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【 LETTERS TO THE EDITOR 】

Changes in SARS-CoV-2 Antibody Titers from Three to Nine Months after Administration of the BNT162b2 mRNA Vaccine among Healthcare Workers in Japan: A Prospective Study

Key words: Japan, healthcare workers, SARS-CoV-2 antibody titer, vaccine

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To the Editor, We reported changes in severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) antibody titers from three to six months after the administration of the BNT162b2 messenger ribonucleic acid (mRNA) vaccine among healthcare workers in Japan (1). At 3 to 9 months, the changes in the SARS-CoV-2 antibody titers in all subjects (N=331) and by age group [20-29 (N=118), 30-39 (N=86), 40-49 (N=79), and ≥50 (N=48) years old] were -81.1%±14.3%, -80.8%±19.6%, -82.7%±8.7%, -80.1%±11.0%, and -80.7%±10.9%, respectively, with similar rates of change across all age groups. Among all subjects, 2.7% had negative SARS-CoV-2 antibody titers. In addition, the SARS-CoV-2 antibody titers peaked at about one month after administration (2). Our findings demonstrated a considerable reduction in SARS-CoV-2 antibody titers in all subjects. At nine months after the administration of the BNT162b2 mRNA vaccine, neutralizing antibodies against COVID-19 (NAbs) were significantly reduced compared to those at one, three, and six months (3). Despite the recent spread of the Omicron variant of COVID-19 throughout Japan, our findings showed that at six months after the administration of the BNT162b2 mRNA vaccine, none of the subjects had NAb activities against this variant. Furthermore, the mRNA COVID-19 vaccine booster produced NAb activities against the Omicron variant in over 90% of subjects at 1-4 weeks after administration (4), suggesting that the NAbs were correlated SARS-CoV-2 antibodies. The predicted cut-off values of SARS-CoV-2 antibody titers for positive neutralization of the Delta and Omicron pseudoviruses were 1,591 and 10,300 U/mL, respectively (5). Our results suggest that COVID-19 vaccine booster administration should be promptly promoted and delivered to all adults.

Author's disclosure of potential Conflicts of Interest (COI).
Takeshi Mochizuki: Honoraria, Astellas, Bristol-Myers, Chugai, Daiichi Sankyo, Eli Lilly, Janssen, Mochida and UCB. Koichiro Yano: Honoraria, AbbVie, Astellas, Ayumi, Bristol-Meyers, Eisai, Hisamitsu, Mochida and Takeda. Katsunori Ikari: Honoraria, AbbVie, Asahi Kasei, Astellas, Bristol-Myers, Chugai, Eisai, Eli Lilly, Janssen, Takeda, Tanabe-Mitsubishi, Pfizer and UCB.

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