

Course Title: General Pathology (MLT 2nd Sec A and B)
Mid term assignment

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Note:

- Write in your own words, do not copy paste.
 - Use only MS word to attempt questions.
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1. Define the following terms with 2 physiological and pathological examples each.
 - A. Atrophy
 - B. Hypertrophy
 - C. Hyperplasia
 - D. Metaplasia
2. How does the calcium ions influx affects the cell?write it in your own words.
3. What is free radical?What is the effect of Reactive Oxygen Specie(ROS) on the cell?
4. Write down some differences between Apoptosis and Necrosis.
5. Write a note on Air Embolism.

Q No.1: A. Atrophy

Ans: *Atrophy Shrinkage in the size of the cell by the cell of substances is called atrophy*

Cause of Atrophy

- *Decreased work load e.g(immobilization of a limb to permit healing of a fracture)*
- *Loss of innervation*
- *Diminished blood supply*
- *Inadequate Nutrition etc*

Physiological example

- *Some stimulat are physiological i.e e.g (loss of hormone stimulation in menopause due to decrease level of estrogen hormone and then shut down the reproactive system) and other pathalosis are e.g (denervation)*

Pathological example of Atrophy

- *Nerves disease include Charcot, Marie, tooth disease, poliomyelitis, amyotrophic lateral sclerosis (ALS) and Guillain Barre syndrome.*

B. Hypertrophy

- *Hypertrophy is an increase in cell size or organ or tissue due to increase in the size of the cell.*
- *In Hypertrophy there is no new cell just bigger cells containing increased amount of structural proteins and organelles.*

Physiological example

- **An example of pathological hypertrophy is in cardiac muscles as a result of hypertension or Aortic valve disease.**

Pathological example

- *Muscular hypertrophy in response to exercise. Skeletal and cardiac muscles fibers to increase in diameter and to accumulate more structural contractile proteins.*

C. Hyperplasia

- ***Hyperplasia** is an increase in number of cell which result increase in the size of the organ it is the result of increased cell mitosis or division*
- ***Hyperplasia** can be physiological or pathological.*

Physiological hyperplasia

1. Hormonal hyperplasia

- *The proliferation of the glandular epithelium of the female breast at puberty and during pregnancy*
- **Compensatory hyperplasia**
- *In which residual tissue grows after removal or loss of part of an organ e.g when part of a liver is related mitotic activity in the remaining cells begins as early as 12 hrs later eventually restoring the liver to it's normal weight*

Pathological hypertrophy

- *Growth of adrenal gland due to production of adrenocorticotrophic hormone bye a pituitary adenoma and proliferation of endometrium due to prolonged estrogen stimulat.*

D . Metaplasia

- *It is the reversible replacement of the differentiated cell type with another mature differentiated cell type. In simplistic terms it is as if the original cell's*

Physiological example

- **Prominent** *example of metaplasia involved the change associated with the respiratory tract response to inhalation of irritants such as smog or smoke*

Pathological example

- *One example of pathological irritation is cigarette smoke, which causes the mucus secreting ciliated columnar epithelium to non ciliated squamous epithelium.*



Q No.2: How does the calcium ions influx effect the cell?

Ans: *Influx of calcium ions into human erythrocytes occurs by a facilitated diffusion process, which can be inhibited by phenothiazines and the cinchona alkaloids. Calcium effects many membrane function including cation permeability, lipid composition and sum cytoskeletal interactions which may determine cell shape. Most often, the calcium ions increase is initiated the release of calcium ions from intracellular stores followed by*

- **Hydroxyl radical**

Effects. *Harmful effects of reactive oxygen specie on the cell are most often: damage **DNA OR RNA**. Oxygen of Polly unsaturated faty acids in lipids. Oxidation of amino acids in proteins.*



Q No.4: Difference between apoptosis and necrosis?

Ans: Apoptosis: *Apoptosis is a form of cell death that is generally triggered by normal healthy prosis in the body.*

- *It is natural*
- *Effects usually benifecial*
- *Process membrane blebbing, shrinkage of cell, nuclear collapse (nuclear fragmentation) chromatin condensation chromosomal DNA fragmentation,*

