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**Deportment**,B.S(M.L.T) **Section**,B

**Exam,**Mid term

**Paper Pathology**

Q,2)How does the calcium ions influx effects the cells?

Ans; \*Influx of calcium ions to the cytosol comes from the extracellular fluid and store in mitochondria and endoplasmic reticulum.

\*Calcium ions activates phospholipases (Damages cell membrane)Proteases (Damages cell membrane and cytoskeleton)Endonucleases(Damages DNA)

\*This is the main mechanisms of the cell death. Either through sever damage to membranes of lysosomes and leakage of lysososmal enzymes or triggering apoptosis.

\*Hypoxia and Ischaemia occurs in particularly and with certain toxins preventing the rise in calcium ions or restoring to normal levels prevents cell death.

Q,1)Define the following terms with 2 physiological and pathological example each.

Ans; (A) Atrophy:-

 Atrophy is a decrease in cell size or shrinkage in the size of the cell by the loss of cell substances is known as atrophy.

Example of physiologic:-

 Loss of hormone stimulation in menopause due to decreases level of estrogen hormones and then shut down the reproductive system.

Example of pathologic:-

 Denervation

1. Hypertrophy:-

 Hypertrophy is an increase in cell size or organ or tissue due to increase in the size of the cell.

\*Hypertrophy have no new cell,just bigger cells containing increased amounts of structural proteins and organelles.

\*The heart and kidneys have increased susceptibility to hypertrophy.

Example of physiologic:-

 Hypertrophy is an skeletal muscle with sustained weight bearing exercise.

Example of pathologic:-

 Hypertrophy is an cardiac muscle as a result of hypertension or aortic valve disease

1. Hyperplasia:-

 Hyperplasia is an increase in the number of of cell which result increases the size of an organ.It is the result of increased cell mitosis or division.

Example of physiologic:-

 Hormonal hyperplasia ,The proliferation of the glandular epithelium of the female breast at puberty and during pregnancy.

Example of pathologic:-

 Hyperplasia is an abnormal increase in cell division.most form of pathological hyperplasia are caused by excessive hormonal or growth factor stimulation.

1. Metaplasia:-

Greek word meaning change in form.

Metaplasia is the transformation of one differentiated cell type to another differentiated cell type.the change form one type of cell to another may be part of a normal maturation process,or caused by some sort of abnormal stimulus.

Example of physiologic:-

 Metaplasia is the squamous metaplasia that occurs in the uterine cervix during the menstrual cycle as the squamocolumnar junction migrates across the transformation zone.

Q,3) What is free radical?What is the effect of reactive oxygen specie(ROS)on the cell?

Ans: Free Radical:-

 A single unpaired electron in the outer orbit is called Free Radical.

The effect of reactive oxygen specie(ROS):-

\*Oxygen derived from free radicals have a single unpaired electron in the outer shell is reactive oxygen specie(ROS).

\*When generated in cell the rapidly attack and break down nucleic acid and membrane molecule.

\*ROS are normally produced during cellular respiration.

\*ROS are generated by normal physiologic reduction oxidation reaction,Ultraviolet light,X-rays(ionizing reaction)drugs and chemical and acute inflammation.

\*Produced in excess,They react with and damage proteins,lipids,carbohydrates,nucleic acid.

\*These damaged molecules may themselves be reactive species with a chain reaction being set up with wide spread damage.

Q,4)Write down some differences between Apoptosis and Necrosis?

Ans; Apoptosis:-

 It is a word from Greek language,its mean the cell kill its self(suicide).

\*It is a pathway of cell death in which cells activate enzymes that break down the cells own nucleus DNA and nuclear and cytoplasmic proteins.

\*Apoptosis could be physiological and pathological.

\*Separation of fingers in embryo-genesis.

\*Hormonal with drawl in breast and uterus.

\*Atrophy.

\*Accumulation of manifolded protein.

\*Cell injury in certain infections particularly viral infection.

\*DNA damage due to radiation,Extreme temperature or hypoxia.

\*Pathologic atrophy in organs after duct obstruction such as pencrease,Kidnay,and parotid glands.

Necrosis:-

 Necrosis is the type of cell death.

\*These associated with loss of membrane integrity and leakage of cell contents resulting dissolution of cell due to the degradative action of enzymes on injured cells.

\*Necrosis caused by trauma or damage.

\*It involves large group of cell.

\*Necrosis is always pathological process in necrosis inflammation occur in the body.

Q,5) Write a note on Air Embolism?

Ans; Embolism:-

 An embolism is an intravascular solid,or liquid or gases mass that is carried by the blood to a site distant from its point of origin.

Air Embolism:-

 Air bubbles with in the circulation can abstract vascular flow and cause distal is chemical injury.

Source:-

 Exogenic:-

 Transfusion or trauma in the neck or chest artificial pneumothorax,pneumoperitoneum.

Endogenic:-

 Caisson dieases or decompression sickness.

Results:-

 \*Small amount of air (gas) may be absorbed.

\*Occupies the heart ventricle interrupted the blood flow cause death,Air (gas) embolism in multiple organs (Brain,Pulmonary)

***The E.N.D***

***Thank YOU!***