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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

CYCLIC CHANGES IN CERVIX

The cervix is the lower, narrow portion of the uterus where it joins with the top end of the vagina. It is cylindrical or conical in shape and protrudes through the upper anterior vaginal wall. During menstruation, the cervix stretches open slightly to allow the endometrium to be shed. This stretching is believed to be part of the cramping pain that many women experience. Evidence for this is given by the fact that some women's cramps subside or disappear after their first vaginal birth because the cervical opening has widened. During childbirth, contractions of the uterus will dilate the cervix up to 10 cm in diameter to allow the child to pass through. During orgasm, the cervix convulses and the external os dilates. Mucosa of uterine cervix does not undergo cyclic desquamation as the body of uterus regular changes in cervical mucus under influence:

1. Estrogens (ovulation) mucus thinner and more alkaline - promotion of survival and transport of sperm, spinnbarkeit at ovulation.

2. Progesterone (after ovulation, during pregnancy) mucus thick, tenacious, cellular.

During the ovulation phase the cervical mucus is thin and contains a high percentage of water; its dry content is low. (The dry content before and after the ovulation phase is higher.)

Assessment of the dry content of the cervical mucus is a practical and simple method for evaluating estrogenic stimulation, since estrogenic stimulation leads to the production of a watery cervical mucus with low dry content. Inadequate estrogenic stimulation results in scantiness of the cervical mucus, which is thick and of relatively high dry content. Because progesterone inhibits the production of cervical mucus, the administration of progesterone to a woman in whom estrogenic stimulation is adequate depresses secretion and changes the character of the mucus. In a woman in whom estrogenic secretion is inadequate, the mucus becomes gelatinous and its dry content is increased. Cervical mucus appears to have an important function in the process of human reproduction. In response to stimulation by estrogen, cervical glands produce increasing amounts of a characteristic mucoid secretion.

CYCLIC CHANGES IN BREASTS

Cyclic changes in the breasts during menstrual cycle

Under the influence of estrogens

- Proliferation of mammary ducts.

Under the influence of progesterone

- Growth of lobules and alveoli

The hormone estrogen is produced by the ovaries in the first half of the menstrual cycle. It stimulates the growth of milk ducts in the breasts. The increasing level of estrogen leads to ovulation halfway through the cycle and estrogen controls the growth of the ducts. By the time a woman reaches her late 40s and early 50s, perimenopause is starting or is well underway. At this time, the levels of estrogen and progesterone begin to change. Estrogen levels dramatically decrease. This leads to many of the symptoms commonly linked to menopause. Without estrogen, the breast's connective tissue becomes dehydrated and is no longer elastic. The breast tissue, which was prepared to make milk, shrinks and loses shape. This leads to the "saggy" breasts associated with women of this age. It stimulates the formation of the milk glands. In addition, the dark areas of skin around the nipples (the areolas) begin to swell. This is followed by the rapid swelling of the breasts themselves. the hormone progesterone takes over in the second half of the cycle. These hormones are believed to be responsible for the cyclical changes that many women feel in their breasts just before menstruation. These include swelling, pain, and soreness. Most pregnant women feel soreness down the sides of the breasts, and nipple tingling or soreness. This is because of the growth of the milk duct system and the formation of many more lobules and progesterone controls the growth of the glandular buds. Breast swelling, tenderness and pain 10 days preceding menstruation caused by hyperemia and edema of interstitial tissue of the breast.

During menstruation, many 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.

Other physical changes happen as well. These include the blood vessels in the breast becoming more visible and the areola getting larger and darker. All of these changes are in preparation for breastfeeding the baby after birth.

MENSTRUAL CYCLE

Menstruation is the shedding of the lining of the uterus (endometrium) accompanied by bleeding. It occurs in approximately monthly cycles throughout a woman's reproductive life, except during pregnancy. Menstruation starts during puberty and stops permanently at menopause.

By definition, the menstrual cycle begins with the first day of bleeding, which is counted as day 1. The cycle ends just before the next menstrual period. Menstrual cycles normally range from about 25 to 36 days. Menstrual bleeding lasts 3 to 7 days, averaging 5 days. Blood loss during a cycle usually ranges from 1/2 to 2 1/2 ounces. A sanitary pad or tampon, depending on the type, can hold up to an ounce of blood. Menstrual blood, unlike blood resulting from an injury, usually does not clot unless the bleeding is very heavy.

The menstrual cycle is regulated by hormones. Luteinizing hormone and follicle-stimulating hormone**,** which are produced by the pituitary gland, promote ovulation and stimulate the ovaries to produce estrogen and progesterone. Estrogen and progesterone stimulate the uterus and breasts to prepare for possible fertilization**. The menstrual cycle is regulated by the complex interaction of hormones: luteinizing hormone, follicle-stimulating hormone, and the female sex hormones estrogen and progesterone.**

The menstrual cycle has three phases:

- Follicular phase (before release of the egg)
- Ovulatory phase (egg release)
- Luteal phase (after egg release)

The length of each phase can differ from woman to woman, and it can change over time.

Follicular (before release of the egg)

The menstrual cycle begins with menstrual bleeding (menstruation), which marks the first day of the follicular phase.

When the follicular phase begins, levels of estrogen and progesterone are low. As a result, the top layers of the thickened lining of the uterus (endometrium) break down and are shed, and menstrual bleeding occurs. About this time, the follicle-stimulating hormone level increases slightly, stimulating the development of several follicles in the ovaries. Each follicle contains an egg. Later in this phase, as the follicle-stimulating hormone level decreases, only one follicle continues to develop. This follicle produces

estrogen. The increasing estrogen also begins to prepare the uterus and stimulates the luteinizing hormone surge.

On average, the follicular phase lasts about 13 or 14 days. Of the three phases, this phase varies the most in length. It tends to become shorter near menopause. This phase ends when the level of luteinizing hormone increases dramatically (surges). The surge results in release of the egg (ovulation) and marks the beginning of the next phase. The thickened lining of your uterus, which would support a pregnancy, is no longer needed, so it sheds through your vagina. During your period, you release a combination of blood, mucus, and tissue from your uterus.

You may have period symptoms like these:

- cramps
- tender breasts
- mood swings
- irritability
- low back pain

On average, women are in the menstrual phase of their cycle for 3 to 7 days. Some women have longer periods than others.

Ovulatory phase (egg release)

The ovulatory phase begins when the level of luteinizing hormone surges. Luteinizing hormone stimulates the dominant follicle to bulge from the surface of the ovary and finally rupture, releasing the egg. The level of follicle-stimulating hormone increases to a lesser degree. The function of the increase in follicle-stimulating hormone is not understood.

The ovulatory phase usually lasts 16 to 32 hours. It ends when the egg is released, about 10 to 12 hours after the surge in the level of luteinizing hormone. The egg can be fertilized for only up to about 12 hours after its release.

The surge in luteinizing hormone can be detected by measuring the level of this hormone in urine. This measurement can be used to determine when women are fertile. Fertilization is more likely when sperm are present in the reproductive tract before the egg is released. Most pregnancies occur when intercourse occurs within 3 days before ovulation.

The ovulation phase is the only time during your menstrual cycle when you can get pregnant. You can tell that you're ovulating by symptoms like these:

- a slight rise in basal body temperature
- thicker discharge that has the texture of egg whites

Luteal phase (after egg release)

The luteal phase begins after ovulation. It lasts about 14 days (unless fertilization occurs) and ends just before a menstrual period.

In this phase, the ruptured follicle closes after releasing the egg and forms a structure called a corpus luteum, which produces increasing quantities of progesterone. The progesterone produced by the corpus luteum does the following:

- Prepares the uterus in case an embryo is implanted
- Causes the endometrium to thicken, filling with fluids and nutrients to nourish a potential embryo
- Causes the mucus in the cervix to thicken, so that sperm or bacteria are less likely to enter the uterus
- Causes body temperature to increase slightly during the luteal phase and remain elevated until a menstrual period begins (this increase in temperature can be used to estimate whether ovulation has occurred)

During this phase, if you don't get pregnant, you may experience symptoms of premenstrual syndrome (PMS). These include:

- bloating
- breast swelling, pain, or tenderness
- mood changes
- headache
- weight gain
- changes in sexual desire
- food cravings
- trouble sleeping