Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Antibody responses induced by Sputnik V vaccine in individuals previously infected with SARS-CoV-2

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The new wave of COVID-19 in Europe and the emergence of a new variant of concern called Omicron, first detected in southern African countries then subsequently in Europe, Asia and America, demands once again rapid and equitable access to vaccines especially in low-income countries. In stark contrast with a large number of published papers related to the vaccines BNT162b2 (Pfizer/BioNTech), mRNA-1273 (Moderna/NIAID), and (ChAdOx1-S Astrazeneca/ University of Oxford), very few reports have been published referring to the Sputnik-V vaccine (Gamaleya National Center of Epidemiology and Microbiology). Sputnik-V is being used in more than 70 countries, mainly in South America, Africa and Asia, but has not been yet approved for emergency use by the World Health Organization. In The Lancet Regional Health—Americas, Chahla RE and colleagues[1] report a long-term analysis of the antibody response in 602 health workers from Argentina vaccinated by Sputnik V between December 2020 and July 2021. Confirming previous results published in phase I/II studies,[2] the authors report seroconversion levels of 97% at 7 days after the application of the second dose. Follow-up of vaccinated individuals showed that the serum levels of IgG anti-RBD antibodies remain detectable in 94% of individuals at 90 days after vaccination, decreasing this percentage to 31% at 180 days after vaccination.

The study focused its attention on the evaluation of the immune response in health workers infected before vaccination. In this regard, it is important to note that 44% of individuals recruited in the cohort showed significant levels of anti-SARS-Cov-2 IgG antibodies, reflecting the notorious impact of the pandemic on health workers in Argentina. Interestingly, and consistent with previous observations made with mRNA vaccines,[3,4] the authors found that the levels of IgG anti-RBD antibodies measured 14 days after the administration of the first vaccine dose reached values 4.1-fold higher in previously infected individuals, compared with non-infected ones. Administration of the second dose further increase the antibody titers in both groups remaining higher in previously infected individuals at 28 and 90 days after vaccination but decreasing to similar levels at 180 days after vaccination. Interestingly, despite the similar decrease in the titers of IgG anti-RBD antibodies evaluated by ELISA in both groups, the authors found that the serum neutralizing antibody titers assessed using VSV expressing wild-type, alpha, beta, or E484K mutant SARS-CoV-2 spikes were almost 10 fold higher in previously infected individuals, compared with non-infected ones. This observation might reflect the maturation of the antibody response that results in an increased affinity of the antibodies and, consequently, in the enhancement of their neutralizing potency, a phenomenon already described in the immune response induced by both, SARS-CoV2 infection and vaccines.[5,6]

Finally, the authors explored whether the increased potency of the antibody response induced by vaccination occurred similarly in all infected individuals. They found that it was not influenced by the time elapsed between infection and vaccination (at least up to 120 days), but was strongly influenced by the baseline levels of antibodies induced by the infection itself. Only those infected individuals with antibody titers above a certain threshold in response to SARS-CoV-2 infection (> 1:400) could mount a higher quality response to Sputnik V vaccination, compared with uninfected individuals.

As the authors themselves acknowledge, the levels of IgG anti-RBD antibodies observed in Sputnik-V vaccinated individuals reported in the present study are lower than those originally reported in the Sputnik-V phase I/II trial.[2] As the authors explain, these differences could be due to the use of different ELISA platforms in each case. In fact, when comparing the levels of antibodies in the plasma of convalescent patients from SARS-CoV-2 infection, the authors also found lower titles compared with those reported in the Sputnik-V phase I/II trial.

Overall, the data presented by Chahla RE and colleagues provide new and valuable information regarding the persistence of antibody response induced by Sputnik-V vaccination in either previously infected or uninfected individuals. This new information together with recently published data[7-10] not only confirm the immunogenicity of the Sputnik-V vaccine but also provides valuable information to define vaccination

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strategies in low-income countries, where only 6.2% of the population has received at least one dose.

Declaration of Interests

None

Contributors

Both the authors contributed equally to the article.

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