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Assignment

1 – Discuss Ovulation

Answer

Ovulation

This is the release of mature secondary oocytes from the ovarian follicles, in a few days before ovulation under the follicle stimulating Hormones (FSH) and Luteinizing Hormones (LH) , the secondary follicles grow rapidly to a diameter or 25mm to become mature vesicular or mature secondary or gradual follicles.

There is an abrupt increase in luteinizing hormone which causes

1. The primary oocyte to complete meiosis 1
2. The follicle enters the pre osculatory mature vesicular stage

Meiosis II begins and the secondary oocyte is being arrested at metaphase II approximately 3 hours before ovulation. In the meantime, at the surface of the ovary , a stigma appears and the oocyte is inside the ovary, for the oocyte to be released two event occurs which are caused by Luteinizing hormones which Includes :

A: Increase in Collagenase activity resulting in the digestion of collagen fibers surrounding the follicle

B: Increase in Prostaglandin level which helps in the contraction of ovary

The cells of the Cumulus Oophorus will float out with secondary oocyte during ovulation, some of the cumulus oophorus will rearrange around the zone pellucida to form the Corona Radiata and by this ovulation is completed

Clinical Correlates

*During ovulation, some women feel a variable amount of abdominal pain called Mittelschmerz also known as middle pain because it occurs near the middle of the menstrual cycle and it is normal*

*Other symptoms include:*

*Changes in the Cervical mucus*

*Increase libido or Urge for sex*

*Swollen Vagina*

*Nasal body temperature*

*N.B Anovulation is a condition whereby some women fail to ovulate because of low gonatropins*

*2 – Differentiate between Meiosis I and Meiosis II*

*Answer*

1. *Meiosis I at prophase 1 , three major events takes place which includes : Synapsis , crossing Over and Chiasma formation while in Meiosis II at Prophase I there is an absent of the three events*
2. *In meiosis I , the homologous chromosome begins to separate while at meiosis II the sister chromatic begins to separate form each other*
3. *In meiosis I , diploid daughter cells are produced while In meiosis II , four haploid daughter cells are produced*
4. *Meiosis I had a long duration while meiosis II has a short duration*
5. *In meiosis I the centromere do not spilt while in meiosis II the centromere split*
6. *Individual chromosomes are present in the daughter nuclei at meiosis I while sister chromosomes are present in the daughter nuclei in meiosis II*
7. *In meiosis I, it is preceded by interphase while interphase do not take place in meiosis II*

*3– Discuss the stages involved in fertilization*

*Fertilization: This is the union of sperm and egg, the usual site of fertilization is the ampulla , it takes approximately 24 hours*

*It involves six(6)stages*

1. *Passage through Corona Radiata : this is the process where by only capacitated sperm can pass freely through the corona radiata*
2. *Penetration of Zona Pellucida : For the sperm to penetrate the zona pellucida , the acrosome will bind with zona pellucida on the binding site . On the binding site , there are some receptors on the zona pellucida*

*Acrosome contain acrosin which is lysosomal enzymes with the help the acrosin , the sperm will penetrate the zona pellucida and only one sperm will pass through knowing the male deport about 200-600millions sperms .When acrosin is released, the sperm is heading to the plasma membrane of the oocyte , the plasma membrane has cortical granules which send message back to the region of the zona pellucida to close the binding site to block*

1. *Fusion of plasma membrane of sperm and oocyte : The plasma or cell membrane of the sperm and oocyte fuses and break at the area of fusion . The head and tail of the sperm enters the cytoplasm of the oocyte while the plasm membrane of the sperm remain behind*
2. *Completion of the 2nd meiotic division and formation of female pro nucleus :As soon as the sperm enter the region of the oocyte , 2nd meiotic division is completed and the nucleus is converted to the female pro nucleus*
3. *Formation of male pro nucleus: Within the cytoplasm, the nucleus of the sperm will enlarge to form the male pronucleus and the tail of the sperm will degenerate .*
4. *Formation of Zygotes: The male and female pro nucleus fuse together to become Optus , Otis will further develop to form zygote*

*4– Differentiate between Monozygotic and dizygotic Twins*

*Answer*

1. *Monozygotic twins are known as identical twins or conjoined twins while dizygotic twins are called freternal twins*
2. *Monozygotic twins are formed from single zygote while dizygotic twin are formed from two zygotes*
3. *Incidence and occurrence are common in monozygotic twins while incidence is less common in dizygotic twins*
4. *Monozygotic twins are genetically identical while dizygotic twins are genetically but not identical*
5. *Monozygotic are of the same sex while dizygotic are of different sex or sometimes same sex*
6. *Resemblance is similar in monozygotic twins while resemblance is not similar in dizygotic twins*
7. *In monozygotic twins mostly have one amniotic sac ,chorionic and single placenta while in dizygotic twins mostly have two amniotic sac , two chorion and two placenta .*

*Reference: Dr Ogedegbe Embryology slides*