

Adverse events following COVID-19 vaccination in young Japanese people: A case-control study of the risk of systemic adverse events by a questionnaire survey

Short title: COVID-19 vaccine adverse events in young Japanese

Abstract

What is known and objective

Racial differences in adverse events following COVID-19 vaccines have not been sufficiently studied. Here, we aimed to study the adverse events of Moderna's intramuscular COVID-19 vaccine in young Japanese people.

Methods

A case-control study was conducted using a questionnaire survey. Risk factors were determined using a multivariable logistic regression model. We also compared the occurrence of systemic adverse events in three pairs (minor and adult; male and female; and occurrence and non-occurrence of adverse events after the first dose). Propensity matching was used to balance variables.

Results

We analysed 3,369 data points (1,877 after the first dose and 1,492 after the second dose) obtained from a questionnaire survey of 7,965 vaccinated individuals. Comparing the results of the first and second doses, the incidence of local adverse events did not change significantly; however, the incidence of systemic adverse events increased significantly ($p < 0.001$). Eighty-three percent of the participants complained of local adverse events, and 65% of participants complained of systemic adverse events. Anaphylaxis occurred in one female student (0.03%). Even when an adverse event occurred, most of the symptoms improved within 3 days. Female sex was associated with systemic adverse events after the first and second doses with odds ratios (ORs) (95% confidence interval, CI) of 2.49 (2.03-3.06), and 1.83 (1.28-2.61), respectively. Age (< 20 years: minor) was associated with systemic adverse events after the first dose with an OR of 1.80 (1.44-2.24).

The results of the analysis of six cohorts that were created using propensity score matching showed that the incidence of systemic adverse events at the first dose in females was significantly higher than that in males, and that of minors was significantly higher than that of adults.

What is new and conclusion

The results of this study clarified, for the first time, the risk factors for several adverse events from the injection of Moderna's intramuscular COVID-19 vaccine in young Japanese people.

This study suggests that women, minors who experienced adverse events after the first dose, those who experienced adverse events after the first dose, and those who had adverse events after the second dose, should be aware of adverse events.