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Investigation of rheumatoid factor in the serum of individuals vaccinated with Corona AstraZeneca and Pfizer vaccines

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Abstract

A family of viruses known as coronaviruses is responsible for illnesses like the common cold, Middle East respiratory syndrome (MERS), and severe acute respiratory syndrome (SARS). 2019 saw the discovery of a novel coronavirus that was responsible for an outbreak of a disease with Chinese origins.The virus is referred to as SARS-CoV-2, or severe acute respiratory syndrome coronavirus. Novel coronavirus disease 2019 (COVID-19) is the name given to the ensuing illness. The World Health Organization proclaimed the coronavirus (COVID-19) to be a worldwide pandemic in March 2020. The current study was conducted in the laboratories of the Faculty of Science \ Sumer University. We collected 100 blood samples from students of the Faculty of Science 53 males and 47 females who had taken corona vaccines, such as the Pfizer and AstraZeneca vaccines. The time of collecting samples was in January 2022 after they had taken the last dose of vaccines. The current study aimed to find out whether the different corona vaccines have an effect on the appearance of rheumatoid factor in the serum of the study sample students. Where the results were compared with a control sample of 100 apparently healthy people who were not vaccinated with Corona vaccines. The current results showed that all students did not have rheumatoid factor, meaning that the test result was negative. Therefore, it is possible, through this study, to conclude, at the level of the sample taken, that there is no effect of the vaccines used for the Corona virus on the appearance of the rheumatoid factor.

Keywords:COVID-19,Vaccine,AstraZenca,RF, Pfizer.

Introduction

Vaccines are the best way to reduce infection-related morbidity and mortality, and they rank among the most important medical advancements. However, vaccinations are administered to healthy subjects in order to prevent infections, in contrast to antimicrobial medications that are used to treat ill patients; as a result, side effects become extremely relevant[1]. However, the unquestionable benefits of vaccinations to humanity—namely, the avoidance of diseases that pose a substantial financial, societal, and familial burden—do not exceed the drawbacks. Educating individuals, families, and communities on the properties of vaccines helps them understand the risks and benefits of each shot, thereby improving population health[2] .

Globally,COVID-19 epidemic has claimed all world . Recent developments in immunization techniques and the global approval of many vaccines have successfully lowered the rates of death and morbidity. Nonetheless, worries about vaccine safety have been often seen, and there are multiple accounts of autoimmune illnesses developing suddenly after COVID-19 vaccine. Molecular mimicry, autoantibody synthesis, and the function of certain vaccines.Adjuvants appear to be among the elements that are attributed to the autoimmune phenomena [3]. The vaccines developed by Pfizer and BioNTech utilise messenger RNA (mRNA) technology. The coronavirus contains a surface characteristic called a S protein that resembles spikes. [4, 5] . Pfizer and BioNTech have created vaccinations that make use of messenger RNA (mRNA) technology. The coronavirus has a feature on its surface that resembles spikes called a S protein. [6]. On the other hand, the PfizerBioNTech

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vaccine (BNT162b2) is thought to be the first mRNA-based vaccination against infectious diseases to be approved for use in humans. Following vaccination, a number of adverse effects could appear as immunity increases. Muscle soreness, weariness, headache, fever, swelling, joint pain, tingling, itching, and chills were a few of the symptoms. [7] .

Materials and Methods

We retrospectively collected (100) samples of venous blood from persons who were vaccinated with COVID-19 vaccine, and we obtained the serum. All were tested before they vaccinated to estimate if they were positive or negative to RF . Also we collected 100 samples of venous blood from persons who were healty (not vaccinated with any type of COVID-19 vaccine .All studied groups were estimated according to the the manufacture company kit. The experiment established on the reaction between patient serum antibodies , known as RF; and antigen consequent from globulin gamma. Agglutination will be observable if factor are found in serum, after the serum mixed with the reagent. The samples and reagents were at 25C .We take one drop of each negative and positive controls into isolated circles on the test slide and put 50 µL of the serum.At the beginning we mixed reagent on mixer and add 50 µL beside the sample . Then we mixedwith a stirrer, after that we put the slide on a rotator . for 2minutes to read the results.

Results

1- The results of the current study, showed the rate of females vaccinated , there were no significant difference between healthy control group and patients at $p < .05$. .The chi-square statistic is= 0.0201. The p-value is=.887397 not significant at $p < .05$,as seem in table (1).

Table 1 Distribution of study group according to the sex

Sex	Patients	%	Control	%
Male	53	52.5%	52	52.5%
Female	47	47.5%	48	47.5%
Total	100	100%	100	100%
Chi-Square = 0.0201		Df= 199		P =.887397

2 -Distribution of Patients group according to the type of vaccine.

The results of current study showed there is no significant at $p < .05$. When the Patients group distributed according to the type of vaccine . The chi-square statistic is 0.2145 . The p-value is .6578 .

Table 2 Distribution of Patients group according to the type of vaccine

Vaccine type	Males	%	Females	%
Pfizer	28	29.15%	27	25.85%
AstraZeneca	25	23.85%	20	21.15%
Total	53	53%	47	57%
P = .6578		Chi-Square = 0.2145		Df=99

3 -The results of the present study according to the RF test

The results of the current study showed that the result of RF test in the vaccinated group was negative, similar to the control group, whose test results were ealso negative.

Discussion

The method underlying RA progress after vaccination is uncertain, messenger ribose nucleic acid vaccines appeare as both adjuvant and antigen, and it recognized by endosomal TLRs and components of cytosolic inflammasome [8, 9]. In our study, we proved that the Corona vaccine had

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no effect on the development of arthritis in vaccinated patients. We did not find sufficient studies to compare the current results . Our result agree with[10]. Where their study confirmed that the complete vaccination of the disease, whether mRNA or inactivated virus . It is impossible to contribute to evolution inflammation of arthritis. Our results contradict the results of the researcher[8] , who proved that the vaccine had an effect on the development of arthritis and[11] who conclude that RF and antinuclear antibody were repeatedly noticed in patients with COVID-19. Numerous researcher have denoted to devlope RA or flare-up after vaccination with COVID-19 vaccine [12].Also[13] described a case of male 55-years old developed R A after reception the second dosage of covid-19 vaccine .The USA Food and Drug administration showed that development of arthritis in patients after vaccination with COVID-19 was not associated with vaccination. The author [10] also reported that there was no correlation between vaccination with COVID-19 vaccines and arthritis flares.The American College of Rheumatology recommended to vaccine with COVID-19 vaccination for patients who have rheumatic diseases.There is study established that the betamethasone drug was active against arthritis after COVID-19 vaccination[14].

Conclusion

Based on what was achieved through our study, we can conclude that there is no relationship between the development of rheumatoid arthritis as an autoimmune disease and vaccination with the Pfizer and AstraZeneca Covid-19 vaccines.

Conflict of Interest

The authors declare that they have no conflict of interest

Supplementary material

All data generated or analyzed during this study are included in this published article

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