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Case Report

Heterologous COVID-19 vaccinations of Covishield/Astrazenica and Pfizer/Biontech: a case report

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ABSTRACT

The most significant scientific breakthrough in the fight against COVID-19 pandemic is the speedy creation of COVID-19 vaccinations. Despite the fact that all licensed vaccines' efficacy and safety have been shown in large clinical trials, but the data regarding heterologous vaccination regimens' efficiency and safety is still limited. Heterologous schedules are intriguing for a variety of reasons, including logistical and therapeutic efficacy. The approval of heterologous vaccination will give countries with limited vaccine access and countries where different vaccines may become available at different times the opportunity to make vaccination programmes more flexible in response to supply fluctuations. Heterologous regimens have the potential to elicit a greater response, resulting in increased efficacy. In this case report we presented an adult male who was inadvertently given a combination of Covishield and Pfizer COVID-19 vaccines within a 3 weeks interval period. This event happened accidentally. The patient was reassured and followed up after 8 weeks without any adverse reaction.

Keywords: COVID-19, Vaccination, Heterologous

INTRODUCTION

On 11 March 2020, the WHO proclaimed the COVID-19 pandemic. As of 19 August 2021, WHO had confirmed 2,09,201,939 COVID-19 cases, with 43,90,467 deaths and a total of 45,43,716,443 vaccine doses administered.[1]

On the 02 December 2020, the UK granted emergency authorization for the COVID-19 mRNA vaccine BNT162b2, a vaccine against COVID-19. On 21 December 2020, the European Medicines Agency awarded conditional approval. The UK then granted emergency approval for the Oxford/Astrazenica ChAdOx1 nCOV-19 vaccine on 29 December 2020.[2]

After emergency use approval by the Ministry of Public Health in Qatar for mRNA vaccination (Pfizer/Biontech and Moderna vaccination), the first dose of Pfizer/Biontech immunization against COVID-19 was given on 23 December 2020 in Qatar.[3] The mRNA vaccines are administered intramuscularly, usually in the deltoid area, and their mechanisms of action are based on a lipid coat vehicle surrounding the mRNA that allows it to reach the cell's cystol, where ribosomes use the mRNA to generate spike proteins. Spike proteins trigger an immune response that leads to antibodies against the SARS-CoV-2 virus via a variety of routes.[4]

Mixing COVID-19 vaccines is thought to be a viable approach for quickly overcoming the COVID-19 epidemic, particularly in low and middle-income countries. Only a few European countries, including Canada, advocated combining vaccines for their citizens, due to unusual thromboembolic problems with the ChAdOx1-S vaccination (Astrazeinka). Mixing research trials have begun in the US, China, and the UK, but they have yet to be officially approved.[5] Heterologous regimens have the potential to elicit a greater response, resulting in

increased efficacy. Finally, the development of new SARS-CoV-2 mutations is expected to necessitate the mixing of vaccinations. Safety has been cited as a primary driver for the adoption of heterologous vaccination regimens in patients primed with ChAdOx1S, in addition to efficacy despite the rareness of its side effects.[6]

CASE REPORT

Forty-six years old male patient with a history of allergic rhinitis and no past history of any other chronic diseases, vaccinated with 1st dose of Covishield vaccine (Astrazenica Indian version) on 12 March 2021 in India then traveled to Qatar and went to QNCC after he received SMS to take 1st dose of Pfizer/Biontech COVID-19 vaccination on 05 May 2021.

The patient had history of mild symptoms after the prime dose in India (Covishield) as mild local left arm pain, low grade fever, but there was neither history of other local symptoms (hardness, itching, pain, redness, swelling, warmth) nor general symptoms (malaise, chills, fatigue, headache, joint pain, nausea, vomiting, diarrhea, muscle ache, behavioral changes and shortness of breath).

Before his 2nd vaccination with dose of Pfizer/Biontech COVID-19 he was vitally stable and no fever or any other symptoms, he was observed 30 min after vaccination by medical staff in QNCC and he was giving follow up appointment on 26 May 2021 for evaluation.

After 2nd vaccination in Qatar, there wasn't history of local symptoms (hardness, itching, pain, redness, swelling, warmth). Also, there wasn't general symptoms (malaise, chills, fatigue, headache, joint pain, nausea, vomiting, diarrhea, muscle ache, behavioral changes or shortness of breath). follow up done on 26 May 2021 and 06 June 2021 with no abnormality detected or new symptoms or changes physically or mentally.

Physical examination results no abnormality detected, no investigation has been requested and he took OTC paracetamol after both doses.

DISCUSSION

Mixing vaccination is not a new concept. it has been used against many multiple illnesses including HIV, malaria, ebola and influenza. The advantages of mixing are to increase the protective efficacy and rationalize the usage of the available vaccines. Another benefit of this method is to avoid the development of resistance by the virus against one of the vectors based-vaccines like in Covieshield/Astrazenika which use the adenovirus vector technology. The potential risks of using the mixing vaccination are increased the adverse events following the vaccination like increase fever, joint pain and headache.[7] In Spain Combivacs in which will analyze the possible protective effect and the safety of supplying a dose of the messenger RNA vaccine for COVID-19 (BioNtech/Pfizer) to people who have already received a first dose of the vaccine from the AstraZeneca laboratory, after a minimum of 8 weeks have elapsed since that dose. The number of participants in this study 978 and more than half of them will receive the above combination. Results of the study not yet officially released but preliminary promising results came out in the lancet website.[8]

Combivacs aims to clarify whether people who have received the first dose of AstraZeneca have generated enough antibodies or a booster dose with another vaccine is required. Adverse effects were similar in both groups in the research and from mild 68.3% to moderate 29.9%. Most common headache, malaise, mild nausea, fever and mild cough.[9]

UK mix and match research is called COM-COV2 which aims to collect information which will contribute to the development of a vaccination program which aiming safe and flexible enough against COVID-19. The findings interpretations showed higher immunity response in heterologous vaccination than in homologous vaccination. There were four serious adverse events across all groups, none of which were considered related to immunization.[2]

In this case mild usual symptoms (mild fever and local arm pain) after 1 day from the second dose and no unusual observation for 8 weeks. So, this event is not negatively affecting the patient on short term and or prevent him from COVID-19 vaccination although no reliable test to measure the immune response available nowadays in PHCC and that was one of the limitations which affecting the understanding of the event.

There are advantages to having flexible immunization programs where the second dose is not necessarily the same as the first dose, i.e. a permissive approach to using heterologous prime/boost schedules. Two studies are currently underway to evaluate the combination of 2 different types of vaccines however there is no official published data as of yet.

Unforeseen incidents happen during mass vaccination campaigns due to the vast number of people being vaccinated. The mixing and matching of COVID-19 vaccines rarely happen outside research planning and should be followed and reviewed. In this case the mix of doses was given indifferent countries under different conditions. Prime dose in India (Covishield) and second dose was accidentally given in Qatar.

CONCLUSION

Although a combination of different types of COVID-19 vaccination still not programmed all over the world and still waiting for strong evidence at the moments. But if it happened accidentally follow up and reassurance should be done to ensure the safety of patient and no need to take any other extra measures. Heterologous COVID-19 vaccination will be more flexible in vaccination mass

programs and help to overcome the shortness of vaccinations in some countries and in between borders. We recommend applying a reliable COVID-19 antibodies test to be available for both monitoring and for research purposes.

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REFERENCES

1. WHO. Coronavirus (COVID-19) Dashboard, 2019. Available at: https://COVID-19.who.int/. Accessed on 20 August 2021.
2. Liu X, Shaw RH, Stuart ASV, Greenland M, Aley PK, Andrews NJ, et al. Safety and immunogenicity of heterologous versus homologous prime-boost schedules with an adenoviral vectored and mRNA COVID-19 vaccine (Com-COV): a single-blind, randomised, non-inferiority trial. Lancet. 2021;398(10303):856-69.
3. Raddad LJ, Chemaitelly H, Ayoub HH, Yassine H M, Benslimane F, Khatib HA, et al. Protection afforded by the BNT162b2 and mRNA-1273 COVID-19 vaccines in fully vaccinated cohorts with and without prior infection. medRxiv. 2021.
4. Anand P, Stahel VP. Review the safety of Covid-19 mRNA vaccines: a review. Patient Saf Surg. 2021;15(1):20.
5. Salles T, Alhambra D. Heterologous vaccine regimens against COVID-19. Lancet. 2021;398(10295):94-5.
6. Spencer AJ, McKay PF, Rammerstorfer S, Ulaszewska M, Bissett CD, Hu K, et al. Heterologous vaccination regimens with self-amplifying RNA and adenoviral COVID vaccines induce robust immune responses in mice. Nat Commun. 2021;12(1):2893.
7. Kumar VM, Perumal SR, Trakht I, Thyagarajan SP. Strategy for COVID-19 vaccination in India: the country with the second highest population and number of cases. NPJ Vaccines. 2021;6(1):60.
8. Kunal S, Sakthivel P, Gupta N, Ish P. Mix and match COVID-19 vaccines: potential benefit and perspective from India. Postgrad Med J. 2021;140648.
9. Shaw RH, Stuart A, Greenland M, Liu X, Nguyen Tam JS, et al. Heterologous prime-boost COVID-19 vaccination: initial reactogenicity data. Lancet. 2021;397(10289):2043-6.

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