Evaluation of the Effectiveness of COVID-19 Vaccination on Serum IgG, and IgM Levels in Saudi Arabia

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ABSTRACT

Three types of COVID-19 vaccines have FDA approval and are used worldwide; their immune response sturdiness is limited, and the level of serum IgG and IgM will help in determining the effectiveness of the vaccines against COVID-19 viruses. The point of this study was to look into the humoral immune response to SARS-Cov-2 by checking the levels of IgG and IgM in the serum of people who had been vaccinated. The study also includes a comparison between two authorized vaccines used at the beginning of the pandemic, BNT162b2 and AZD1222. Methods: A total of 88 samples were collected 3-4 weeks after vaccination from different groups of confirmed COVID-19 vaccinated to evaluate the concentrations of IgG and IgM using ELISA, groups including control subjects who did not receive any vaccine, vaccinated pre-COVID-19 infection, vaccinated post-COVID-19 infection, healthy vaccinated one dose, and healthy vaccinated two doses. Results: vaccinated pre-COVID-19 infection groups showed a significant increase in IgG and IgM compared to control, additionally, healthy vaccinated groups (with one or two doses) showed a significant increase in IgG. However, post-COVID-19 infection vaccination showed no significant difference. Conclusion: IgG and IgM concentrations increased as a response to the vaccine, and vaccination with a booster dose showed a higher elevation. Moreover, vaccination prior to infection may mitigate the severity of symptoms after infection. Finally, both BNT162b2 and AZD1222 are effective in boosting immunity, and their side effects need further studies in the long term.

Key words: COVID-19, SARS-CoV-2, Immunoglobulins, IgG, IgM, vaccines.

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