MENSTRUAL CYCLE

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- The reproductive cycle in the female primates (*e.g.* monkeys, apes and human beings) is called **menstrual cycle.**
- The first menstruation begins at puberty and is called menarche.
- In human females, menstruation is repeated at an average interval of about 28/29 days, and the cycle of events starting from one menstruation till the next one is called the menstrual cycle.

- One ovum is released (ovulation) during the middle of each menstrual cycle.
- The cycle starts with the menstrual phase, when menstrual flow occurs that lasts for **3-5 days.**
- The menstrual flow results due to breakdown of endometrial lining of the uterus and its blood vessels which forms liquid that comes out through vagina.
- Menstruation only occurs if the released ovum is not fertilized. Lack of menstruation may be indicative of pregnancy.
- The menstrual phase is followed by the follicular phase (proliferative phase).
- During this phase, the primary follicle in the ovary grows to become a fully mature Graafian

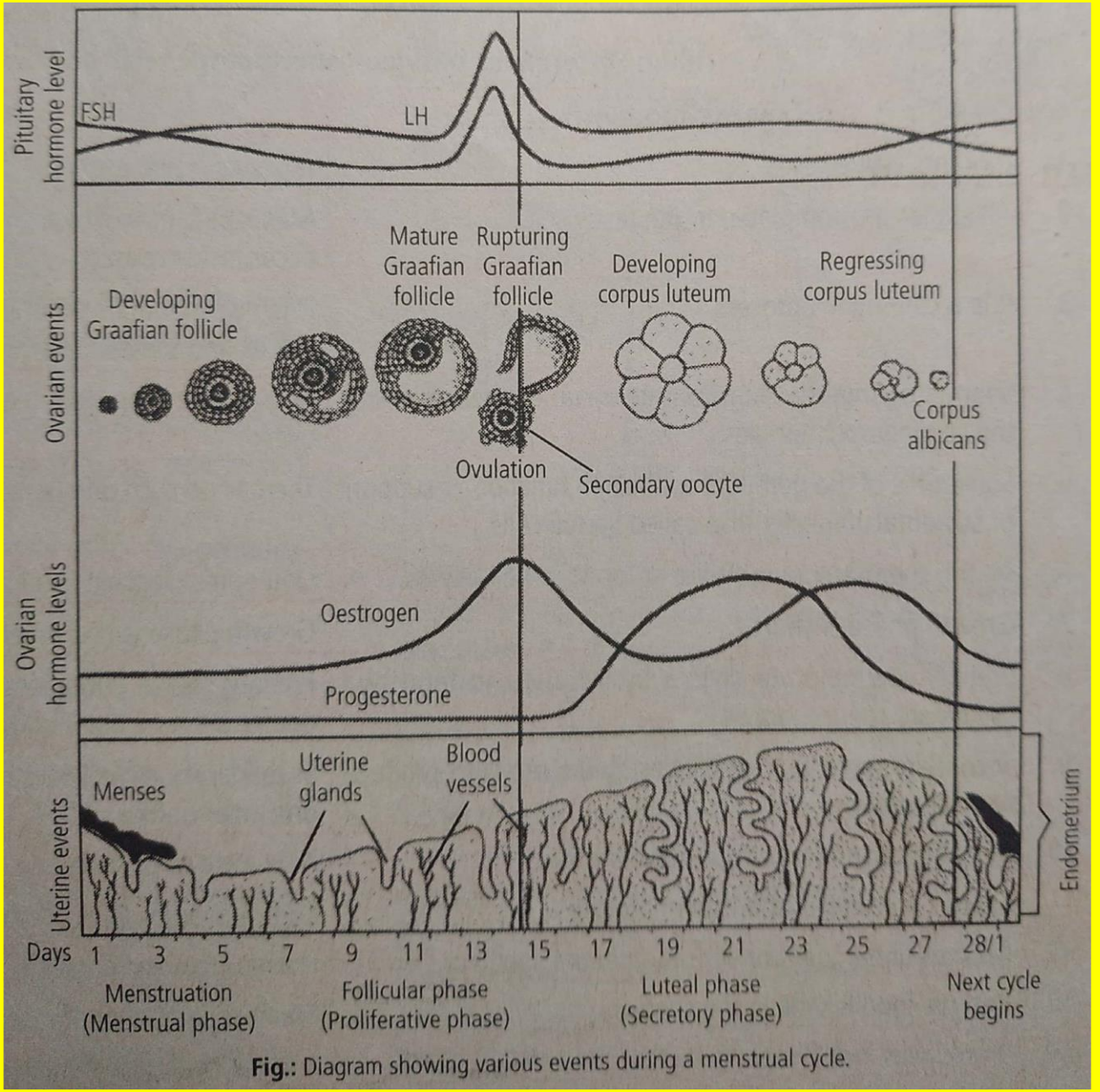

Fig.: Diagram showing various events during a menstrual cycle.

follicle and simultaneously the endometrium of uterus regenerates through proliferation.

- These changes in the ovary and the uterus are induced by changes in the levels of pituitary and ovarian hormones.
- The secretion of **gonadotropins (LH and FSH)** increases gradually during the follicular phase, and stimulates follicular development as well as secretion of estrogens by the growing follicles.
- Both LH and FSH attain a peak level in the middle of cycle (about 14th day).
- Rapid secretion of LH leading to its maximum level during the mid-cycle called LH surge induces rupture of Graafian follicle and thereby the release of ovum **(ovulation).**
- The ovulation (ovulatory phase) is followed by the luteal phase (secretory phase) during which the remaining parts of the Graafian follicle transform as the **corpus luteum.**
- The corpus luteum secretes large amounts of progesterone which is essential for the maintenance of the endometrium.
- Such an endometrium is necessary for implantation of the fertilized ovum and other events of pregnancy.

- During pregnancy all events of the menstrual cycle stop and there is no menstruation.
- In the absence of fertilization, the corpus luteum degenerates. This causes disintegration of the endometrium leading to menstruation, marking a new cycle.
- In human beings, menstrual cycles ceases around 50 years of age; that is termed as menopause.
- Cyclic menstruation is an indicator of normal reproductive phase and extends between menarche and menopause.
- Menstrual cycle is controlled by **FSH, LH, estrogen** and **progesterone.**

Questions

1. What is the menstrual cycle? Name the hormones which control the menstrual cycle.
2. What is the significance of LH surge through the menstrual cycle?
3. Explain the role of pituitary and the ovarian hormones in the menstrual cycle in human females.
4. Why is there no menstruation during pregnancy?
5. Define the following term:

    (a) Menarche

    (b) Menopause