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Changes in the menstruation pattern after COVID infection: A questionnaire based study

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Abstract---The pandemic of COVID 19 had tremendous impact on the physical, mental as well as the social well being of the people. It has affected the respiratory, cardiovascular as well as endocrine system. Menstruation which is a regular cyclical phenomenon seem in females of reproductive age group has also been affected because of COVID-19. A study was conducted in Dhiraj hospital to know about the affect of COVID on menstrual patterns of the women who were affected . At the end of the study we observed that the women who recovered from covid infection suffered from altered menstrual pattern in form of scanty menstrual blood flow and, prolonged cycles, few women experienced menorrhagia with excessive amount of blood loss. When followed up for 4 months almost all women regained their normal pattern of menstrual cycle suggesting that the covid 19 infection had transitory effect on menstrual pattern.

Keywords---COVID-19 pandemic, menstrual cycle, reproductive age group, questionnaire, hypothalamus, RTPCR.

Introduction

Menstruation is a regular cyclical phenomenon comprising of shedding of devastated endometrium accompanied with dark altered colored blood, cervical mucus, vaginal exfoliated cells and vaginal secretions occurring monthly during reproductive age of female. Vasoconstriction of spiral artery induced by angiotensin II initiates menstruation². Usually it starts at about the age of 11 to 14 years of age when the ovaries start functioning under the influence of gonadotrophins from the anterior pituitary gland. The cycle is regulated by hypothalamo-pituitary-ovarian axis with help of various hormones secreted in water cascade pattern. At the same time feedback mechanisms at various levels help balancing the activity of hypothalamo-pituitary-ovarian axis resulting in normal menstrual pattern of 3 days of menstrual bleeding at interval of 28 days with average blood loss of 50 ml. Abnormal function of angiotensin II and ACE are responsible for the alterations in the menstrual cycle. Increased stress also can be accounted for altered menstrual cycles.²

Menstrual cycles during the adolescent years may be anovulatory leading to irregular menstrual pattern upto age of 20 years. Same way the pattern may be irregular after the age of 40 years as a result of exhaustion of primordial follicles or hormonal imbalance due to obesity. Many a times we witness irregular menstrual pattern in perimenopausal age. Apart from the above mentioned physiological situations the menstrual pattern gets altered by [1] uterine pathological conditions e.g. fibroid, endometriosis, and tubercular endometritis. (2) ovarian pathology e.g. hormone producing tumors. Other causes for irregular menses comprise of medical disorders like anemia, thyroid dysfunction and diabetes mellitus. Certain medications also have significant impact on the menstrual cycle.

Hypothalamus being the A-P centre of HPO axis control and in turn the master control of menstrual cycle. Hypothalamus is very sensitive to emotions and stress. Any ups and downs in the level of stress in life of a female is reflected as alterations in the menstrual pattern in various ways. Covid infection may lead to an affect in the hypothalamus-pituitary-ovarian-endometrial axis with results in the changes in the menstrual cycles.⁴ The Biological mechanisms that may be responsible for the menstrual changes that are present after a covid infection are due to the immunological influences of the hormones which regulate the menstrual cycles. There are also effects of the immune cells on the lining of the uterus which are responsible for the cyclical build up and breakdown of the uterine endometrial tissue.⁵

Recently COVID-19 virus that originated from wet market of Wuhan (China) and gripped the world in form of pandemic imparted serious morbidity and huge mortality in human beings. COVID has been responsible for not only respiratory distress but also diseases of the cardiovascular system, endocrine system and the digestive system.¹ Mankind suffered a lot of tension and stress due to morbidity,

loss of nears and dears and, financial crisis due to loss of employment and subdued businesses and unexpected high medical expenditures due to illness. Menstrual irregularities were said to occur in patients who have multisystem disorder due to COVID but evidences have shown that it has led to transient menstrual changes in the menstrual pattern in women affected with covid regardless of their health status.³ As we came across many patients having various menstrual complaints after recovery from covid 19 infection, we opted to carry out a study about the menstruation pattern after covid infection.

Materials and Methods

This was a single centre prospective analytical study conducted at Dhiraj hospital, Pipariya a tertiary care hospital affiliated to SBKS Medical Institute and Research Centre located in the outskirts of Baroda city. A questionnaire sheet was prepared and given to the patients.

Inclusion Criteria

1. All the non pregnant patients attending the hospital OPD with gynecological complaints who suffered from covid 19.
2. Patients of age group 20 to 40 years.
3. Patients with positive RT PCR TEST
4. Six menstrual cycles regular and normal prior to covid infection

Exclusion Criteria

1. patients having late menarche, irregular menstrual cycles in past
2. patients with premature menopause.
3. patients with h/ o. hysterectomy or oophorectomy
4. patients having chronic medical disease like DM, tuberculosis
5. patients on drugs which could affect menstrual cycle
6. lactating mothers.
7. patients attending Gynec opd with menstrual complaints without the history of covid infection.

The proforma for this included name, age, address, date of RT PCR test, details of hospitalization (outdoor treatment or indoor admission, drug used especially steroids, no of days of admission, duration of treatment and time elapsed before RT PCR turned negative. The questionnaire included past and present menstrual history in detail. No of days of menstrual bleeding, the no of days of menstrual cycle, regularity of the cycles, amount of blood loss, and association with pain, passage of clots or lysed blood and any other relevant symptoms formed the main points of interrogation. The study period was from November 2020 to April 2021. Total no of patients included in the study were 356 who had suffered from the corona virus disease recently. The patients coming to the opd with any gynecological complaints were attended by one of the author and interrogated in detail about their menstrual cycles immediately after recovery from covid illness (a non reactive RT PCR was taken as the landmark of recovery).

Observations

The patients reported a variety of changes pertaining to the pattern of menstrual cycle after recovery from covid 19. The various changed reported were:

- Lighter periods (decreased amount of blood loss and lesser days of bleeding)
- Heavier periods (excessive amount of blood loss and increased days of bleeding)
- Prolonged cycles (cycles of more than 35 days)
- passage of clots
- Missed periods
- Disappearance of pre menstrual symptoms. (dysmennorrhoea and pre menstrual mastalgia)
- Inter menstrual spotting

Results

Out of 356 patients that attended Gynec OPD during the study period 289 patients had some alteration in menstrual pattern either in form of alteration in menstrual blood volume Or the no of days of menstrual bleeding.

Table 1: Relationship between positive RT PCR and Menstrual abnormality

No of patients with Positive RT PCR	No of patients with Menstrual abnormality
356	289

Table 2 Age-Wise Distribution of the patients

AGE	No. of patients in study
21 to25 years	56
26 to30 years	71
31 to 35 years	102
36 to 40 years	127

Table 3 Amount of Blood loss

No of patient with Menstrual abnormality	No of patient having Scanty blood loss	No of patients with excessive blood loss
289	227 (78.55 %)	62 (21.45)

Table 4 Severity of the Disease in study group

Total no of cases	Mild to moderate disease	Severe disease
356	260	96

Table 5 Amount of blood loss indicated by lysis of clots

Severity of disease	No of patients	No of patients with h/o blood clots	No of patients with lysed blood
Mild to moderate	256	05	251
severe	96	18	78

Out of patients 289 patients 227 patients(78.55 %) noticed reduction in the menstrual blood volume while 62 patients (21.45 %) patients reported moderate increase in blood loss during menses. The patients with mild symptoms and positive RT PCR but having normal HRCT (no evidence of consolidation patches)were taken as mild cases. Those with oxygen saturation below 95 or patients with respiratory distress or on ventilator support were considered as severe cases 18 women who had more severe illness (recovery period more than one week.(96 patients) noticed passage of dark colored blood clots Retrospectively viewing their laboratory reports revealed high levels of D dimer in these patients. These women who had long duration(more than 7 days) of illness had longer menstrual cycles (more than 35 days).

96 patients had severe corona virus infection. 32(33.33 %) patients from this group had cycles longer than 35 days following recovery from the illness. In 260 patients the symptoms were mild (although RT PCR was positive) and recovery period was less than one week 38 (17.2 %) patients had longer menstrual cycle. In this study 32 patients reported disappearance of dysmenorrhoea. After they recovered from covid 19. 20 patients reported absence of pre menstrual heaviness of breast. After recovery, 7 patients noticed mid cycle spotting in the cycle that followed covid 19 illness. On follow up of the patients we observed that after 4 months of recovery from covid 19 almost 89 % of subjects regained their normal pattern of menstruation without any medical intervention.

Discussion

Endometrium lacking the ACE 2 is normally less vulnerable to direct invasion by the corona virus. But this natural protection fails to guard the endometrium against the raised levels of catecholamines produced by brain and adrenals under circumstances of stress when the body is put under fight or flight mode. Excessive stress initially stimulates the anterior pituitary but prolonged stress ultimately suppresses production of all anterior pituitary hormones except ACTH. Thus lower levels of FSH may be considered accountable for irregular or no follicular development resulting in prolonged cycles or scanty periods. As the corona virus disease has strong association with coagulopathy the patients who suffered from severe infection with corona suffered excessive blood loss during periods .Problematic menstruation may cause anaemia, has a significant negative impact on quality of life and is a huge socioeconomic burden for women, their families, health services and society.⁶⁻¹⁰ Passage of blood clots noticed by some women may be attributable to excessive blood loss and failure of lysis of clot in view of depleted clotting factors following consumption in clots. Disappearance of pre menstrual symptoms can be well explained in view of anovulatory cycles.

Conclusion

During the pandemic of covid -19 men and women were equally susceptible to get infected by the SARS Covid -19 virus. In addition to the impact of the disease on the respiratory tree the women had also effect on the menstrual pattern because of the anxiety and worries clouding the hypothalamopituitary axis which regulates the ovulation and in turn the menstrual cycle. We came across many women with altered menstrual pattern after covid infection. The alteration of the cycle was either in form of altered menstrual blood loss volume or the length of the menstrual cycle. Majority of the women had longer menstrual cycles with reduction in menstrual blood volume. Few women also presented with menorrhagia. Some women had intermenstrual spotting but of no significance. Some women who suffered from covid 19 disease had temporarily altered menstrual cycle with regard to menstrual blood volume as well as menstrual cycle length. Disappearance of the pre menstrual pain and breast discomfort was a welcome sign in certain women. Resumption of normal menstrual pattern was a rule in almost all women within four months of recovery.

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