

Menstrual Cycle Effects of COVID-19 Vaccination in JharkhandIndrani Dutta¹, Atima Bharti²¹Senior Resident, Department of Obstetrics and Gynaecology, RIMS, Ranchi, Jharkhand, India,²Associate Professor, Department of Obstetrics and Gynaecology, RIMS, Ranchi, Jharkhand, India

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Conflict of interest: Nil

Abstract

Background: The COVID-19 vaccine defends to resist the severe effect of coronavirus infection, but few people were uncertain to get vaccinated due to its influence on the menstrual cycle. Studies that were done to examine the safety and effectiveness of the vaccine do not include after-effects on the menstrual cycle.

Objective: This study aims to evaluate the association between the menstruation cycle during the vaccination and the menstruation cycle after taking the vaccine and the irregularities in pre-menopausal and post-maturity women.

Methods and Materials: This is a cross-sectional study that includes 600 pre-menopausal and post-menopausal women to investigate the relation linking vaccine and alteration in menstrual bleeding. The online survey was conducted to gather menstrual cycle data. The majority of the women were of the age group of 25-45 years of age. The inclusion criteria were women who get any type of COVID-19 vaccine, none of them expecting a baby. 300 women passed the inclusion criteria. Statistical analysis was done by using chi-square test, t-tests, and logistic regression

Results: In the present study it partly confirmed the findings from earlier research that the vaccine is related to remarkable alterations in the menstruation cycle and bleeding in women. Missed periods, irregularity in the cycle, and spotting was very less significant. Following to the second dosage of the vaccination, there is a reduction in changes in the level of the menstrual cycle. It was detected that 11.2 % of post-maturation women had menstrual signs following the first dose and 37.6% of post-maturation women had signs subsequent to the second dosage.

Conclusion: In this research, it was deduced that the vaccine is possibly have negative reaction on the menstrual cycle, but it is short-term.

Keywords: Menstrual Cycle, COVID Vaccine, Diagnosis.

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Introduction

It was on 11 March 2020, when World health Organization (WHO) announced the worldwide pandemic of COVID-19 [1]. Regardless of immense work worldwide to take up vaccination programs to battle against SARS-CoV-2, sadly pandemic still continuing, and many deaths associated with COVID-19 are reported [2, 3]. The initial symptoms that occurred in this infection are anosmia and ageusia [4-6]. Eventually, the virus infects the respiratory [7], circulatory [8] and nervous [9] systems. After effects of the vaccine are headache, high temperature, tiredness, and pain in arms and muscles.

Although, in earlier clinical research changes in menstrual cycle, menstrual flow, period time, and menstrual bleeding were not detected or recorded as frequent after-effects [10, 11]. Before 20 May 2021, at least 150 women had been informed about their disturbed menstrual cycle after vaccination to the vaccine adverse reporting system [11].

Before September 2021 more than 30,000 women informed negative effects on their menstrual cycle after the vaccination to the UK's Medicines and Regulatory Product Agency Yellow Card Surveillance Scheme [12]. Studies conducted by Phelan et al [13] and Demir et al [14] revealed the amount of strain and uneasiness occur due to the COVID pandemic was enough to alter some of the menstruation cycle features in women. The COVID-19 pandemic had bad effects on both mental and reproductive health. If there is any relation between COVID vaccine and menstruation cycle disruption, it may cause doubtfulness in women to get vaccinated. So, clinical study is required to examine the level of menstrual disturbance after the shot and the extent of its effect on fertility [15].

The menstrual cycle in a woman indicates physical well-being, potency, and reproductive capacity. A well-synchronized hypothalamic-pituitary-ovarian axis leads to a healthy monthly menstrual cycle. Mental stress can trigger the hypothalamic-pituitary-

gonadal axis causing a repressive alteration on the HPG which is related to decreased impulse of gonadotropin-releasing hormone. It leads to functional hypothalamic amenorrhoea and the absence of ovulation [16, 17]. Viral infections, including SARS-CoV-2 interfere with the hypothalamic-pituitary-ovarian-endometrial axis which leads to disturbance in the menstrual cycle.

The United States National institute of Health carried out a study to figure out the potential relation between covid vaccine and menstruation irregularity [12]. It was shown that the menstruation length increases after the first and second dose of vaccination. The vaccination of human papillomavirus and covid vaccination are almost identical which has the tendency make immune stimulus on hormones which manages the menstruation cycle. Regardless of changes alteration of in menstruation cycle after the first and second dose of vaccination, it is short term and it come backs to normalcy after some time. As covid vaccine interferes with the menstruation cycle, it leads to hesitancy in young women.

Norwegian Institute of Public Health Sciences [18] conducted research that shows 14% of women had excessive periods after the first dose of the vaccine while 15% encountered excessive periods after the second dose of the vaccination. In a study conducted by Muhaidat [9], it was evaluated that 66.5% of the subjects encountered disturbance in menstrual cycle after vaccination. Though many women encounter disturbance in their menstrual cycle after the vaccination, their cycle returns to normal with the progressing months. The current study aims to evaluate the relationship between the menstruation cycle in the course of vaccination and the menstruation cycle after taking the vaccine and the

irregularities in pre-menopausal and post-maturation women.

Materials and Methods

It was a cross-sectional study that included 600 women which was conducted through an online survey in RIMS, Ranchi, Jharkhand.

Inclusion criteria: Women who got any dose of the vaccine, not expecting a baby

Exclusion criteria: Pregnant women, breastfeeding mothers, women suffering from polycystic ovarian syndrome, endometriosis.

Out of 600, 300 women met the inclusion criteria. A question form was sent to the subjects online. The subjects were comprised of both pre-menopausal and post-maturation women who had got first or both doses of vaccination. The questions included age, background, body weight, level of pregnancy, level of breastfeeding, and medical history. Other questions include regularity in periods, menstrual flow, and duration of menstrual period. Consent was taken from all the women and participant identity was not revealed.

Statistical analysis: SPSS V.26 software was used for statistical analysis. To evaluate the relation between COVID vaccine and menstruation cycle alteration, definitive and incidental statistical analysis was done. Disruption in the menstrual cycle after the vaccination was evaluated using correlation analysis. The amount of vaccine dosage which affects the menstrual cycle was examined by chi-square test.

Results

Table 1: Alteration in menstrual length following the first and second dosage

Change in length of menstrual cycle	First dose	Second dose
Lighter	86 (12%)	65 (9%)
Heavier	103 (23%)	96 (18%)
About the same	150 (63%)	100 (56%)

In Table 1, the change in the length of the menstruation cycle is shown. 12 % of the women had lighter changes in cycle following the first dose whereas after the second dose, 9% had lighter changes in period lengths. 23% and 18% subsequent to the first and second dosage respectively had heavier alteration in menstruation length. 63% following the first dose and 56% after the second dose have less alteration in menstruation length.

Table 2: Menstrual symptoms post-vaccination

Menstruation symptoms	First dose	Second dose
Regular menstruation	95	65
Period length	105	128
Moderate period flow	80	88
Light period flow	20	19

As shown in Table 2, 95 women had regular menstrual cycles following the first dose of vaccination and 65 following the second dose of vaccination. 105 and 128 subjects had normal period length after the first and second of vaccine

respectively. 80 women experienced moderate period flow subsequent to the first dose while 88 women experienced it after the second dose. 20 subjects experienced light period flow after the first dose and 19 after the second dose.

Discussion

The reaction of covid 19 to women's menstrual cycle is not known to a great extent. In the present study, it was seen majority of the women have less or no effect on the menstrual cycle after vaccination. Covid is viral infection caused by member of RNA coronavirus family SARS-CoV-2. Serious viral infection can affect hypothalamic hypogonadism causing cause loss of menstruation irregularity in period bleeding [15, 16]. Many agents effects the menstrual cycle of women after COVID-19 19 but the most significant ones are age and overweight. Both age and weight are associated undoubtedly with severe headaches at the time of periods and disturbance in the menstrual cycles.

It was seen that except for delay in periods other serious menstrual symptoms were not reported. Most of the women had normal regular period cycles, menstrual flow, and period length. Moreover, females do not encounter other menstruation cycle disturbances like missed menses, spotting, and missed periods after the first and second dosage of vaccine. Earlier studies contradict the result of the present study which evaluated those vaccines can cause late menstruation and affect period length [20, 21]. As per Male [12] covid vaccine triggers the hormones that manage the menstruation cycle which is why vaccination disturbs the cycle. There was no notable difference was found in menstrual length in women following both the doses as compared in contrast to menstruation period length prior to the vaccine. Research done by Edelman et al [11] evaluated that COVID-19 vaccination has the least effect on the menstruation cycle.

In the present research, it was discovered that the most frequent menstruation cycle disturbances after the vaccination was delayed period, heavy flow, extreme menstrual bleeding, and other symptoms. It is suggested that after receiving the vaccination, there is a delay in periods. There is not much proof that the vaccine causes irregularity in periods. According to the result of the current study the alteration in the menstruation cycle and vaccination are for a very short time. The females who were not menstruating before vaccination encounter changes in menstrual cycle after vaccination according to the current study. Following the second dose of the vaccination the post-menopausal women encounter a rise in menstrual symptoms. This correlates with a research carried out by Lee et al [20]. It was falsely stated that the vaccine affects women's potency. This creates doubt in minds about the vaccine whether it is safe or not.

Conclusion

In the present study, it was evaluated that COVID-19 vaccine is partly associated to the disturbance in the menstrual cycle. It was seen in this study that

delayed menstruation, serious menstrual symptoms, and bleeding were not notably distinct after the vaccination. It was noted that the effect on the menstrual cycle was less after the second dose as compared to the first dose of the vaccination. The research indicated the disturbance in the menstrual cycle after vaccination is short-term it gets back to normal after a few days of receiving the vaccination. It is suggested to reduce hesitation towards vaccination thus increasing the positive outcome of covid 19 vaccination programs.

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