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MBBS

1)Ovulation is the release of eggs from the ovaries. In women, this event occurs when the ovarian follicle ruptures and releases the secondary oocyte ovarian cells. After ovulation, during the luteal phase, the egg will be available to be fertilized by Sperm. In addition, the uterine lining(endometrium) is thickened to be able to receive a fertilized egg. If no conception occurs, the uterine lining as well as blood will be shed during menstruation.

Disorders of ovulation

Disorders of ovulation are classified as menstrual disorders and include oligoovulation and anovulation:

- Oligoovulation is infrequent or irregular ovulation (usually defined as cycles of greater than 36 days or fewer than 8 cycles a year)
- anovulation is absence of ovulation when it would be normally expected (in a post-menarchal, premenopausal female). Anovulation usually manifests itself as irregularity of menstrual periods, that is, unpredictable variability of intervals, duration, or bleeding. Anovulation can also cause cessation of periods (secondary amenorrhea) or excessive bleeding (dysfunctional uterine bleeding).

The World Health Organization (WHO) has developed the following classification of ovulatory disorders:

- WHO group I: hypothalamic-pituitary-gland axis failure
- WHO group II: Hypothalamic-pituitary-gonadal axis dysfunction. WHO group II is the most common cause of ovulatory disorders, and the most common causative member is polycystic ovary syndrome (PCOS).
- WHO group III: ovarian follicle

- WHO group IV: hyperprolactinemia

2) Meiosis is a way sex cells (gametes) divide. Since sex cells determine the genetic code of offspring, meiosis attempts to create unique combinations of chromosomes in gametes.

Meiosis I is the first stage of this cell division, where pairs of chromosomes are split up

1. In meiosis I, homologous chromosomes separate, while in meiosis II, sister chromatids separate.
2. Meiosis II produces 4 haploid daughter cells, whereas meiosis I produces 2 diploid daughter cells.
3. Genetic recombination (crossing over) only occurs in meiosis I

3) fertilization is the union of sperm and oocyte

It occurs in 6 stages

- I) Passage of sperm through the corona radiata

Capacitated sperms have the ability to pass through the corona radiata using the glycoprotein coat and seminal fluid that has been removed from the acrosomal region

- II) Penetration of the zona pelucida

The intact acrosome of the sperm binds with a zona glycoprotein on the zona pelucida. As soon as the sperm comes in contact with the oocyte the permeability of the zona pelucida changes. Only one sperm can penetrate the oocyte

- III) Fusion of the plasma membranes of the sperm and oocyte

The plasma membranes of both the oocyte and the sperm fuse and breakdown at the area of fusion. Only the head and the tail of the sperm enter the oocyte's cytoplasm

- IV) Completion of second meiotic division of oocyte and formation of female pronucleus

When the sperm penetrates the oocyte the oocyte completes the second meiotic division and becomes a mature oocyte and a second polar body that fades away. The nucleus of the oocyte is now called the female pronucleus

V) Formation of male pronucleus

Within the cytoplasm of the oocyte the nucleus of the sperm enlarges to form male pronucleus and the tail disappears

VI) The two pronucleus fuse to form an ootid

The pronucleus of the oocyte and of the sperm fuse to form an ootid which later turn into the zygote and prepare for cleavage

4) Dizygotic are twins which result from the fertilization of 2 different eggs with 2 different sperms. Dizygotic twin pairs can be girl/girl, boy/boy, or girls/boy. Other words for dizygotic twins are also fraternal or non-identical twins. They normally don't look 100% alike and sometimes have appearances similar to each other in the same way non-twin siblings have.

Monozygotic twins result from the fertilization of one egg and one sperm. The fertilized embryo then splits within days after fertilization resulting in two individuals which usually share the same chromosomes. Monozygotic twins are also known as identical or maternal twins. Mostly they have very similar appearances.