PAPAR GENERAL PATHOLOGY

 '''SECTION A'''

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Q NO1:-

A) ATROPHY :- shrikage in the size of the cell by loss of the cell substances.when a sufficient numbers of cell involved. the entire tissue. organ diminshes in size.

 OR

 Atrophy is the wasting away or Reduction in the some parts of the body by the loss of cell substance.

CAUSES :-

 Decrease work Load. for examples :-

¤) Immobilzation of a Limb to permit healing of a fracture loss of a Innervations.

¤) Diminished blood supply.

¤) Inadequate nutrition.

¤ ) Loss of endocrine stimulation.

¤) Aging loss of Teeth, Hair, Thing of skin , weaking of muscle , Loss of weight in organ and sluggish mental activity.

Pathological examples:-

1. ( Denervation) Atrophy of the breasts can occurs with prolonged estrogen reduction aswith menopause.
2. physiological examples:-

 Loss of hormones stimulation in menopause due to decreased level of estrogen hormones and then shut down the Reproductive system.

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B) HYPERTROPHY :--

 Represents an increase in size and with it an increase in the amount of functional actin and myosin filaments. cell enzymes and adenosine triphosphate ( ATP) are synthesized normal physiologic or abnormal pathologic condition.

(1)PATHOLOGIC EXAMPLE :--

\*) Myocardium in hypertension.

\*) sustained weight bearing exercise or response to exercise.

2) PHYSIOLOGICAL EXAMPLES:-

\*) Growth of Uterus during pregnancy.

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C) HYPER PLASIA :-

 (OVER FORMATION) Is an increase in the number of cell which result of increase cell mitosis or Division .Hyperplasia can be physiological or pathological.

PHYSIOLOGICAL EXAMPLES:-) 1)Hormonal infuence of hormonal stimulation. Hyperplasia of the female breast epithelium at puberty or in pregnancy. pregnant uterus.Normal endometrium after a normal menstrual cycle. prostatic hyperplasia in Old age.

2) PATHOLOGIC EXAMPLES :-

Endomental hyperplasia is an example of abnormal hormone.

Induced hyperplasia due to increase in Estrogen.

benign prostatic hyperplasia due to abnormal response to androgens.

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D) METAPLASIA :-

 Is a Reversible change in which one adult cell type is Replaced by another Adult cell type. ...OR....

Greek word means change in form. Is the reversible replacement of one differenciated cell type with another mature differenciated cell type.

CAUSES :-- changes in environment Irritation or inflamation. Nutritional.

Tobacco smoke squamous. metaplasia in the respiratory tract .

PHYSIOLOGICACAL AND PATHOLOGICAL TERM :most common Gastric acid reflux .

metaplasia of distal esophagus Ephithelial or (mesenchymal) with another cell type that is better able to withstand the adverse environment.

 EXAMPLES :-

The most common example of metaplasia is Barrett's Esophagus.

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QNO 2: HOW CALCIUM ION INFLUX AFFECTS THE CELL :-

ANS :- Influx of calcium to the cytosol comes from the extra cellular fluid and stores in mitochondria and endoplasmic reticulum. Ca++ activates phospholipases ( Demages cell membranes) proteases ( demages cell membranes and cytoskeleton and endonucleases demage

DNA this is one of the

 main mechanisms of cell death.

Failure of the calcium pump leads to influx of Ca++ Into the cell. activate various enzymes to the detriment of the cell.

RER loses Ribosomes and protein synthesis falls. This may result energy depletion Rise in cytosolic calcium concentration DNA protein structural demage plasma membrane demag and permanently changed

WHAT CAUSES AN INFLUX OF CALIUM INTO THE CELL?

Oxidative stress causes Ca( 2+) Influx into the cytoplasm from the endoplasmic reticulum through the cell membrane and the ER/ SR channels.

Respectively rising ca ( 2+) concentration in the cytoplasm causes ca( 2+) Influx into mitochondria and nuclei.

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QNo 3:- WHAT IS FREE RADICAL ? WHAT IS THE EFFECT OF ROS.

FREE RADICAL : - A free radical can be define as any molecular species capable of independent existence that contains an unpaired electrion in an atomic orbital.

The presence of an unpaired electron results in certain common properties that are shared by most radical many radical are unstable and highly reactive.

FOR EXAMPLES :- A Notable example

 of a free Radical is the Hydroxyl radical ( H0) a molecule that is one Hydrogen atom short of a water molecule and thus has one bond dangling from the Oxygen.

EFFECT OF REACTIVE OXYGEN SPECIES :-

The effect of reactive oxygen species in the cell it attack rapidly and and degrade nuclei acid and membrane molecules. it is usually derived from oxygen to produce reactive oxygen.

FUNCTION :- Reactive oxygen species Oxidize active ( membrane lipids) oxygen derived free radical have a single unpaired electron in the outer orbit.

it is normally produce during cellular respiration Reactive oxygen species are generated by normal physiologic reduction oxidation reaction ultra violet light x rays, chemical and acute inflamation.

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Q NO:4

ANS :- DIFFERENTIAT BETWEEN APOPTOSIS AND NECROSIS :-

1) APOPTOSIS :-

It is Derived from Greek Language which orignally refer to falling of Leaves from Trees in the Autumn. Apoptosis means cell Kills it self ( Suicide ) programmed cell death.

Apoptosis could be physiological and pathological .

) Affect single cells.mitochondria becomes Leaky.

) No inflamatory response.

)cell shrinkage.

) membrane bleeding but Integrity maintained.

) increased Mitochondria membrane permeability release of proaapoptotic protein and formation of apoptotic bodies.

) Chromatin Condensation and Non Random DNA Fragmentation.

) cell membrane Intact in Apoptosis.

) Fragmentation of DNA and marked condensation of Both Nucleus and Cytoplasm.

) Apoptotic bodies are Rapidly phagocytosed by Epithelial cells or microphages.

2) NECROSIS :-

It is the type of cell death that is associated with loss of membrane integrity and Leakage of cell contents.

Resulting in dissolution of cells due to the Degradative action of enzymes on Injured cell.

CAUSES OF NECROSIS :-

) Trauma or demage.

)Affects group of neighboring cells

) Significant inflamatory Response.

) Cell Swealling loss of membrane Integrity

) organelle swelling and Lysosomal Leakage .

)Random degradation of DNA.

) Lysed cells Ingested by Macrophages.

) Swelling of cytoplasm and Mitochondria.

) No vesicle formation occur Total cell Lysis.

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QNO 5 :-"" AIR EMBOLISM"""

ANS :- It is also called Gas Embolism. It is a condition Caused by Gas bubbles in the blood stream.

In case of acumulation of large amount of Gas in Arteries due to Trauma or other Causes the bubbles stop the flow of blood thus causing lack of oxygen and cell death.

VENOUS EMBOLISM :-

when an air bubbles enters a vein it is called a venous air embolism.

ARTERIAL EMBOLISM :-

When air bubbles enters an Artery and block it is called Arterial air Embolism.

) Air Embolism is an Uncommon.

 If an Arterial Gas Embolism Reaches the Brain it is referred to as a Cerebral Embolism and cause a stroke.

) An Injection of 2.3 ml of air into the Cerebral Ciculation can be Fatal.

) Air Embolisms may also Occur in the Xylem of Vascular plants.

) Especially when suffering from water stress. gas bubbles with in the Circulation can Obstruct Vascular Flow and cause Distal ischemic Injury.

) Source Transfusion or Trauma in the Neck or Chest Artificial pneumothorax.

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