Proceedings of the ISymRU 2021
Medicine and Public Health: Poster Presentation

Immunogenicity and Vaccine Efficacy of Covid-19 Vaccines in Sri Lanka

De Silva S. S[1], Eugene E. J[1]

Abstract

The widespread morbidity and mortality associated with the coronavirus disease 2019 (COVID-19) pandemic precipitated the most extensive and rapid global vaccine development programme in history. This literature review is focused on the vaccine efficacy (VE) and immunogenicity of COVID-19 vaccines administered in Sri Lanka such as Sinopharm (BBIBP-CorV), AstraZeneca (AZD1222/chAdOx1), Pfizer (BNT162b2), Moderna (mRNA-1273) and Sputnik V (Gam-COVID-Vac). The descending order of the vaccines based on the resultant ratios of neutralising antibody is as follows - mRNA-1273, BNT162b2, AZD1222, Sputnik V, BBIBP-CorV. The efficacies of currently used vaccines) range from 50.38% to 95%. VE of Sinopharm, AstraZeneca, Moderna, Pfizer and Sputnik V were 79.34%, 90%, 94.1%, 95% and 91.6% respectively. In response to COVID-19 global vaccine development 102 candidate vaccines were developed on seven different platforms (viral vectored vaccine, recombinant protein vaccine, activated vaccine and live attenuated vaccine, DNA, RNA, virus inactivated) out of which 15 vaccines have already been approved for emergency use. According to WHO five vaccines are used among the Sri Lankan population. Namely, Sinopharm (BBIBP-CorV), AstraZeneca (AZD1222/chAdOx1), Pfizer (BNT162b2), Moderna (mRNA-1273) and sputnik V (Gam-COVID-Vac). This literature review mainly focuses on the immunogenicity, safety and efficacy of the above-mentioned vaccines administered in Sri Lanka. The VE of Sinopharm, AstraZeneca, Moderna, Pfizer and Sputnik V were 79.34%, 90%, 94.1%, 95% and 91.6% respectively. The importance of neutralizing antibodies in imparting protection against COVID-19 has been supported by prior investigations on monoclonal antibodies and convalescent sera. Multiple studies have found that antibody responses established by natural infection with coronaviruses (e.g., SARS CoV-2) may decline significantly over time. However, reinfection in these patients has been rare, implying that immunological memory may play a key role in preventing re-infections. As a result, the formation of a recallable specific immune response to SARS-CoV-2, rather than the antibody level, may be the key to an effective COVID-19 vaccine. This literature review shows immunogenicity and vaccine efficacy plays vital role determining the safety and effectiveness of the vaccine but immunogenicity is determined by ethnicity, cellular immunity and neutral antibodies.

Keywords: *COVID-19 vaccines, vaccine efficacy, immunogenicity, neutralising antibody*

[1] Department of Biomedical Science, Faculty of Information Technology and Sciences, International College of Business and Technology, Colombo 04, Sri Lanka

Corresponding author: sherikadesilvaa@gmail.com, mcjeugene@yahoo.com