18/MHS01/340 29/04/20

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Embryology assignment.

1) Ovulation is the release of secondary oocyte from the ovarian follicle. Coincident with the final development of matured secondary oocyte, there's an abrupt increase in the LH and this leads to a) primary oocyte to complete meiosis I and b) follicle to enter preovulatory mature vesicular stage.

Meiosis II is initiated but the secondary oocyte is arrested at metaphase approximately 3 hours before ovulation.

For the oocyte to be released, two events occur which are due to the LH surge ;A] it increases collagenase activity there by leading to digestion of the collagen surrounding the follicle. B] Prostaglandin levels are increased thereby leading to muscular contraction of the ovarian wall.

Some cells of the cumulus oophorus then arrange themselves around the released matured secondary oocyte thereby forming the corona radiata.

Applied anatomy: a] Middle pain: it is an abdominal pain associated with Ovulation its called middle pain because it occurs near the middle of the menstrual cycle. B] Anovulation: this is the inability to release matured secondary oocyte. Some signs of ovulation are: Increase urge for sex, swollen vagina and Tenderness of the breast.

2]

Meiosis I	Meiosis II
There's crossing over	There's no crossing over
There's chaisma formation	There's no chiasma formation
There's paring	There's no pairing
Centromere do not split	Centromere split
Two daughter cells are formed	Four daughter cells are formed

3] a) Passage of sperm through the corona radiata: Only matured sperm can pass through the corona radiata therefore they must capacitated[removal of glycoprotein coat and seminal plama protein from the plasma membrane that overlies the acrosome.

b) Penetration of Zona pellucida: Release of acrosin from the acrosome of the sperm allows the sperm to penetrate the zona pellucida. When the head of the sperm comes in contact with the oocyte, the permeability of the Zona pellucida changes. When another sperm in contact with the oocyte surface, lysosomal enzymes are released from the cortical granule. This is to prevent polyspermy.

c) Fusion of the plasma membranes of the oocyte and sperm: the head and tail of the sperm enter the cytoplasm of the oocyte but the sperm's plasma membrane remains behind.

d) Completion of second meiotic division of sperm and oocyte and formation of female pronucleus: when a sperm penetrates an oocyte it then leads to the completion of second meiotic division thereby leading to formation of mature oocyte and second polar body. The nucleus of the mature of oocyte is called female pronucleus.

e) Formation of male pronucleus: within the cytoplasm, the nucleus of the sperm enlarges to form the male pronuclei while the tail degenerates.

d) The two pronuclei fuse into a single diploid aggregation of chromosomes , the ootid becomes a zygote: chromosomes in the zygote become arranged on a cleavage spindle in order to prepare for cleavage.

4)

Monozygotic twin	Dizygotic twins
Usually of the same sex	Usually of separate sexes
There are identical	There are not identical
They share the same placenta.	They do not share the same placenta
Genetically identical	Genetically unidentical
They share the same amniotic sac and chorionic sac	They do not share the same amniotic sac and chorionic sac