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# Safety and tolerability of mRNA COVID-19 vaccines in people with antiphospholipid antibodies

Published Online
October 20, 2021
https://doi.org/10.1016/
S2665-9913(21)00320-9

Vaccines represent a cornerstone in controlling the COVID-19 pandemic. The availability of data on the immunogenicity and safety of vaccines in patients with autoimmune diseases is progressively increasing.[1–3] However, some concerns have been raised regarding the safety of the vaccines in patients with antiphospholipid antibodies, as these antibodies have been reported to appear following both infection and vaccination and have been identified in patients with COVID-19.[4] Although a few cases of thrombocytopenia and thrombotic events with clinical features resembling antiphospholipid syndrome have been reported in recipients of either adenoviral vector-based or mRNA-based COVID-19 vaccines,[5] a pathogenic link and, more critically, the clinical relevance of antiphospholipid antibodies in these clinical settings have yet to be fully elucidated.

| | Surveyed patients (n=102) |
|---|---|
| Age (years) | 52 (18–77) |
| Female | 87 (85%) |
| Male | 15 (15%) |
| Antiphospholipid antibody carrier | 50 (49%) |
| Antiphospholipid syndrome | 52 (51%) |
| Primary antiphospholipid syndrome | 38 (37%) |
| Antiphospholipid syndrome associated to SLE | 14 (14%) |
| Thrombotic antiphospholipid syndrome | 42 (41%) |
| Obstetric antiphospholipid syndrome | 10 (10%) |
| Antiphospholipid antibody profile | |
| Lupus anticoagulants | 77 (76%) |
| Anticardiolipin antibodies (IgG/IgM) | 67 (66%) |
| Anti-β2-glycoprotein 1 antibodies (IgG/IgM) | 56 (55%) |

Data are n (%) or median (range). SLE=systemic lupus erythematosus.

***Table*: Demographic and clinical characteristics of surveyed patients**

To assess the safety and tolerability of COVID-19 vaccines in people with antiphospholipid antibodies, we surveyed 102 vaccinated patients at the Center of Research of Immunopathology and Rare Diseases (San Giovannni Bosco Hub Hospital, Turin, Italy), of whom 52 had a diagnosis of antiphospholipid syndrome and 50 have anti-phospholipid antibodies without clinical features of the syndrome (table). 67 (66%) of 102 patients received the Comirnaty BNT162b2 mRNA (tozinameran, Pfizer–BioNTech) vaccine and 35 (34%) received the Spikevax mRNA 1273 (elasomeran, Moderna) vaccine. 89 (87%) participants had received two doses of vaccine and 13 (13%) had received a single dose of vaccine because of a previous PCR-proven SARS-CoV-2 infection. The study was reviewed and approved by Comitato Etico Interaziendale Città Di Torino. Participants provided written informed consent to participate in this study.

78 (76%) of 102 patients had at least one side-effect: 45 (44%) reported pain at the injection site, 37 (36%) fatigue, and 29 (28%) headache. Symptoms were transient and self-limiting within 10 days. There were no differences in frequencies of systemic side-effects between the two mRNA vaccines. Symptoms were reported as mild in 72 (71%) patients and moderate in 30 (29%). No symptoms compatible with new thrombotic events were reported. The rate of reactions was not different when comparing those after the first and second doses. Only one patient with thrombotic antiphospholipid syndrome and a known history of mild thrombocytopenia (110 000/mm³), who was on long-term vitamin K antagonist therapy, reported the occurrence of self-limiting purpuric lesions on her calves 10 days after the second dose. Blood tests were unremarkable except for a single transient fluctuation of platelet count (88 000/mm³). Consequent investigations (during an observation time of 5 months) showed a platelet count persistently above 100 000/mm³.

Although more data are needed, including from long-term follow-up, immunogenicity data from our survey show that mRNA COVID-19 vaccines seem to have an acceptable safety and tolerability profile in patients with antiphospholipid antibodies. No major adverse effects nor thrombotic events were reported. Side-effects seem frequent, but mild and transient in nature.

We declare no competing interests.

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1 Boekel L, Steenhuis M, Hooijberg F, et al. Antibody development after COVID-19 vaccination in patients with autoimmune diseases in the Netherlands: a substudy of data from two prospective cohort studies. *Lancet Rheumatol* 2021; published online Aug 6. https://doi.org/10.1016/S2665-9913(21)00222-8.

2 Rotondo C, Cantatore FP, Fornaro M, et al. Preliminary data on post market safety profiles of COVID 19 vaccines in rheumatic diseases: assessments on various vaccines in use, different rheumatic disease subtypes, and immunosuppressive therapies: a two-centers study. *Vaccines (Basel)* 2021; **9:** 730.

3 Medeiros-Ribeiro AC, Aikawa NE, Saad CGS, et al. Immunogenicity and safety of the CoronaVac inactivated vaccine in patients with autoimmune rheumatic diseases: a phase 4 trial. *Nat Med* 2021; published online July 30. https://doi.org/10.1038/s41591-021-01469-5.

4 Sciascia S, Radin M, Bazzan M, et al. Antiphospholipid antibodies and infection: *non nova sed nove. Front Immunol* 2021; **12:** 687534.

5 Klein NP, Lewis N, Goddard K, et al. Surveillance for adverse events after COVID-19 mRNA vaccination. *JAMA* 2021; **326:** 1390–99