

COVID-19 Vaccine and the Necessity to Identify Its Side Effects

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Dear Editor

Since the beginning of the COVID-19 pandemic, the cessation of its prevalence and the reduction of the COVID-19 virus circulation has been considered. So it was necessary to limit the people's social and professional life in one place as much as possible to make a highly effective vaccine. Most global governments, physicians, health care workers, and other employees use techniques and methods to control the COVID-19 pandemic, including supportive medications, isolation, quarantine, wearing masks, social distancing, and ultimately disinfection.¹ However, all these techniques alone are not enough to control the COVID-19 pandemic without the help of a highly effective vaccine. This issue prompted the world to develop an effective vaccine for COVID-19.

According to the World Health Organization, as of December 20, 2020, more than 74,879,038 infected cases and 1,676,236 deaths have been reported worldwide due to COVID-19.² Now, one year after the outbreak of SARS-COV-2, there is no specific medication approved for the treatment of COVID-19, although it seems several potential therapies had more or less promising results.³⁻⁵ However, more efforts have been made to produce a highly effective vaccine and control the COVID-19 pandemic. Nevertheless, some questions arise here, like whether a rapid production and development of the vaccine can be done with complete confidence. And if the vaccine can prevent the possible side effects of COVID-19 not only in the short term but also in the medium and long term.

People with COVID-19 infection have very low immunity to reinfection, and only 16.7 percent retain antibodies for 3 months. This principle necessitates the production of a vaccine that can protect people against COVID-19 for at least 1-2 years.⁶

Although the WHO announced in February 2020 that it is not expected to find a vaccine against the acute respiratory syndrome virus (SARS-COV-2)—the virus that causes COVID-19—in less than 18 months, in November 2020, Pfizer and Moderna announced positive results of the effectiveness of their vaccine against COVID-19.

Given that it usually takes 12-15 years to develop and commercialize a vaccine, accelerated efforts to develop a vaccine against Acute Respiratory Syndrome (SARS-COV-2) show that the safety testing was performed in one year,⁷ a much shorter time than usual. Therefore, it is not easy to know the medium- and long-term analytical safety of the proposed vaccines with such an intensive time validity. It is one of the issues that should be considered in using these vaccines against SARS-COV-2.

Also, due to the shorter production period of the COVID-19 vaccine compared to other available vaccines (one year versus 12 years) and the pandemic emergency in the world (SARS-COV-2), the vaccines may not have been tested separately in the age groups of children, adults, and the elderly. So, the side effects of the COVID-19 vaccine may not have been identified in any age group. Therefore, this article suggests performing field trials separately in each age group to identify the possible side effects of COVID-19 vaccine injection.

The next important issue is the emergence of rare side effects of COVID-19 vaccination. The smaller the sample size of people vaccinated and tested, the less likely they are to develop these side effects. So because phase 3

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of vaccine production for the COVID-19 vaccine has not been administered, performing the field trials at higher sample sizes could help identify the rare side effects of the COVID-19 vaccine. Finally, because the vaccine production process is shorter than usual, the likelihood of identifying medium- and long-term side effects is very low. So, this article suggests that vaccinated individuals should be prepared for the possibility of medium- and long-term complications before vaccination.

It is important to note that large-scale immunization operations increase the likelihood of adverse side effects. Also, the occurrence of side effects or reactions following vaccination is a medical event which occurs after immunization and appears to be due to immunization.^{8, 9} Therefore, the emergence of side effects of the COVID-19 vaccine in the large-scale population will not be unexpected. In this case, the health care systems should be prepared to properly respond to the possible side effects of receiving the COVID-19 vaccine in all age groups and to provide the necessary measures to deal with short-term, medium-term, and long-term complications. It is also necessary that health personnel provide essential training and information about the possible side effects occurring after the injection of the COVID-19 vaccine to the recipients.

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