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**Assignment**

Briefly discuss the cyclic changes in any two of the following:

1. Cervix
2. Vagina
3. Breast

Explicate any one of the following:

1. Menstrual Cycle
2. Hormonal regulation of the menstrual cycle

**Answer**

1. **The cyclic change in Cervix.**

Cervical mucus appears to have an important function in the process of human reproduction. In response to stimulation by oestrogen, cervical glands produce increasing amounts of a characteristic mucoid secretion. At the peak of this secretory activity, prior to ovulation, these glands produce copious amounts of a thin, isotonic mucus which is easily penetrated by the sperm. Progesterone, on the other hand, is known to bring about both quantitative and qualitative alterations in the cervical secretion. During the luteal phase of the menstrual cycle, cervical mucus has been shown to become scanty in amount, as well as viscous and cellular. During the progestational phase also, such properties as spinnbarkeit and crystallization of the cervical mucus, which characterize oestrogen stimulation, are markedly reduced or absent and consequently sperm migration is inhibited. Since endogenous progesterone causes an inhibition of sperm migration through cervical mucus, exogenously administered progestin’s, as prescribed for oral contraception, might be expected to have a similar effect. The purpose of this report is to present our data on sperm penetrability and the cyclic variations of certain properties of cervical mucus in a group of women during normal menstrual cycles and cycles in which oral progestogens were administered.

The cyclic changes of the endo-cervical mucosa as related to the menstrual cycle. Others have reported chemical and physical alterations of the endo-cervical mucus peculiar to particular phases of the menstrual cycle.

Mucosa of uterine cervix does not undergo cyclic desquamation as the body of uterus. Regular changes in cervical mucus under influence:

1. Oestrogens (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

1. **Cyclical changes that occur in the breast.**

Breast development is a vital part of a woman’s reproduction. Breast development happens in certain stages during a woman's life: first before birth, again at puberty, and later during the childbearing years. Changes also happen to the breasts during the menstrual cycle and when a woman reaches menopause.

**When does breast development begin?**

Breasts begin to form while the unborn baby is still growing in the mother’s uterus. This starts with a thickening in the chest area called the mammary ridge or milk line. 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 thing to develop are lobes, or small subdivisions of breast tissue. Mammary glands develop next and consist of 15 to 24 lobes. Mammary glands are influenced by hormones activated in puberty. Shrinkage (involution) of the milk ducts is the final major change that happens in the breast tissue. The mammary glands slowly start to shrink. This often starts around age 35.

**Changes that happen in the breast by puberty?**

As a girl approaches her teen years, the first visible signs of breast development begin. When the ovaries start to produce and release (secrete) oestrogen, fat in the connective tissue starts to collect. This causes the breasts to enlarge. The duct system also starts to grow. Often these breast changes happen at the same that pubic hair and armpit hair appear. Once ovulation and menstruation begin, the maturing of the breasts begins with the formation of secretory glands at the end of the milk ducts. The breasts and duct system continue to grow and mature, with the development of many glands and lobules. The rate at which breasts grow is different for each young woman.

**Female breast developmental stages**

Stage 1- Preteen. Only the tip of the nipple is raised

Stage 2- Buds appear, and breast and nipple are raised. The dark area of skin around the nipple (the areola) gets larger.

Stage 3- Breasts are slightly larger, with glandular breast tissue present.

Stage 4- The areola and nipple become raised and form a second mound above the rest of the breast.

Stage 5- Mature adult breast. The breast becomes rounded and only the nipple is raised.

**What cyclical changes happen to the breasts during the menstrual cycle**

Each month, women go through changes in the hormones that make up the normal menstrual cycle. The hormone oestrogen 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 oestrogen leads to ovulation halfway through the cycle. Next, the hormone progesterone takes over in the second half of the cycle. It stimulates the formation of the milk glands. 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.

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.

**What happens to the breasts during pregnancy and milk production?**

Many healthcare providers believe the breasts are not fully mature until a woman has given birth and made milk. Breast changes are one of the earliest signs of pregnancy. This is a result of the hormone progesterone. 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. 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.

By the fifth or sixth month of pregnancy, the breasts are fully capable of producing milk. As in puberty, oestrogen 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 (FSH), luteinizing hormone (LH), prolactin, oxytocin, and human placental lactogen (HPL). 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.

**What happens to the breasts at menopause?**

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 oestrogen and progesterone begin to change. Oestrogen levels dramatically decrease. This leads to many of the symptoms commonly linked to menopause. Without oestrogen, 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. Women who are taking hormone therapy may have some of the premenstrual breast symptoms that they had while they were still menstruating, such as soreness and swelling. But if a woman’s breasts were saggy before menopause, this will not change with hormone therapy.

Explicate on:

1. **Menstrual Cycle**

Everyone (adolescent boys and girls) who is about to enter puberty (the process of body changes that cause a child’s body to become an adult body capable of reproduction) should be taught or know the basic medical definition of menstruation and that it is a normal process that females go through as their bodies prepare themselves for potential pregnancy. It is a part of the monthly menstrual cycle (regular cycling of hormones) that occur in the female reproductive system that makes pregnancy possible.

Medically, menstruation (also termed period or bleeding) is the process in a woman of discharging (through the vagina) blood and other materials from the lining of the uterus at about one monthly interval from puberty until menopause (ceasing of regular menstrual cycles), except during pregnancy. This discharging process lasts about 3-5 days.

**Signs and symptoms of menstruation**

Beside the bleeding, other signs and symptoms of menstruation may include:

* Headache.
* Acne.
* Bloating.
* Pains in the low abdomen.
* Tiredness.
* Mood changes.
* Food cravings.
* Breast soreness.
* Diarrhea.

**The time menstruation begins, and the time it ends**.

The menstrual cycle is the hormonal driven cycle; Day 1 is the first day of your period (bleeding) while day 14 is the approximate day you ovulate and if an egg is not fertilized, hormone levels eventually drop and at about day 25; the egg begins to dissolve and the cycle begins again with the period at about day 30. Menstruation begins day 1 and normally ends days 3-5 of the menstrual cycle.

**Girls begin their puberty and start their period (start to menstruate)**

The average age for a girl to get her first period in the US is 12, but the range of age is about 8 to 15 years old. Women usually have periods until about ages 45 to 55.

**How long does it take for a menstrual cycle to end?**

The menstrual cycle is the hormonal driven cycle. Day 1 is the first day of your period (bleeding) while day 14 is the approximate day you ovulate and if an egg is not fertilized, hormone levels eventually drop and at about day 25. The egg then begins to dissolve and the cycle begins again with the period at about day 30.

Most periods vary somewhat, the flow may be light, moderate or heavy and can vary in length from about 2 to 7 days; with age, the cycle usually shortens and becomes more regular.

**Treatment for pain and other symptoms caused by menstruation**

Treatment for the causes of menstrual pain depend on what the cause is, and may include birth control pills, heavy or prolonged periods, IUDs, non-inflammatory steroid drugs (NSAIDs), for example, ibuprofen (Advil,), aspirin, naproxen (Aleve), and other-the-counter pain (OTC) medications to relive pain and cramping.