

Why was the study done?

Prelicensure randomized controlled trials evaluating the effectiveness and safety mRNA COVID-19 vaccines such as Pfizer-BioNTech and Moderna-Spikevax, demonstrated an acceptable safety profile. However, these trials usually do not detect rare events which may be observed when vaccines are provided to millions of people in the population. Thus, post-marketing studies are needed to assess safety of vaccine. When mRNA vaccines were rollout at large scale, myocarditis (inflammation of the heart muscle) and pericarditis (inflammation of the lining around the heart) was observed mainly among young adults. While this finding has been observed for both Pfizer-BioNTech and Moderna-Spikevax vaccines, indirect comparisons show that the risk appears to be higher following the 2nd dose of Moderna-Spikevax vaccine than Pfizer-BioNTech. Our study aimed to build on the existing evidence by conducting a head-to-head safety comparison between the two mRNA vaccines.

What were the results of the study?

Our study used data from the British Columbia COVID-19 Cohort (BCC19C). We found that those individuals who received Moderna-Spikevax vaccine had higher chance of developing heart inflammation (myocarditis) compared to those who received Pfizer-BioNTech vaccine. The results also show that younger males (<40 years) who received Moderna-Spikevax vaccine had higher chance of developing heart inflammation (myocarditis) compared to males who received Pfizer-BioNTech vaccine.

How can these findings be used?

Although we found a comparatively higher risk of heart inflammation (myocarditis) following Moderna vaccination, it is important to understand that myocarditis after COVID-19 vaccination is rare. In our study, we found 36 myocarditis cases after 1 million Moderna doses, and 13 myocarditis cases after 1 million Pfizer doses. This is in contrast to heart inflammation following COVID-19 infection where 72 people out of 100,000 develop heart inflammation following COVID-19 infection. This evidence suggests that the two vaccines are relatively safe. Overall, our study supports the importance of the vaccine choices being offered to specific age and sex groups to prevent COVID-19 infection.

What is the reference for this study?

Naveed Z, Li J, Wilton J, Spencer M, Naus M, Garcia HV, Kwong JC, Rose C, Otterstatter M, Janjua NZ. Comparative risk of myocarditis/pericarditis following second doses of BN162b2 and mRNA-1273 coronavirus vaccines. JACC. 2022;80(20):1900-08.