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CLINICAL ASPECTS OF MENSTRUAL CYCLE AND ITS ABNORMALITIES

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Abstract: *The health problems of adolescents are very particular. Menstrual cycle and its abnormalities such as amenorrhea, abnormal/excessive uterine bleeding, dysmenorrhea and premenstrual syndrome are particularly common in adolescent girls. A woman's first menstruation occurs around age 12. However, occurrence depends on overall health and diet The Menopause will comes at the end of a woman's reproductive phase, commonly occurs between ages 45 and 55. The menstrual cycle is the monthly series of changes a female body goes through in preparation for possibility of pregnancy.*

Keywords: *adolescents, amenorrhea, dysmenorrhea, menstrual disorder/abnormalities, dysfunctional uterine bleeding, anovulation, anovulatory cycle, menorrhagia, metrorrhagia*

Introduction: Menstruation is the most striking events in women's life. Menstruation disorder is a common concomitant of anorexia nervosa. Menstrual cycle is the monthly series of changes in the female's body controlled by hormones that helps in the preparation of uterus for a possible pregnancy. A woman's first menstruation occurs around the age of 12. However, occurrence depends on overall health and diet. Menopause occurs at the end of a woman's reproductive phase, commonly between the age of 45 and 55. Age of menopause is largely the result of genetics. [1]

The cycle is controlled by hormones of the pituitary gland and ovaries. Menstrual flow might occur every 21 to 35 days and last 2 to 7 days. From the beginning of one period to the beginning of the next takes about 28 days. However, it can defer in many people with shorter and longer cycles.

Menstrual Cycle: We can observe the Physiological changes during menstrual cycle at following three levels:

- Neuroendocrine level
- Ovaries
- Uterus

We can divide the Menstrual cycle into 4 phases:

- Menstrual phase
- Ovulatory phase
- Proliferative / follicular (estrogen) phase
- Secretory / luteal phase (progesterone) phase

Phase	**Average start and end day (28 day cycle)**
Menstrual Phase	1-4
Proliferative/ Follicular Phase	5-13
Ovulation	13-16
Secretory Phase	16-28

Menstrual Phase (Day 1-4)

Menstruation

- It is the discharge of bloody fluid containing endometrial cells, glandular secretions and blood cells, lasting for 3 -4 days.
- Due to strong vasoconstriction and proteolytic activity, functional stratum of endometrial tissue dies and is discharged during menstrual bleeding.
- Endometrium becomes very thin, but due to low estrogen levels, hypophysis secretes more FSH which stimulates secretion of estrogen, and estrogen serves as proliferation signal to the endometrial basal layer.

Proliferative Phase (Day 5-16)

- Due to the rise of follicle stimulating hormone (FSH) during the first days of the cycle, several ovarian follicles are stimulated.
- As they mature, the follicles secrete increasing amounts of estrogen, which thickens the new functional layer of endometrium in the uterus
- Estrogen also stimulates crypts in the cervix to produce fertile cervical mucus
- At the end of this phase ovulation occurs.

Ovulatory Phase (13-16)

- Before ovulation–estrogen is released to stimulate the uterus to build the lining with extra blood and tissue to prepare for pregnancy. If the egg is fertilized by the sperm cell it travels to the uterus and attaches.

Secretory Phase (Day16-28)

- Most of the time the egg is not fertilized. If the egg is not fertilized the egg will begin to dissolve. Then the uterus no longer needs the extra blood and tissue. Then the menstrual cycle starts over again.

Long cycles are common during the beginning years of menstruation, later on menstruation cycle become normal. Many females have menstrual periods that for last four to seven days and their period usually occurs every 28 days.

Menstrual problems are-

- Menstrual flow much heavier or lighter than usual
- **Periods Occur**
  - Less than 21 days
  - More than 35 days
  - Last longer than seven days
  - Accompanied with pain, cramp and vomiting.
  - Missing 3 or more in a row.
- Abnormal Bleeding
- Bleeding in between periods.
- Experiencing changes in mood or behavior.

A female generally experiences cycle length variations of up to eight days between the shortest and longest cycle lengths. Lengths ranging between eight and 20 days are considered moderately irregular. Variation of 21 days can be treated as irregular.

Causes

1. Pathologically

- Using excessive Alcohol, smoking, Caffeine, Drugs
- Polycystic ovarian syndrome (PCOS)/ estrogen dominance
- Using medicines like birth control etc.
- The menstrual cycles can also be disturbed due to
  - Anorexia nervosa
  - Extreme weight loss and increased physical activity.
- Recent Child birth, miscarriage or D & C
- Breastfeeding delays the return of menstruation.
- Pelvic Inflammatory disease (PID)
- Uterine abnormalities such as Uterine Fibroids which causes heavy menstrual.
- Chemotherapy
- Premature ovarian failure – loss of normal ovarian function before age of 40.

2. Physiologically

- Pregnancy
- Menopause

The menstrual cycle abnormalities are-

- Anovulation
- Anovulatory cycle
- Amenorrhoea
- Cryptomenorrhoea
- Oligo and Hypomenorrhoea
- Menorrhagia
- Polymenorrhoea and Polymenorrhagia
- Dysfunctional Uterine Bleeding (DUB)
- Metrorrhagia
- Pre & Mid menstrual tension
- Dysmenorrhoea
- Post menopausal bleeding

Anovulation: Anovulation is a condition in which a woman does not release an egg for fertilization each month during menstrual period. In other words, no ovulation takes place. Naturally, the ovaries release a matured egg into the fallopian tubes every month where it can be fertilized. When a woman is anovulatory, a mature egg is not released regularly every month. Anovulation is one type of menstrual cycle disorder that may significantly affect female fertility.

Causes

- Imbalance of the hormones within the body
- Thyroid problems
- Pituitary problems
- Obesity
- Weight loss

Anovulatory Cycle: Anovulatory cycle occurs when a woman skips ovulation. If a woman is not tracking her ovulation, she may not yet know

it has happened. When anovulation takes place, most women will appear to menstruate as normal, but ovulation will not occur. During the early and late years of menstruation, this is a common occurrence. In these instances, a woman's body is changing drastically and anovulatory cycles will happen quite regularly. The problem occurs when anovulation is a common matter in a woman's life.[2]

Causes for anovulatory cycles are stress, overexertion, and eating habits. The women who are taking Pill, Shot, they are chemically imitating anovulation. Over an extended period of time, the use of these drugs can negatively affect the function of your reproductive system.

Amenorrhoea: Women's missed at least 3 menstrual periods in a row have Amenorrhœa. it is the absence of a menstrual period in a female of reproductive age. Amenorrhea can also be occurred due to problems with the reproductive organs or with the glands that help regulate hormone levels [3].

We can classify the amenorrhoea in following two parts. 1. Physiological amenorrhoea. 2. Pathological amenorrhoea. Physiologal amenorrhoea-it due to 1. Pregnancy, 2. Breast feeding, 3. Menopause. Pathological Amenorrhoea are classified as-

- Primary amenorrhoea
- Secondary amenorrhoea

Causes for Amenorrhoea

1. Physical deformities
2. Certain medicines, specially contraceptive medicines.
3. Anti Psychotic drugs used to treat Schizophrenia
4. Functional Hypothalamic Amenorrhoea (FHA) can be caused due to stress, weight loss or excessive exercise.
5. PCOS.
6. Eating disorder and Osteoporosis together.
7. Premature menopause.
8. Pituitary tumour
9. Secondary Amenorrhoea can be caused by low levels of the hormones leptin in females with low body weight and also due to Breast feeding as well as mental disease, hypo & hyperthyroidism, Hysterectomy etc [4].
10. Primary Amenorrhoea is caused due to Hypothyroidism,
11. Sheehan`s syndrome
12. Hypo & hyperthyroidism
13. After radiotherapy

Hypomenorrhea: Normal menstrual bleeding lasts between 3 to 7 days and the volume of the blood may range between 30 to 80 ml per cycle. If this menstrual flow continuous reduced and the bleeding lasts for less than 2 days for repeated cycles, it is known as hypomenorrhea. This condition is also known as scanty menstruation, scanty discharge [5].

Causes

- Asherman`s syndrome of which hypomenorrhea may be the only apparent sign.
- Nervousness and emotional: Psychogenic factors like stress or excessive excitement.
- Low body fat: Excessive exercise and crash dieting.

Polymenorrhoea: It is an abnormal uterine bleeding. It is due to menstrual cycle with intervals of 21 days or fewer. Bleeding that occurs at regular intervals less than 21 days apart is usually polymenorrhea. Normal menstrual cycle is from 21 to 35 days long. Day 1 of the menstrual cycle occurs the first day you experience any amount of bleeding.

Menorrhagia: It is an abnormally heavy and prolonged menstrual periods at irregular intervals. It may be associated with abnormally painful periods (dysmenorrhea) [6]

Causes

1. Abnormal blood clotting
2. Distruption of normal hormonal regulation of periods.
3. Fibroids
4. Blood disorder or stress related disorder.
5. Periods soon after the onset of menstruation in girls and before menopause may in some women be particularly heavy.
6. Endometrial Carcinoma causes due to irregular bleeding.

Metrorrhagia: Vaginal bleeding that occurs between the expected menstrual periods. Metrorrhagia may be a sign of an underlying disorder, such as hormone imbalance, endometriosis, uterine fibroids or, less commonly, cancer of the uterus. Metrorrhagia may cause significant anemia. Metrorrhagia is most commonly due to stress, low thyroid levels, or hormone fluctuations sometimes related to starting, stopping, or missing doses of birth-control pills, patches, or other prescribed estrogen supplements [7].

Oligomenorrhea: Infrequent menstruation. It occurs in women of childbearing age. Some variation in menstruation is normal. A woman who regularly goes more than 35 days without

menstruating may be diagnosed with oligomenorrhea.

Causes: Period irregularities are usually caused by environmental factors, which can easily be changed to help reintroduce a normal period. These factors include: Emotional stress, Physical illness, Poor nutrition, over exercise, Frequent travel. Sometimes however, oligomenorrhea is the result of physiological problems which must be addressed in order to restore normal menstruation [2].

Dysfunctional Uterine Bleeding (DUB): Dysfunctional uterine bleeding (DUB) is a condition that affects nearly every woman at some point in her life. DUB is a condition that causes vaginal bleeding to occur outside of the regular menstrual. Dysfunctional Uterine Bleeding may be divided in two parts:

1. Ovulatory type
- Menorrhagia
- Poly or Epimenorrhoea and Polymenorrhagia
- Premensturual spotting

2. Anovulatory type
- Metropathia haemorrhagica

Dysmenorrhea: The painful cramps that may occur immediately before or during the menstrual period. In young women painful periods often occur without an underlying problem. In older women it is more often due to underlying issues. It is more common among those with heavy periods irregular periods, whose periods started before twelve years of age, or who have a low body weight. We can classify the dysmenorrhea in following two types: 1. Primary dysmenorrheal, 2. Secondary dysmenorrhea.

Dysmenorrhea may be either primary or secondary. Primary dysmenorrhea occurs in the absence of any identifiable pathology and is attributed to the production of prostaglandins during the menstrual cycle. Secondary dysmenorrhea occurs when there is an identifiable pelvic or hormonal pathology causing pain [8].

Causes
- Endometriosis
- Secondary dysmenorrheal is caused due to leiomyoma, adenomyosis, ovarian cysts and pelvic congestion.
- Skeletal abnormalities like scoliosis [9].

Kinds of Dysmenorrhea
1. Spasmodic Neuralgic
2. Congestive
3. Obstructive
4. Membranous

Conclusion: Regular menstruation is a signal that the hypothalamic–pituitary–ovarian axis is functioning normally in its endocrine capacity. Adolescent girls referring persistent oligomenorrhoea, in first two years from menarche, had a higher risk for developing a persistent menstrual irregularity. They have longer bleeding periods and this has practical implication because these adolescents potentially more susceptible to iron deficiency anemia. Proper understanding of the normal menstrual cycle is necessary to pinpoint the causes of the abnormalities [7].

A careful history, physical examination and selected laboratory tests can help to differentiate this type of transient menstrual irregularity from the large number of endocrine and anatomic abnormalities that also present in this age group.

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