Name: Ikumogunniyi Anita Jibola
Assignment Title: Female reproductive physiology
Course Title: Renal Physiology, Body fluid & Temperature Regulation and Autonomic Nervous System
Course Code: PHS 212
Matric number: 18/mhs07/025

Question
Briefly discuss the CYCLIC CHANGES in any two of the following:

a) CERVIX (b) VAGINA (c) BREASTS

Explicate any one of the following:

1) Menstrual cycle

2) Hormonal regulation of the menstrual cycle

Answer

1b. Cyclic changes in the vagina
the vagina changes a lot throughout a person's life. An average adult vagina is slightly curved, and ranges from about 7 to 12 cm in length.
During the reproductive years after the first menstrual period and before menopause, more layers of tissue are present lining the vagina, as a result stimulation from higher estrogen levels in the body.
The vagina is also influenced by the hormone level changes during pregnancy. Increased blood flow is directed to the pelvis, causing a deeper color change to the vulva and vagina. Throughout a pregnancy, the connective tissue of the vaginal walls progressively relaxes, in preparation for the delivery of a baby. After delivery, the vagina and vaginal opening temporarily widen, but 6-12 weeks after delivery, the vagina returns to its original size.
Due to age, the walls of the vagina of the vagina become more relaxed and wider.
After menopause, when estrogen is lower, the walls of the vagina become thinner and frailer.
The vagina also changes in response to hormonal fluctuations of the menstrual cycle. Around mid-cycle, when estrogen is highest, vaginal tissue becomes thicker and fuller.
The vagina also undergoes changes during sexual activity. When a person with a vagina is sexually aroused, increased blood flow is directed towards the genitals, causing the vaginal tissue to become filled with blood, and additional lubrication to be produced. During sexual excitement, the vagina responds by increasing its length and width. This shape change happens as the uterus and cervix are drawn higher into the pelvis, which creates more space and moves the cervix farther away from any semen that is ejaculated into the vagina. This allows time for the semen to mix with female genital fluids, stimulating the sperm to undergo the physical changes necessary for fertilizing an egg.

1c. Cyclic changes in the breasts

Breasts start to form when the baby is developing in the mother's uterus. The formation of breasts starts with a thickening in the chest area known as the mammary ridge. By the time a baby girl is born, nipples and the beginnings of the milk-duct system have formed.

Breast changes continue to happen over a woman's life. The first things to develop are lobes, or small subdivisions of breast tissue. Mammary glands develop next and consist of 15 to 24 lobes. During girls' teen years, signs of breast development are visible. The ovaries produce and release estrogen. Fat in the connective tissue starts to collect causing the breasts to enlarge. The duct system also starts to grow.

When ovulation and menstruation starts, the breasts mature and start with the formation of secretory glands at the end of the milk ducts. The breasts and duct system continue to grow and mature, alongside the development of many glands and lobules. Women also have changes in breast texture. Their breasts may feel very lumpy. This is because the glands in the breast are enlarging to get ready for a possible pregnancy. If pregnancy does not happen, the breasts go back to normal size. Once menstruation starts, the cycle begins again.

It's believed that the breasts are not fully mature until a woman has given birth and made milk. During pregnancy the dark areas of skin around the nipples swell followed by the swelling of the breasts. By the fifth or sixth month of pregnancy, the breasts are fully able to produce milk. Estrogen controls the growth of the ducts, and progesterone controls the growth of the glandular buds. Many other hormones also play vital roles in milk production. These include follicle-stimulating hormone, luteinizing hormone, prolactin, oxytocin, and human placental lactogen. Other physical changes happen like the areola getting larger and darker and the blood vessels in the breast becoming more visible.

By the time a woman reaches her late 40s and early 50s, estrogen levels decrease causing the breast's connective tissue to be dehydrated inelastic. The breast tissue shrinks and loses shape.

2. Menstruation

The menstrual cycle is the annual natural change that happens in the female reproductive system (the uterus and ovaries) that makes pregnancy possible. The cycle is required for the production of oocytes, and for the preparation of the uterus for pregnancy. The menstrual cycle occurs due to the rise and fall of estrogen. This cycle results in the thickening of the lining of the uterus, and the growth of an egg.

Phases of the menstrual cycle

1.The Menstruation

this is the removal of the thickened lining of the uterus (endometrium) from the body through the vagina. Menstrual fluid contains blood, cells from the lining of the uterus (endometrial cells) and mucus. The average length of a period is between three days and one week. Sanitary pads or tampons are used to absorb the menstrual flow

2. Follicular phase

this phase starts on the first day of menstruation and ends with ovulation. Alerted by

hypothalamus, the pituitary gland releases follicle stimulating hormone. This hormone stimulates the ovary to produce around five to 20 follicles which bead on the surface. Each follicle houses an immature egg. Usually, only one follicle will mature into an egg, while the others die. This can occur around day 10 of a 28-day cycle. The growth of the follicles stimulates the lining of the uterus to thicken in preparation for possible pregnancy.

3. Ovulation

this is the release of a mature egg from the surface of the ovary. It usually occurs mid-cycle, around two weeks or so before menstruation starts. During the follicular phase, the developing follicle causes a rise in the level of estrogen. The hypothalamus in the brain recognizes these rising levels and releases a chemical called gonadotrophin-releasing hormone. This hormone signals the pituitary gland to produce raised levels of luteinizing hormone and Follicle Stimulating Hormone. Within two days, ovulation is triggered by the high levels of LH. The egg is carried into the fallopian tube and moved toward the uterus.

4. Luteal phase

during ovulation, the egg bursts from its follicle, but the ruptured follicle stays on the surface of the ovary. For the next two weeks or so, the follicle transforms into a structure known as the corpus luteum. This structure starts releasing progesterone, along with small amounts of estrogen. This combination of hormones maintains the thickened lining of the uterus, waiting for a fertilized egg to stick. When a fertilized egg sticks to the lining of the uterus, it produces the hormones that are necessary to maintain the corpus luteum like the human chorionic gonadotrophin. The corpus luteum keeps producing the raised levels of progesterone needed to maintain the thickened lining of the uterus. If pregnancy does not occur, the corpus luteum will wither and die. The level of progesterone drops causing lining of the uterus to fall away. This is known as menstruation. The cycle then repeats.