( $r=0.109$ ,  $p=0.397$ ), and anti-spike IgG antibodies titers in different ABO blood groups and ongoing iron chelation therapies. Therefore, in our experience, magnitude of anti-body response after two doses of anti-SARS-CoV-2 vaccine

was not correlated to different ABO groups in TDT patients, thus confirming data previously reported in healthy subjects.

**Conflicts of interest:** Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article.

## References

1. Liu N, Zhang T, Ma L et al. The impact of ABO blood group on COVID-19 infection risk and mortality: A systematic review and meta-analysis. *Blood Rev.* 2021 Jul;48:100785.
2. Ishaq U, Malik A, Malik J et al. Association of ABO blood group with COVID-19 severity, acute phase reactants and mortality. *PLoS One.* 2021 Dec 14;16(12):e0261432.
3. de Freitas DV, Bonet-Bub C, Yokoyama APH et al. Anti-A and SARS-CoV-2: an intriguing association. *Vox Sang.* 2021;116:557–63.
4. Bloch EM, Patel EU, Marshall C et al. ABO blood group and SARS-CoV-2 antibody response in a convalescent donor population. *Vox Sang.* 2021;116:766–73.
5. Vicentini C, Bordino V, Cornio AR et al. Does ABO blood group influence antibody response to SARS-CoV-2 vaccination? *Vox Sang.* 2021 Dec 28.

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