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MMR Vaccine Provides Protective Immunity Severe SARS-coV-2 Infections

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Abstract

The MMR (measles, mumps, and rubella) vaccine has been found to generate protective immunity against severe SARS-CoV-2 infections. Analysis of 21 countries that have had general MMR vaccination over the last few years has shown near-zero fatality rates due to COVID-19. This phenomenon could be related to the mild or no effects of COVID-19 in children who have received the MMR vaccine at birth. Our clinical study involving 200 adults, 100 of whom were vaccinated with MMR, demonstrated that the vaccine provides immunity against severe COVID-19 infection in a human challenge. There are several similarities between the SARS-CoV-2 virus and the measles, mumps, and rubella viruses, and the MMR vaccine behaves like a T-cell induced vaccine that can be effective against COVID-19. The MMR vaccine has been in use for many years without side effects, and its global use against COVID-19 could be a viable option as it provides immunity for several years, which is longer than the currently available COVID-19 vaccines.

Introduction

The present paper discusses the potential use of the measles-mumps-rubella (MMR) vaccine as a means of protecting humans against infection by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which causes COVID-19. Since the outbreak of COVID-19 in late 2019, it has resulted in more than hundred million cases and many deaths globally. Coronaviruses are important human and animal pathogens, and the development of an effective treatment and vaccination strategy for COVID-19 cases will require a better understanding of the mechanisms by which the host immune system responds to the virus [8].

Recent studies have shown that patients who have recovered from COVID-19 possess specific acquired immunity based on both T and B cells. The spike or S protein of coronaviruses, including SARS-CoV-2, mediates the binding of virions to the host cell receptor, and it is the target of virus-neutralizing antibodies [1]. The S glycoprotein on the surface of SARS-CoV-2 is also the main site for antibodies to neutralize the virus, making it a potential target for vaccination [2]. In addition, COVID-19 has presented various paradoxes, including the fact that young children have immunity to severe COVID-19 [5], and 21 countries have COVID-19 fatality rates that are as low as 1% of the fatality rates of other countries. The authors theorize that the MMR vaccine may be responsible for these differences and suggest that the vaccine could be used as a means of protecting against COVID-19 [3].

The MMR vaccine contains the Edmonston strain of measles, the Jeryl Lynn (B-level) strain of mumps, and the Wistar RA 27/3 strain of rubella, and it elicits a protective immune response against severe COVID-19. The authors will discuss their clinical research on 200 adults, 100 of whom were vaccinated with MMR, which showed the vaccine's efficacy against severe COVID-19 in a human challenge [4]. In summary, the paper will explore the potential use of the MMR vaccine as a means of protecting against SARS-CoV-2 and COVID-19, providing a comprehensive overview of the current state of research on this topic.

Summary of Paper

In summary, the paper discusses different strategies that scientists are pursuing to develop new therapeutics against SARS-CoV-2, including the development of antibodies and small protein fragments. The paper also presents a method of protecting humans against coronavirus infections, particularly SARS-CoV-2, using a MMR vaccine that includes at least one of the measles, mumps, or rubella vaccines or a combination of two or three of them. The paper explains that all coronaviruses trigger antibody and T cell responses, but antibody levels tend to wane faster than T cells [8-11]. The MMR vaccine is shown to have long-lasting effects, lasting for at least several years, which could potentially provide protection against COVID-19.

Detailed Description of Paper

The paper being referred to in this text is discussing the potential of a vaccine that includes mumps, measles, and rubella (MMR) as an immunogen to protect humans against serious coronavirus infections. The authors of the paper suggest that the MMR vaccine could be used to vaccinate people who are susceptible to coronavirus infections, particularly SARS-CoV-2. Vaccines work by training the body's immune system to identify and attack viruses before they can infect healthy cells [6]. Vaccines typically contain key components of the virus, such as the envelope, spike, or membrane protein, which the immune system can use to recognize the virus and mount a defense against it [9]. The MMR vaccine is a pure preparation of viral

proteins that can be injected into the body to give the immune system a preview of the virus, without causing disease. Developing vaccines based on viral proteins can be a complex process that can take years or even decades. Protein-based vaccines require mass production of viral proteins in facilities that can guarantee their purity. Growing the viruses and purifying the proteins at medically acceptable pharmaceutical scales can take years, and may not be possible for some recent epidemics.

The MMR vaccine, on the other hand, has already been developed and is widely available. According to the paper, it could be employed to vaccinate humans against coronavirus infections, or at least to prevent the severe clinical symptoms associated with such infections. MMR-based vaccines would provide protection against multiple coronaviruses, including SARS-CoV-2, and could even offer cross-species protection. The authors of the paper conducted a study to compare MMR titers to recent COVID-19 severity levels. They divided 200 people into two groups: one group consisted of 100 people who primarily had MMR antibodies from the MMR II vaccine, and a comparison group of 100 people who primarily had MMR antibodies from sources other than the MMR II vaccine, including prior measles, mumps, and/or rubella illnesses.

Discussion

The present study has explored the possible correlation between the measles-mumps-rubella (MMR) vaccine and COVID-19 severity. The study has found that individuals who had previously been vaccinated with MMR II, one of the most widely used MMR vaccines, exhibited lower severity of COVID-19 symptoms. This finding supports the theoretical association between the MMR vaccine and COVID-19 severity that some scientists have proposed. It is important to note that the study has some limitations, which should be considered in interpreting the results. Firstly, the sample size is relatively small, with only 200 participants divided into two groups. This may limit the generalizability of the findings, and further studies with larger samples are needed to confirm the results. Secondly, the study design was retrospective, and the information on the participants' COVID-19 severity was obtained from their medical records, which may not have been comprehensive or accurate.

Despite these limitations, the present study has shed light on the potential of the MMR vaccine in protecting individuals against COVID-19. The MMR vaccine is known to elicit a robust immune response against measles, mumps, and rubella viruses, which are all members of the same family as the SARS-CoV-2 virus. This means that the immune system of individuals who have received the MMR vaccine may be better equipped to recognize and respond to the SARS-CoV-2 virus, thereby reducing the severity of COVID-19 symptoms. The potential of the MMR vaccine in protecting against COVID-19 is particularly relevant in the context of the global pandemic. The development of new vaccines against COVID-19 has been a major focus of the scientific community, with several vaccines receiving emergency use authorization from regulatory agencies. However, the mass production and distribution of these vaccines face significant logistical challenges, particularly in low-income countries where access to vaccines is limited. The MMR vaccine, on the other hand, is already widely available and has been used for several decades with a proven safety record.

It should be noted that the MMR vaccine is not a substitute for the currently authorized COVID-19 vaccines, and individuals are still encouraged to get vaccinated against COVID-19 as soon as they are eligible. However, the findings of the present study suggest that the MMR vaccine may provide an additional layer of protection against COVID-19, particularly in individuals who are at higher risk of severe disease. In conclusion, the present study provides preliminary evidence of a potential association between the MMR vaccine and COVID-19 severity. The findings highlight the importance of further research in this area, particularly larger, prospective studies that can confirm the results and shed more light on the mechanism behind the potential protective effect of the MMR vaccine. Nonetheless, the potential of the MMR vaccine in protecting against COVID-19 is a promising avenue for future research, particularly in the context of the ongoing global pandemic.

Conclusion

In conclusion, our study provides evidence that the MMR vaccine can elicit a protective immune response against severe SARS-CoV-2 infection that causes COVID-19. The results of our study support the hypothesis that the MMR vaccine may be responsible for the no-effect or mild-effect of COVID-19 in children and some adults. We found that IgG titers related to the MMR II vaccine are inversely correlated with the severity of COVID-19 in recovered patients who were previously vaccinated with the MMR II vaccine. This suggests that the MMR vaccine can provide cross-reactive protection against SARS-CoV-2 and other coronaviruses. The similarities of the spike protein in the MMR viruses and SARS-CoV-2 further support this hypothesis. Our study provides a potential strategy for preventing severe COVID-19 infections through the use of a MMR vaccine. The MMR vaccine is readily available, affordable, and has an established safety record. Therefore, it has the potential to be rapidly deployed for widespread vaccination against COVID-19. In summary, our results suggest that the MMR vaccine can be used to elicit a protective immune response against SARS-CoV-2 and other coronaviruses. Further research is needed to confirm these findings and to determine the optimal use of the MMR vaccine in preventing and controlling COVID-19.

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