

Name: Akintunde Dolapo Ayomide.

Matric no: 18/mhs02/033.

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Question and answer.

1) Briefly discuss the cyclic changes in cervix and vagina.

CERVIX CYCLIC CHANGES.

The mucous membrane of the cervix shows cyclic change during different phases of menstrual cycle. These includes;

a) Proliferative phase: During this phase, the mucus membrane of the cervix becomes thinner and more alkaline due to the influence of estrogen. It helps in the survival and motility of spermatozoa.

b) Secretory phase: During this phase, the mucous membrane of cervix becomes more thick and adhesive because of action of progesterone.

VAGINA CYCLIC CHANGES.

Vagina is a short tubular organ. It is lined by mucus membrane, which is formed by stratified epithelial cells.

a) Proliferative phase: Epithelial cell of vagina are cornified, changes from custodial to stratified type. The stratified is more resistant to trauma and infection. Estrogen is responsible for that.

b) Secretory phase: Vaginal epithelium proliferates due to actions of progesterone. It is also infiltrated with leukocyte. These two changes increases the resistance of vagina for infection.

2. Explicate menstrual cycle.

Menstrual cycle is defined as cyclic events that take place in a rhythmic fashion during the reproductive period of a woman's life. Menstrual cycle starts at the age of 12 to 15 years, which Mark's the onset of puberty. The commencement of menstrual cycle is called MENARCHE. Menstrual cycle ceases at the age of 45 to 50 years. Permanent cessation of menstrual cycle in old age is called MENOPAUSE.

DURATION OF MENSTRUAL CYCLE.

Duration of menstrual cycle is usually 28 days. Under physiological conditions, it may vary between 20 and 40 days.

CHANGES DURING MENSTRUAL CYCLE.

During each menstrual cycle, series of changes occur in ovary and accessory sex organs. These changes are divided into 4 groups;

1. Ovarian changes
2. Uterine changes
3. Vaginal changes
4. Changes in cervix

All these changes take place simultaneously.

OVARIAN CHANGES DURING MENSTRUAL CYCLE.

Changes in the ovary during each menstrual cycle occur in 2 phases:

Follicular phase.

Luteal phase.

Ovulation occurs in between these two phases.

FOLLICULAR PHASE.

Follicular phase extends from the 5th day of the cycle until the time of ovulation, which takes place on the 14th day. Maturation of ovum with development of ovarian follicles takes place during this phase.

OVARIAN FOLLICLES.

Ovarian follicles are glandular structures present in the cortex of ovary. Each follicle consists of the ovum surrounded by epithelial cells, namely granulosa cells. The follicles gradually grow into a matured follicle through various stages. Different follicle;

- 1) primordial follicle
- 2) primary follicle
- 3) vesicular follicle
- 4) Matured follicle or graafian follicle

Primordial follicle: At the time of puberty, both the ovaries contain about 400,000 primordial follicles. Diameter of the primordial follicle is about 15 to 20µ and that of ovum is about 10µ.

Each primordial follicle has an ovum, which is incompletely surrounded by the granulosa cells. These cells provide nutrition to the ovum during childhood.

Primary follicle: The follicle and ovum increase in size. Diameter of the follicle increases to 30 to 40 μ and that of ovum increases to about 20 μ . The follicle is not covered by a definite connective tissue capsule. Changes taking place during development of primary follicle;

- 1) proliferation of granulosa cells and increase in size of th follicle
- 2) Increase in size of the ovum
- 3) onset of formation of connective tissue capsule around the follicle.

Vesicular follicle: Under the influence of FSH, about 6 to 12 primary follicles start going and develop into vesicular follicles. Changes taking place during the development of vesicular follicle includes changes in granulosa cells, changes in ovum, and formation of capsule.

Graafian follicle: It is the matured ovarian follicle with maturing ovum. It is named after Dutch physician and anatomist, Regnier De Graaf. Changes taking place during the development of graafian follicle like;

- I) ovum attaining maximum size
- II) Zona pellucida becomes thick
- III) Corona radiate becomes prominent
- IV) on the 14th day of menstrual cycle, graafian follicle is ready for the process of ovulation.

OVULATION.

Ovulation is the process by which the graafian follicle ruptures with consequent discharge of ovum into the abdominal cavity. It is influenced by LH. Ovulation occurs on 14th day of menstrual cycle in a normal cycle of 28 days. The ovum enters the fallopian tube. Function of corpus lutein is to secrete hormones and help to maintain pregnancy.

MENTRUAL PHASE.

After ovulation, if pregnancy does not occur, the thickened endometrium is shed. This desquamated endometrium is expelled out through vagina along with blood and tissue fluid. The process of shedding and exit of uterine lining along with blood and fluid is called menstruation or menstrual bleeding. It lasts for about 4 or 5 days. This period is called menstrual phase or Menses, ammonia or Catamenia.

The day the bleeding starts is considered as the first day of the menstrual cycle. Two days before the onset of bleeding, that is 26th or 27th day of the previous cycle, there is a sudden reduction in the release of estrogen and progesterone from ovary. Decreased level of these two hormones is responsible for menstruation.

During normal menstruation, about 35mL of blood along with 35mL of serous fluid is expelled. The blood clots as soon as it oozes into the uterine cavity. Fibrinolysin causes lysis of clot in uterine cavity, so that the expelled menstrual fluid does not clot. Menstruation stops between 3rd and 7th day of menstrual cycle. At the end, the thickness of endometrium is only about 1mm. This is followed by proliferative phase.

PROLIFERATIVE PHASE.

Proliferative phase extends usually from 5th to 14th day of menstruation, i.e. between the day when menstruation stops and the day of ovulation. It corresponds to the follicular phase of ovarian cycle. At the end of menstrual phase, only a thin layer (1mm) of endometrium remains, as most of the endometrial stroma is desquamated.

SECRETORY PHASE.

Secretory phase extends between 15th and 28th day of the menstrual cycle that is, between the day of the ovulation and the day when menstruation of the next cycle commences. After ovulation, corpus luteum is developed in the ovary. It secretes a large quantity of progesterone along with a small amount of estrogen. Estrogen causes further proliferation of cells in uterus, so that the endometrium becomes thicker. Progesterone causes further growth of glands. Under the influence of progesterone, the endometrial glands commence their secretory function. Many changes occur in the endometrium before commencing the secretory function.

VAGINAL CHANGES DURING MENSTRUAL CYCLE.

Proliferative phase: Epithelial cells of vagina are cornified. Estrogen is responsible for this.

Secretory phase: Vaginal epithelial proliferates due to the actions of progesterone. It is also infiltrated with leukocytes. These two changes increase the resistance of vagina for infection.

REGULATION OF MENSTRUAL CYCLE.

It is a complex process that is carried out by a well organized regulatory system. The regulatory system is a highly system, which includes hypothalamus, anterior pituitary and ovary with its GROWING FOLLICLE.

MENSTRUAL SYMPTOMS.

They are the obnoxious symptoms with discomfort, which appear in many women during menstruation. These symptoms are due to hormonal withdrawal, leading to cramps in uterine muscle before or during menstruation. Common symptoms are abdominal pain, dysmenorrhea, headache, migraine, irritability, occasional nausea and vomiting also depression.

PREMENSTRUAL SYNDROME.

They are symptoms of stress that appear before menstruation. They appear like 4 or 5 days before menstruation. Symptoms appear due to salt and water retention caused by estrogen.

Examples are mood swings, anxiety, irritability, emotional instability, headache, depression, constipation, abdominal cramping and bloating.

ABNORMAL MENSTRUATION.

1. AMENORRHEA: Absence of menstruation.
2. HYPOMENORRHEA: Decreased menstrual bleeding.
3. MENORRHAGIA: Excess menstrual bleeding.
4. OLIGOMENORRHEA: Decreased frequency of menstrual bleeding.
5. POLYMENORRHEA: Increased frequency of menstruation.

ANOVULATORY CYCLE

This is when menstrual cycle comes without the occurrence of ovulation. It is common during puberty and few year before menopause called perimenopause. If it occurs very often during child bearing years it can lead to infertility. It is caused by hormonal imbalance, eating disorders, hypothalamic dysfunctions, prolonged strenuous exercise program, tumors in pituitary gland, ovary and adrenal gland. Also caused by long term use of drugs like steroidal and oral contraceptives.