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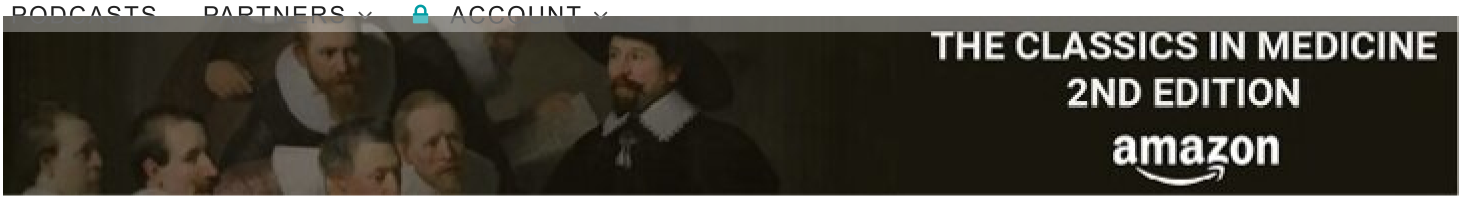

SARS-CoV-2 vaccination side effects associated with increased neutralizing antibodies

by **Jayden Berdugo** and **Kiera Liblik** — June 27, 2024 in **Infectious Disease**, **Public Health**

Reading Time: 3 mins read

1. In a prospective cohort study of individuals vaccinated against SARS-CoV-2, symptomatic patients had higher levels of neutralizing antibodies (nAB) compared to those who did not report any symptoms.

2. For every 1°C increase in skin temperature, there was an increase in nAB value one month later and a greater increase in nAB six months later.

Evidence Rating Level: 1 (Excellent)

Study Rundown: The benefits of the COVID-19 vaccines, including reduced severity, are shown to degrade over time, necessitating booster doses. Despite plentiful supply, at the time of the study, only 17% of participating adults had received a booster, citing concern about side effects as a major worry. This study hoped to reframe the illness felt post booster shot vaccination as signs of a healthy immune response through measurements of long-term nAB. Some of the biometric measurements included skin temperature (ST), respiratory rate (RR), and heart rate (HR). Self-reported daily as well as the vaccine ple who had previously been infected with COVID-19. Overall, participants e iencing symptoms after the SARS-Cov-2 vaccination had higher levels of nAB compared to individuals who did not experience any symptoms.

Click here to read the study in AIM

In-Depth [prospective cohort]: To learn if short-term side effects of the SARS-CoV-2 vaccine are associated with a nAB response, a prospective cohort study was conducted. It included 363 participants in the symptom data collection and 147 in the biometric-related data analysis. These participants met the eligibility criteria of being 18 years or older, had no immune-related diseases (such as autoimmune conditions), nor active cancer and were not taking medications known to affect the immune system (such as steroids). If participants had a positive test result on the anti-spike IgG antibody test or the anti-nucleocapsid IgG antibody test, they were excluded from the study as this meant they had previously been infected by SARS-CoV-2. Other reasons for exclusion included previous vaccination with the Ad26.COV2.S, or incomplete or missing data. A total of 91.5% of participants who reported having experienced at least one symptom after the first dose also reported having at least one symptom after the second dose. Similarly, 74.1% of participants who experienced no symptoms after the first dose, reported at least one symptom after the second. There was a significant interaction between outcome time points and vaccination-induced change in nightly 99th-percentile ST at the second dose but not at the first. Each 1°C increase in skin temperature was associated with a 1.8-fold increase in nAB after 1 month and a 3.1-fold increase in nAB after 6 months. By combining self-reported symptoms and biometric data to predictive nAB models, this study showed that after a second dose of vaccine, symptoms had a 1.4-1.6 factor increase in nAB levels. The nAB level was approximately double on average in participants reporting seven symptoms compared to zero symptoms. In summary, SARS-Cov-2 vaccination side effects were associated with elevated nAB levels.

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