



Covid-19 Vaccinations and Menstrual Cycle Alteration

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Abstract

The rapid development of safe and effective vaccines against Coronavirus Disease 2019 (COVID-19) has been a triumph of medical sciences, but vaccines only work if people take them. COVID-19 vaccination may be associated with change in menstrual cycle length following vaccination. Although there is extensive evidence that COVID-19 vaccination does not affect fertility, misinformation that it could has been a major source of vaccine hesitancy among young women. As the vaccination program was rolled out to younger age groups, some people noticed menstrual changes after COVID-19 vaccination, and many members of the public found these reports concerning. Research was needed to generate robust data to inform healthcare professionals and the public about these potential side effects. Menstrual changes have been reported in association with a variety of vaccines, including those against pathogens other than severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), so the aim of this work is to describe SARS-CoV-2 infection and the menstrual cycle changes because of it.

Keywords: Vaccine; Menstrual cycle; Adverse Effect; Fertility; Menstrual Changes

Abbreviations: COVID-19: Coronavirus Disease 2019; SARS-CoV-2: Severe Acute Respiratory Syndrome Coronavirus 2; PASC: Post-Acute Sequelae of SARS-CoV-2.

Introduction

The menstrual cycle involves complex interactions between various tissues, hormones, and organ systems. As such, the menstrual cycle is sensitive to endogenous and exogenous factors, including infection and changes in lifestyle. Over a year into the global COVID-19 pandemic caused by SARS-CoV-2, there is increasing interest in understanding the post-acute sequelae of SARS-CoV-2 (PASC) following infection. Emerging evidence suggests that SARS-CoV-2 infection, COVID-19 vaccination, and/or psychological stress related to the COVID-19 pandemic may influence the menstrual cycle [1].

People across the world are getting vaccinated against the virus as COVID-19 spreads. The possibility of adverse reactions to COVID-19 vaccinations has always been a source of concern [2-4]. It is also unclear whether COVID-19 immunizations impact female vaccinators' menstrual cycles. Unfortunately, menstrual cycle outcomes were not collected in clinical studies of the current COVID-19 vaccines [5-7]. The menstrual cycle of a woman runs from the first day of her menstruation to the first day of her next cycle. Many factors, including nutrition, sleep, and exercise, as well as illness, travel, and stress, are known to influence the length of the menstrual cycle [8]. COVID-19 vaccines have caused a variety of side effects in people, including pain at the injection site, nausea, aches, fever, and fatigue. In more severe situations, patients may have insomnia, lack of appetite, and feelings of depression. Furthermore, vaccination may shorten or lengthen the menstrual cycle by influencing the secretion

and stability of estrogen, progesterone, follicle-stimulating hormone, luteinizing hormone, and other hormones associated with female reproduction [9]. Figure 1 shows the COVID-19 vaccine impact on the menstrual cycle.

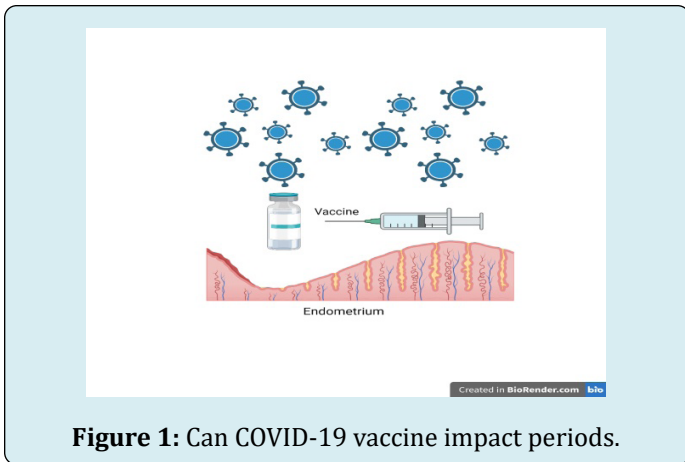


Figure 1: Can COVID-19 vaccine impact periods.

Recently, researchers from Oregon Health & Science University studied 3,959 people aged 18 to 45 years old (vaccinated 2,403; unvaccinated 1,556) in the United States for three consecutive cycles before receiving their first vaccine dose, followed by vaccine-dose cycles (cycles 4-6) or, if unvaccinated, six cycles over a similar period [10,11]. The majority of those vaccinated (55%) utilized the Pfizer-BioTech vaccine (Moderna 35%, and Johnson & Johnson/Janssen 7%). The investigators calculated the mean within-individual variation in the cycle and menstrual duration (three pre-vaccine cycles vs first and second dose cycles in the vaccinated cohort, and the first three cycles vs cycles four and five in the unvaccinated cohort). They used mixed-effects models to calculate the corrected difference in the cycle and menstrual length change between vaccinated and unvaccinated women. The results of the study showed that the onset of menstruation was about a day later than usual after vaccination. The overall number of menstruation days, on the other hand, did not change following vaccination. The COVID-19 vaccine causes a little alteration in cycle length but not in menses length. Further research is needed to establish the influence of COVID-19 vaccines on other elements of women's menstrual cycles, such as if they produce abnormal bleeding or other symptoms, according to the study [12,13].

It is important to note that most people who report such a change following vaccination find that their period rapidly returns to normal and extensive investigation has found no evidence that COVID-19 vaccination adversely impacts female fertility. Nonetheless, people are concerned by these reports. Investigating the potential link between COVID-19 vaccination and menstrual changes is important for maintaining public trust in the vaccination program and, if a link is found, to allow people to plan for potential changes

to their cycles [14].

Conclusion

The impact of COVID-19 on the menstrual cycle is largely unknown. People who reported changes in their menstrual cycle after SARS-CoV-2 infection reported more COVID-19 symptoms than those who did not. There has not been much research on how COVID-19 vaccines or other vaccines alter the menstrual cycle on a worldwide scale. These findings serve as a guide for women who want to learn more about the COVID-19 vaccine's side effects and make their own decisions.

Competing Interests

The authors declare no conflicts of interest.

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