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Menstrual Irregularities Post COVID 19 Vaccine

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Abstract

The COVID-19 pandemic has prompted unprecedented global vaccination efforts, with vaccines such as Pfizer-BioNTech, Moderna, and AstraZeneca being widely administered. Anecdotal reports and preliminary studies have suggested a possible association between COVID-19 vaccination and menstrual irregularities. This review evaluates current literature on menstrual irregularities observed post COVID-19 vaccination, examining the prevalence, types of irregularities, potential mechanisms, and implications for public health. Evidence indicates that while menstrual irregularities can occur, they are generally transient and resolve without long-term health consequences. Further research is needed to fully understand the underlying mechanisms and to provide more definitive guidance.

Keywords: Menstrual cycle; vaccine hesitancy; mRNA.

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1. **Introduction**

The outbreak and global spread of Covid-19 virus accelerated the need to develop and distribute vaccines. Currently, the vaccines are distributed and administered globally. The vaccines can be divided into three main categories, with the first category consisting of mRNA based vaccines such as Pfizer-BioNTech and Moderna while the second and third groups consists of inactivated whole virus vaccines like Sinopharm and viral vector vaccines like Johnson and Johnson [1]. The mRNA vaccines work by instructing cells to produce a protein that triggers an immune response, while viral vector vaccines use a modified virus to elicit immunity. As vaccination programs scaled up, reports emerged about various side effects, including menstrual irregularities. Menstrual cycles are known to be influenced by multiple factors, including stress, illness, and hormonal changes. This article reviews the current evidence regarding menstrual irregularities following COVID-19 vaccination, aiming to provide a comprehensive overview of this emerging issue.

2. Article Review

2.1. Overview of Covid-19 Vaccines

The COVID-19 vaccines have demonstrated high efficacy in preventing severe disease and reducing transmission. For instance, a research by Cai and his colleagues. analyzing the efficacy of the Covid-19 vaccines found that the efficacy of all vaccines surpassed 70% with vaccines falling under the mRNA category having the highest efficacy at 94.29% [2]. In another systematic review investigating the efficacy of Covid-19 vaccines, Sharif and his colleagues. found that the efficacy of adenovirus vector vaccine was 73% and 85% for mRNA vaccine [3]. Therefore, the Covid-19 vaccines developed and distributed proved effective in controlling Covid-19 virus spread and deaths. Nevertheless, all the studies have reported adverse effects including pain at the injection site, fever and menstrual irregularities.

2.2. Reported Menstrual Irregularities Prevalence

Growing evidence suggests that women experience menstrual irregularities after receiving the Covid-19 vaccine. In one of the studies, it was determined that in 78138 women who received Covid-19 vaccinations, 39,759 reported menstrual problems, translating to a prevalence rate of 52.05% [1]. Main menstrual problems included menorrhagia, metrorrhagia, and polymenorrhea. Mahfouz and his colleagues. also investigated the prevalence of menstrual changes for women between eighteen and forty-five years after Covid-19 vaccination. In 729 participants in the study, the findings revealed an overall menstruation irregularities of 60.1%, with highest prevalence reported among women between twenty-five and thirty-four years [4]. When considering specific vaccines, Brueggman and his colleagues. discovered that the incidence of menstrual disturbances was slightly higher in women who received Moderna vaccines than other bands [5].

2.3. Potential Mechanisms

The exact mechanisms behind vaccine-related menstrual changes are not yet fully understood. Potential explanations include immune system activation, hormonal fluctuations, and stress responses. Cytokine production

occurring from immune response arising from vaccination is cited as a potential link to menstrual changes. Cytokine production affects the hypothalamic-pituitary ovarian (HPO) axis which in turn interferes with the ovarian hormones requires in menstrual cycles [6]. Additionally, the stress associated with the pandemic and vaccination process might contribute to observed irregularities. For instance, research showed that Covid-19 induced anxiety, depressive symptoms and stress led to increase in irregular menstrual cycle in healthcare workers [7].

2.4. Clinical and Health Implications

Menstrual irregularities post-vaccination are generally considered benign and transient but could pose severe implications in disease control and management. According to a study by Gupta and his colleagues. investigating spread of information about Covid-19 vaccines' impact on menstrual cycle, it was discovered that 40% of participants had received the information, of which 65% was negative [8]. Consequently, vaccine hesitancy was reported at 30% for respondents who received information that Covid-19 vaccines altered the menstrual cycle [8]. Walcherberger and his colleagues. reported similar findings where women of child-bearing age hesitated to take Covid-19 vaccinations due to its effects on their menstrual cycle [9]. Researchers have pointed flaws in messaging where healthcare stakeholders fail to acknowledge the possibility of impacts on menstrual cycle. Accordingly, proper messaging is required to provide critical information to women and deconstruct false information shared on social media platforms. Ongoing monitoring and research involving diverse participants are crucial to confirm the safety profile of vaccines and address any potential long-term implications [8,9].

2.5. Results

Analysis of current literature reveals that menstrual irregularities are a reported highly prevalent in women, with some studies reporting prevalence rates of more than 50% [1,4]. The majority of studies indicate that these irregularities are temporary and resolve without intervention. The most common changes reported include variations in cycle length and flow volume. The frequency and severity of these irregularities vary among individuals and are influenced by multiple factors including age, vaccine type, and pre-existing health conditions. Despite the menstrual cycle changes being self-limiting as normal cycle is restored with time, these changes make some women vaccine hesitant and therefore vulnerable to the virus. There is need to focus on educating women in this area and undertake more research to increase understanding of the association of Covid-19 vaccines to menstrual changes.

2.6. Limitations

While most studies analysed show link between Covid-19 vaccines and menstrual changes, there are several limitations. First, some confounding variables like pre-existing conditions, and stress during the pandemic due to new restrictions could contribute to menstrual changes. Second, most studies in this area do not broadly undertake comparative analyses to compare specific vaccines and their effects on menstrual cycles. The comparative analysis would help to breakdown into specific vaccine components that causes changes to menstrual cycle. Lastly, most studies have a short-term focus and thus, there is little evidence to show that the menstrual changes are tolerable, hence the need for longitudinal studies.

3. Conclusion

Menstrual irregularities following COVID-19 vaccination appear to be relatively common but typically resolve on their own without significant health implications. The evidence suggests that while these changes can be distressing, they are usually transient and do not indicate a serious underlying problem. Healthcare providers should be aware of these potential side effects and provide appropriate reassurance to patients. Continued research is needed to further elucidate the mechanisms behind these changes and to monitor long-term effects.

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