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The Co-Administration of COVID-19 and Hepatitis B Vaccines, Should Safety Be a Concern?

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Ethics Statement

This survey was approved by the IRB/ Research Ethics Committee (REC-22-05-11) and informed consents were obtained from the subjects.

Dear Editor:

We read with great interest the recent contribution by Choi and Cheong entitled “Should the COVID-19 Vaccine be Administered Simultaneously with Other Vaccines?” [1]. The topic of concomitant administration of coronavirus disease 2019 (COVID-19) and other vaccines has been largely overlooked in literature and hence the available data represent general recommendations and guidelines that need to be carefully applied. The editorial by Choi and Cheong clearly underscores the importance of considering the current health status of the individual to receive the vaccines as well as the specifications of each vaccine to be administered. The authors also overviewed the different protocols currently applied in some countries as well as the World Health Organization recommendations. Apparently, two major concerns are to be addressed about the concomitant administration of COVID-19 and other vaccines: potential adverse reactions and immunogenicity, *i.e.*, safety and efficacy.

We were recently challenged by a situation where our third-year dental students were required to receive Hepatitis B vaccine as a pre-request to commence their clinical duties at the College of Dental Medicine (CDM)/ University of Sharjah, UAE, around the same time when some of them were also scheduled to receive COVID-19 vaccine. The healthcare authorities responsible for the provision of the Hepatitis B vaccine questioned the safety and efficacy of the concurrent administration of the two vaccines. However, we were unable to provide an evidence-based protocol and there weren't any national guidelines to follow at that time.

Considering all relevant risks and benefits, together with the limited data available, a decision was made to proceed with the administration of both hepatitis B (HBVAXPRO, Merck Sharp and Dohme, Haarlem, Netherlands) and COVID-19 (Pfizer/BioNTech BNT162b2, Comirnaty®, Pfizer Europe MA EEIG, Puurs, Belgium) vaccines to ensure the safety of our students in the clinical setting. A self-administered online questionnaire was designed to report the adverse effects experienced by the students (in accordance with the relevant literature [2-4]), their severity and any self-perceived concerns about the concomitant administration of Hepatitis B and COVID-19 vaccines.

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Conflict of Interest

No conflict of interest.

Author Contributions

Conceptualization: MSA, MEK, SAK. Data curation: MSA, MEK. Formal Analysis: MSA, MEK. Methodology: MSA, MEK, SAK. Supervision: MSA, MEK, SAK. Writing - original draft: MSA. Writing - review & editing: MSA, MEK, SAK

Safety concerns were primarily applicable to those students who received the two vaccines within 14 days or less. A cohort of 15 students (female = 11, male = 4), aged 20 - 21 years, fulfilled the inclusion criteria, *i.e.*, medically fit and received the Hepatitis B and COVID-19 vaccines within a period of 14 days or less (**Table 1**). The duration between the two vaccines ranged between 0 and 14 days (mean = 6 days). Pain or swelling at the site of injection was the most encountered adverse effect (N = 8) and the adverse effects lasted for an average of 2 days following the COVID-19 injection. Only 2 students had adverse effects severe enough to interfere with their daily activities and 4 students had concerns about a possible interaction between the 2 vaccines. None of our students developed serious or unusual adverse effects as those reported in some studies, *e.g.*, anaphylactic shock, facial swelling, Bell's palsy [2], cardiac arrhythmia and leg paresthesia [4], visual disturbance [5] or bullous pemphigoid [6].

The potential interaction between COVID-19 vaccines and other vaccines has not gained much attention in the literature and the scarce data currently available are limited to the concomitant administration of COVID-19 vaccines and influenza vaccine [5]. The antibody response to both vaccines was maintained with no safety issues reported [5]. Whether or not this applies to other vaccines is still largely unknown.

Some health authorities recommend that an interval of at least 14 days is required between COVID-19 vaccination and other vaccines [7], while the Centers for Disease Control and Prevention of the United States do not support any time restrictions on the administration of COVID-19 and other vaccines, including the administration of COVID-19 and other vaccines on the same day [8].

In conclusion, both COVID-19 and Hepatitis B vaccines are essential for healthcare providers, and according to our preliminary results, it appears that the co-administration of these two vaccines bears no additional risks to individuals. However, these findings should be interpreted with caution due to the small size of the tested cohort and the lack of data on the efficacy of the vaccines when administered within a short period of time. Therefore, there is an urgent need to share experience between healthcare facilities and institutions worldwide to help resolve this emerging dilemma and reach a consensus on the co-administration of COVID-19 and other vaccines.

Table 1. Adverse effects experienced by students who received the COVID-19 and Hepatitis B vaccines within 14 days or less

Case number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Gender	M	F	F	F	F	F	F	M	F	F	F	M	F	F	M
Duration between vaccines (days)	14	5	3	3	5	4	14	3	10	14	5	4	7	3	0
Adverse effects of COVID-19 vaccine															
Pain or swelling at injection site	√		√			√	√		√	√			√	√	
Muscle or joint pain		√	√	√				√							
Fatigue			√	√	√										√
Headache			√	√		√					√	√			
Fever or chills				√									√		
Nausea or vomiting															
Others															
Duration of adverse effects (days)	1	2	2	1	1	2	1	7	2	3	3	1	1	1	2
Severity of adverse effects (1 - 3) ^a	1	1	3	1	2	1	2	1	2	1	1	2	1	1	3
Concern about the co-administration of vaccines (Yes, No)	N	N	N	Y	N	N	Y	Y	N	N	Y	N	N	N	N

^a1: mild, 2: moderate (interfering with ability to work), 3: severe (interfering with daily activities). COVID-19, coronavirus disease 2019; M, male; F, female.

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