SINOPHARM VACCINE… three years later

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February 9, 2024 marked three years since the Sinopharm vaccine was first administered in Peru, with healthcare professionals being the initial recipients [1]. This milestone occurred amid ongoing confusion and growing fear of the SARS-CoV-2 among Peruvians. Nevertheless, there was hope that science, through its tools, could offer the population the long-awaited light at the end of the pandemic tunnel. The Centro de Investigación de Virología (Virology Research Center) at Universidad de San Martín de Porres (CIV-USMP) has reviewed relevant information both nationally and internationally and has reflected on the three years that have elapsed since the first dose of the Sinopharm BBIBP-CorV vaccine was administered in our country.

First, a few months after the start of immunization with BBIBP-CorV—a conventional inactivated vaccine developed by the Chinese company Sinopharm—the CIV-USMP conducted a study (in 2021) to assess the neutralizing antibody levels in a group of vaccinated healthcare workers. Specifically, antibody concentrations were compared between two groups: those with a COVID-19 diagnosis prior to vaccination and those vaccinated without a history of the disease. This descriptive, cross-sectional study revealed a significant increase in neutralizing antibodies among vaccinated individuals with prior SARS-CoV-2 infection, thus concluding that vaccination enhanced immunity in these patients. As a result, even months before its official implementation, this study highlighted the potential benefits of administering a booster dose using another vaccine platform [2].

Second, as the pandemic progressed, numerous studies worldwide examined COVID-19 vaccine effects not only in clinical research but also in everyday contexts. In March 2023, a meta-analysis was published based on studies estimating protection from prior infections, categorized by variant and time since infection. The authors reviewed cohort and case-control studies assessing the reduction in COVID-19 risk among individuals with prior SARS-CoV-2 infection compared to those without. They found that protection from prior infections remained high and stable, even after 40 weeks. In this regard, they suggested that immunity from prior infection should be considered together with vaccine-induced protection. They even suggested that immunity from prior infection may be at least equivalent to, if not greater than, that provided by two doses of mRNA vaccines [3]. This raises a thought-provoking question: Is the "end of the pandemic" primarily due to the global vaccination coverage, the global high infection rates that may have led to herd immunity, the evolution of the virus to the Omicron variant, or a combination of all these factors?

Third, at the national level, a retrospective cohort study of health professionals who received the Sinopharm BBIBP-CorV vaccine was published in March 2023. This study aimed to evaluate the vaccine's effectiveness in preventing viral infection and mortality among healthcare professionals, using data from national healthcare worker health records, SARS-CoV-2 laboratory testing records and death records. The study included 606,772 healthcare workers. Among fully immunized workers, the vaccine showed an efficacy of 83.6 % for preventing all-cause mortality, 88.7 % for preventing COVID-19-related mortality and 40.3 % for preventing SARS-CoV-2 infection. These findings indicate the Sinopharm vaccine high effectiveness in preventing both all-cause and COVID-19-related mortality among fully immunized healthcare workers [4]. It is worth noting that Bosques and Corral define effectiveness studies as those involving "real-world" patients with multiple diagnoses or needs. In contrast, efficacy studies provide results in a controlled experimental research trial [5]. Therefore, vaccine efficacy measures the vaccine's ability to protect against infection, symptomatic disease, hospitalization and death [6].

Evidence gathered from both the general population and specific groups, including the three previously mentioned, provides extremely valuable information for making better decisions on vaccination policies, particularly in relation to COVID-19. In this regard, it is essential to adequately design or analyze various studies to ensure their internal and external validity, as well as their clinical relevance [7]. Clarifying these concepts is vital when making public health decisions. Additionally, it is necessary to clearly define criteria for identifying infected and/or sick patients in order to determine whether observed effectiveness pertains to the infection or disease prevention. It is important to remember that, unlike disease, infection is characterized by the presence of a microorganism, detected by laboratory testing and a specific immune response in the host but without clinical manifestations.

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Vaccination has undoubtedly played a key role in eradicating or controlling numerous infectious diseases. During the first half of 2021, amid the pandemic, COVID-19 vaccines saved countless lives. However, the high infection rates seen in the second half of the year resulted in natural, robust and long-lasting immunity. With the emergence of the omicron variant, we could see the light at the end of the pandemic tunnel and, since December 2023, we shifted from a critical phase into an endemic state that, following the historical experience of the Spanish flu, may persist for many decades.

At this moment, we have both the opportunity and the duty to review and reevaluate public health policies to face the pandemic. It is essential to strengthen public health strategies from academia, based on data and scientific evidence, to analyze and explain to society what has happened and identify areas for improvement.

In light of this, after reviewing the studies cited above and three years following the introduction of the Sinopharm vaccine in Peru, we can conclude that natural immunity acquired from prior infection is robust and long-lasting, as is the "hybrid" immunity gained from vaccines and prior infection. In contrast, immunity acquired only through vaccination offers good protection, though for a limited period of time.

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