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A cohort study on the immunogenicity and safety of the inactivated SARS-CoV-2 vaccine (BBIBP-CorV) in patients with breast cancer: Does trastuzumab interfere with the outcome?

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Background: The COVID-19 pandemic has led to more than 260 million infections and 550,000 deaths as of early December 2021. Worldwide. Vaccinating people against COVID-19 is considered as the best approach to overcome the pandemic since COVID-19 vaccines are effective and can reduce the risk of getting and spreading the virus. However, their efficacy and safety in patients with underlying disease such as cancers have not been approved yet. Here we report a cohort study on immunogenicity and safety of the inactivated SARS-CoV-2 vaccine (BBIBP-CorV) in patients with breast cancer, who were vaccinated as a part of a national plan for vaccination of patients with special diseases.

Methods: In this multi-institutional cohort study, a total of 160 breast cancer patients (mean age of 50.01±11.5 years old) were assessed for the SARS-CoV-2 Anti-Spike IgG and SARS-CoV Anti RBD IgG by ELISA after two doses of 0.5 mL inactivated COVID-19 vaccine (BBIBP-CorV). All patients were followed-up for three months for clinical COVID-19 infection based on either PCR results or imaging findings. Common Terminology Criteria for Adverse Events were used to assess the side-effects.

Results: In the patient group, 93.3% were seropositive for either of SARS-CoV-2 anti-spike or SARS-CoV-2 anti RBD IgG after the second vaccine dose. The prevalence of COVID-19 infection after vaccination was 0.7%, 0% and 0% for the first, second and third month of the follow-up period. The most common local and systemic side-effects were injection site pain (22.3%) and fever (24.3%). The rate of either SARS-CoV-2 Spike protein or neutralizing antibody seropositivity was only 75.0% in patients treated with trastuzumab, compared to 96.7% in patients of the follow-up group.

Conclusions: Taken together, obtained results confirm that approved vaccines can help patients with cancer to protect themselves from COVID-19 infection. These findings highlighted the importance of early vaccination in disease with high risk including cancer, especially patients who are currently receiving treatment for cancer that may arise complications. Long-term complications were not discussed in the current study. Further research is needed, however, to confirm these findings in a larger and more diverse cohort of cancer patients.

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