

NAME:NWEKE TOCHI PRAISE
MATRIC NO:19/MHS01/447
DEPARTMENT:MBBS
ASSIGNMENT TITLE:EMBRYOLOGY

1. DISCUSS OVULATION

Ovulation is the release of a mature secondary oocyte from the ovulation follicle ovulation occurs around the mid cycle. i.e, ovulation occurs on the in an average of 28days, ovulation on the 14th day. Ovulation occurs when the chromosomes align at metaphase.

The secondary oocyte remains arrested in metaphase of meiosis until fertilization occurs. Ovulation occurs (14-16) days.

Ovulation is triggered by a sudden increase in lutenizing hormone (LH) production which reaches its peak at about 12-36hrs prior to ovulation. The ovarian follicle undergoes a sudden growth sprout under influence of follicle stimulating hormone (FSH) and the lutenizing hormone (LH). This growth sprout produce a cystic swelling or bulge on the surface of the ovary. A small avascular spot, called stigma soon appears on in the swelling. The stigma then ruptures expelling the secondary oocyte with the following fluids. In summary, this event occurs when the ovarian follicle rupture and release the secondary oocyte ovarian cells. When the egg is released, it may or may not be fertilized by sperm. It fertilized, the egg may travel to the uterus and implant to develop into a pregnancy. It left unfertilized, the egg disintegrated and sheds as menstruation.

Signs and symptoms

- Tenderness of the breast
- Slight drop in basal body temperature
- Swollen vagina
- The cervical mucus becomes more abundant, takes on a water to raw-egg-white-like consistency.
- Increase urge for sex.
- Ovary pain characterized by discomfort or pain on one side of the abdomen, also called mittleschmerz.

Clinical correlates

An ovulation is the absence of ovulation in some women owing to inadequate of secretion of follicle stimulating hormone (FSH) and Lutenizing hormone (LH).

Question NO 2:

DIFFERENCE BETWEEN MEIOSIS1 AND MEIOSIS2

MEIOSIS 1	MEIOSIS 2
In prophase 1 Synapsis occurs Crossing occurs Chiasma formation occurs	In prophase 2 Synapsis is absent Crossing is absent
IN METAPHASE 1: Alignment of 46 homologous duplicated chromosomes at the metaphase plate	IN METAPHASE 2: Alignment of 23 duplicated chromosomes and metaphase plate
IN ANAPHASE 1 Separation of 46 homologous duplication chromosomes	IN ANAPHASE 2 Separation of 23 duplicated chromosomes
TELOPHASE 1 Formation of secondary gametocytes[23 duplicated chromosomes 2N]	TELOPHASE 2 Formation of 4 gametes[23 single chromosomes 1N]
In meiosis1, homologous chromosomes separate	Meiosis 2, sister chromatid separate .

Question N0.3

Discuss the stages involve in fertilization

Fertilization is the union of the sperm and oocyte.

The usual site of fertilization is the ampulla of the uterine tube.

There are six (6) stages involved in fertilization:

- i. Passage of sperm through the corona radiata.
- ii. Penetration of zona pellucida
- iii. Fusion of plasma membrane of oocyte and that of sperm.
- iv. Completion of second meiotic division and formation of female pronucleus.
- v. Formation of male pronucleus
- vi. Formation of zygote.

(a) PASSAGE OF SPERM THROUGH THE WOMAN RADIATA:

For sperms to pass through corona radiata, they must have been capacitated i.e removal of the glycoprotein coat and seminal plasma proteins from the plasma membrane that overlies the acrosomal region of the spermatozoa.

(b) PENETRATION OF THE ZONA PELLUCIDA:

The zona is a glycoprotein shell surrounding the egg that facilitates and maintains sperm binding and induces the acrosome reaction.

The release of acrosomal enzyme acrosomal allows sperm to penetrate the zone pellucid, thereby coming in contacts with the plasma membrane of the oocyte.

As soon as the head of a sperm comes in contact with the oocyte surface the permability of the zona pellucida changes and the lysosomal enzymes (to breakdown) are released from cortical granules lining the plasma membrane of the oocyte.

These enzymes alter properties of the zona pellucida to:

- Present sperm penetration and
- Inactivates sperm binding sites for spermatozoa on the pellucida surface.

N/B only one sperm seems to be able to penetrate the oocyte.

(c) FUSION OF PLASMA MEMBRANES OF OOCYTE AND SPERM:

The plasma on cell membranes of the oocyte and sperm fuse and break down at the area of fusion.

The head and tail of the sperm enter the cytoplasm of the oocyte, but the sperm's plasma membrane remains behind.

(d) COMPLETION OF THE SECOND MEIOTIC DIVISION OF OOCYTE AND FORMATION OF FEMALE PRONUCLEUS:

As soon as the sperm penetrates the oocyte, it then activates the oocyte into completing the second meiotic division and forming a mature oocyte and a second polar body.

The nucleus of the mature oocyte is now called the female pronucleus.

(e) FORMATION OF THE MALE PRONUCLEUS:

Within the cytoplasm of the oocyte, the nucleus of the sperm enlarges to form the male pronucleus and the tail degenerates.

(f) FORMATION OF ZYGOTE:

Male pronucleus and female pronucleus will become fused and form an ootid. The ootid becomes a zygote.

N/B: fertilization will take place within 24 hours.

Question NO. 4

DIFFERENTIATE BETWEEN MONOZYGOTIC TWINS AND ZYGOTIC TWINS

Monozygotic twin	zygotic twin
They look alike	They don't look like
They have the same sex	They can be of different sexes
They are genetically identical	They are not genetically identical
They are also known as identical twins	They are also known as fraternal twins
Mostly diamniotic, monochorionic with single placenta.	Mostly have two amnions, two chorions and two placentas.
It results from the fertilization of one secondary oocyte by one sperm.	It results from the fertilization of two different secondary oocytes by two different sperm.
Are often called conjoined twins.	Not seen as conjoined twins.
Incidence is more common	Incidence is less common

