P1524 EFFECTS OF CORONAVIRUS DISEASE 2019 (COVID-19) VACCINATION ON HEMOGLOBIN LEVELS IN THALASSEMAIA PATIENTS

Topic: 27. Thalassemias

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Background: COVID-19 vaccines are effective in reducing the risks of hospitalization and death, especially for people with comorbidities and impaired immunity. Systemic reactions such as fever, headache and myalgia are frequently reported after COVID-19 vaccination, especially adenoviral vector vaccines followed by mRNA and inactivated vaccines. Thalassemia disease is the most common monogenic disease worldwide. Among patients with thalassemia diseases, high fever or systemic reactogenicity after vaccination may trigger hemolysis, resulting in a sudden decrease in hemoglobin levels.

Aims: To determine whether COVID-19 vaccination significantly reduces hemoglobin (Hb) levels in Thalassemia patients by comparing pre- and post-vaccinated Hb levels after individual vaccination.

Methods: A retrospective cohort study was performed using medical records of thalassemia disease patients, who were followed up at King Chulalongkorn Memorial Hospital (KCMH) from January 2021 to January 2022. Four Hb values; the most recent pre-vaccinated Hb levels (Hb1) and post-vaccinated Hb levels (Hb2) after the first COVID-19 vaccination and the most recent pre-vaccinated Hb levels (Hb3) and post-vaccinated Hb levels (Hb4) after the second COVID-19 vaccination of individual patients were retrieved. Comparison between pre- and post-vaccinated Hb levels of each vaccination was computed using paired t-test.

Results: Among 220 transfusion-dependent thalassemia patients who were regularly followed up at Hematology Department, KCMH, 199 had COVID-19 vaccination records. There were 184 fully vaccinated patients. The first dose vaccinations were being comprised of 115 viral vector vaccines (ChAdOx1 nCoV-19), 42 inactivated vaccines (BBIBP-CorV and CoronaVac)) and 32 mRNA vaccines (BNT162b2 and mRNA-1273). The proportions of the second vaccinations were almost similar. Only 9 patients first vaccinated with inactivated vaccines were administered viral vector vaccines in the second vaccination. Of 120 patients with available Hb data after the first vaccination, the mean difference of Hb levels after first vaccination was 0.03±0.9 g/dL (p = 0.685). The median interval between obtained Hb1 and the first vaccination was 50.6 (IQR: 22-70) days, and between obtained Hb2 and the first vaccination was 28.5 (IQR: 14-38) days. Of 71 patients with available Hb data after the second vaccination, the mean difference of Hb levels after the second vaccination was 0.13±1.0 g/dL (p = 0.292). The median interval between obtained Hb3 and the second vaccination was 27.6 (IQR: 14-34) days, and between obtained Hb4 and the second vaccination was 38.2 (IQR: 18-52) days. There were 14 patients (11.7%) whose Hb levels were decreased over 1 g/dL after the first vaccination, while there were 7 patients (9.9%) whose Hb levels were decreased over 1 g/dL after the second vaccine. Most of these patients were administered viral vector vaccines.

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Summary/Conclusion: COVID-19 vaccines generally do not significantly affect Hb levels in thalassemia disease patients. Approximately 10% of patients had a clinically significant reduction in Hb levels after vaccination, especially those administered viral vector vaccines probably due to prevalent systemic reactogenicity. Although the benefit of COVID-19 vaccine protection is still outweighed this risk, thalassemia patients should be educated about this possible reaction and to observe symptoms and signs of hemolysis after COVID-19 vaccination.