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DEPARTMENT: NURSING

COURSE: PHS 212

QUESTION: Briefly discuss the cyclic changes in the following:

1. Vagina
2. Breast

2. Explicate menstrual cycle

1. **Cyclic change in the vagina:**

Definition of Vagina:

The vagina is a distensile, thin- walled tubular structure which extends from the cervix to the vulva. It is loosely attached to the rectum dorsally and to the urethra ventrally.

The human vagina undergoes cyclic morphological changes, which depend on the ovarian function. It was shown that during the menstrual cycle, definite proliferative and destructive changes occur in the human vaginal epithelium.

**Cyclic change in the breast:**

Definition of breast:

This is either of the two soft, protruding organs on the upper front of a woman’s body which secretes milk after childbirth.

Cyclic changes in composition and volume of the breast during the menstrual cycle, measured by magnetic resonance imaging. Women go through changes in the hormones that make up the normal menstrual cycle. 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 breast. The increasing level of estrogen 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 cyclic changes that many women feel in their breasts just before menstruation. These include swelling, pain and soreness.

1. **MENSTRUAL CYCLE**
2. **Definition/ Introduction:**

This is the process of ovulation and menstruation in women and other primates. It is the monthly cycle of changes in the ovaries and the lining of the uterus (endometrium), starting with the preparation of an egg for fertilization. The menstrual cycle is the regular natural change that occurs in the female reproductive system (specifically 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 (which is required for pregnancy). The egg released from an ovary around day fourteen in the cycle; the thickened lining of the uterus provides nutrients to an embryo after implantation. If pregnancy does not occur, the lining released is what is known as menstruation. The menstrual cycle is governed by hormonal changes.

1. **Stages/Phases of menstrual cycle**

The average menstrual cycle lasts about 28 days. For convenience the first day of menstruation is usually called day 1 of the cycle. The cycle can also be conveniently divided into phases based on changes occurring in the ovaries and in the endometrium. From the first day of menstruation, to the day of ovulation, the ovaries are in the **follicular phase**. After ovulation to the first day of the next menstruation, the ovaries are in the **luteal phase**. From the changes that occur in the endometrium the menstrual cycle is divided into menstrual, proliferative and secretory phases.

**Phases of the Menstrual Cycle: Cyclic Changes in the Ovaries**

* Follicular Phase: The follicular phase of the ovaries lasts from day 1 to about day 13 of the average 28 days cycle. During this phase the follicle operates to produce a mature egg ready for ovulation at about mid cycle. The ovaries contain only primordial and primary follicles in the early parts of this phase. Some primary follicles therefore grow, develop vesicles and become secondary follicles. Towards the end of this phase, one follicle from one ovary has matured and become a graafian follicle. As the follicles grow, granulosa cells secrete increasing amounts of oestradiol (it reaches maximum concentration in the blood at about day 12).
* Luteal Phase: Under the influence of LH, the empty follicle becomes a new structure called corpus luteum following ovulation. The corpus luteum now takes on the function of secreting both oestradiol and progesterone. The levels of progesterone in the blood rise so rapidly to reach a peak in the luteal phase about 1 week after ovulation. The levels of oestradiol and progesterone begin to fall about day 22 in the late luteal phase. Decline in corpus luteum causes oestrogen and progesterone to fall to very low levels by day 28 of the cycle. This hormonal withdrawal causes menstruation and permits new cycle to begin.

**Phases of the Menstrual Cycle: Changes in the Endometrium**

The cycle can also be described in terms of the changes in the endometrium and three phases can be identified.

* The Proliferative Phase of the endometrium occurs in the follicular phase of the ovarian cycle. The increasing amounts of oestradiol produced by the developing follicle causes growth (proliferation) of the functional layer of the endometrium. Spiral arteries develop.
* The Secretory Phase occurs when the ovary is in the luteal phase. In this phase, increased progesterone secretion stimulates the development of uterine glands. The combined effect of oestradiol and progesterone causes the endometrium to become thick, vascular and spongy in appearance. The uterine glands become engorged with glycogen. All these serve to prepare the endometrium well to accept and nourish an embryo should fertilization occur.
* The Menstrual Phaseoccurs as a result of the fall in ovarian hormones in the late luteal phase. There is death and sloughing of the functional layer of the endometrium probably as a result of the constriction of the spiral arteries. These arteries also seem to be responsible for the bleeding that occurs. Fluctuating changes in ovarian hormones produce cyclical changes in cervical mucus that can easily be penetrated by spermatozoa. But after ovulation in the luteal phase high levels of progesterone cause the cervical mucus to become thick and sticky after ovulation has occurred.

1. **Symptoms**

These include: Acne, Tender breasts, Bloating, Feeling tired, Irritability, Abdominal cramps, Joint pains, Diarrhea, Food cravings and Mood changes.

1. **Health conditions related to menstrual cycle**

* PMS (premenstrual syndrome)
* Menopause
* Anovulation
* Menstrual psychosis
* Precocious puberty
* Dysmenorrhea
* Amenorrhea
* Heavy menstrual bleeding.