



Second Lecture / Human diseases / 2nd year /Department of Intelligent Medical Systems .

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Apoptosis , Necrosis , Gangrene , Pigmentation ,
Calcification , Gout

Apoptosis : Programmed physiological cell death .

Necrosis : Death of cells pathological causes in living tissues .

Causes : Microbial causes, Chemicals , Physical such as radiation ,
Lack of blood flow .

Types of Necrosis :

- Coagulative necrosis :

A – Changes of nucleus in affected cells , pyknosis , fragmentation , then ghost like .

B – The dead cells remain in tissues .

C - Lack of blood flow and lack of Oxygen .

- Liquefactive necrosis :

A – The dead cells partially or completely dissolved into thick creamy liquid (Pus) .

B - Causes of this necrosis bacterial infection and lack of oxygen .

– Caseous Necrosis :

A – The dead cells look white in color like cheese. The word caseous means (Cheese like) .

B – Caseous necrosis is seen with infectious lung diseases (tuberculosis) , in liver .

- Fibrinoid necrosis :

A – The dead cells appear pink grey and lack of structures

B - Fibrinoid necrosis with autoimmune diseases

C - Infection or damage of blood vessels .

- Fat Necrosis

Dead cells due to release enzyme combine with calcium creating chalky white deposition . occur mostly in pancreas and breast .

- Gangrenous Necrosis

Occur in skin appear bluish black with rot , lack of

Blood flow to legs (toes) or fingers of hands will lead to gangrenous necrosis ,accompanied with bacterial infection .

Two types of Gangrene :

– Moist Gangrene 2 – Dry Gangrene

Pigmentation

Normally pigments present in human body as melanin , bile and lipofuschine .

These endogenous pigments .

Exogenous pigments :

1 - Anthracosis : carbon which is the most common (air pollution) when inhaled in lung and engulfed by macrophages with in alveoli this case called Anthracosis .

- Tattooing :

A - Is a form of exogenous pigmentation of the skin . The pigment inoculated under the skin , phagocytosed by macrophages .

B – These pigments not cause inflammatory response and not stimulate immunity .

– Endogenous pigments :

A – Bilirubin : Normal level of this pigment in blood are below 1.0 mg/dl .

If it is increased deposition occur in tissues as yellowish or greenish in skin , sclera / cause a disease called Jaundice or Icterus .

Causes :

1 – Liver dysfunction , 2 – Biliary tract obstruction by gall stones , Cancer .

3 – Infant Jaundice or new born Jaundice :

Happen due to Rh+ factor . or occur few days after birth due to deficiency special enzyme in liver .



Melanin :

1 - Normally melanin present in skin produce by melanocytes , it is brown in color .

2 - Disturbances or increased deposition melanin in skin due to hyper- bigmentation , this occur due to sun exposure , hormonal or age .

3 - Sometimes hypopigmentation occur congenital called Albinism .

- Melasma , deposition of melanin during pregnancy in skin of face or in the wall of abdomen .

Other endogenous pigmentation (Lipofuscin and Hemosidrin)



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Calcification :

Deposition of Calcium salts in the form phosphate or carbonate in tissues . There are two types :

1 – Dystrophic calcification 2 – Metastatic calcification

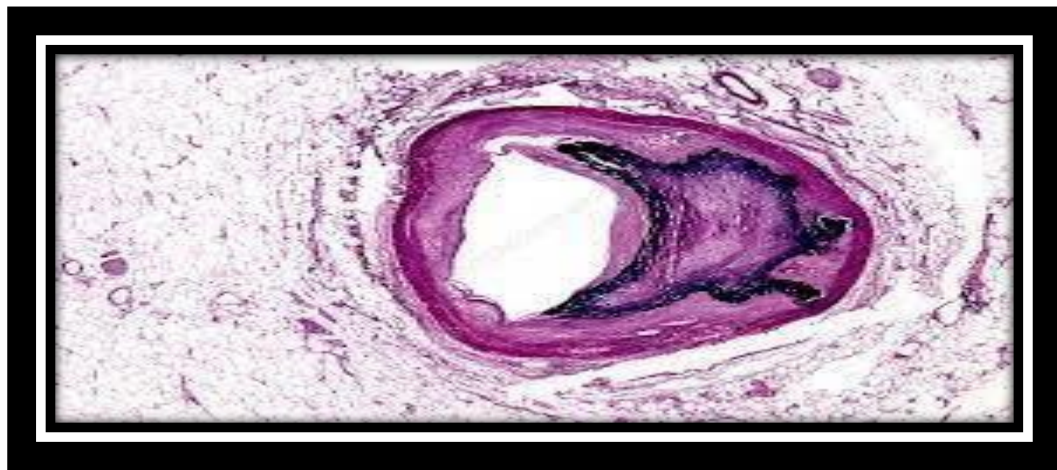
Dystrophic calcification ; begins with the formation of small intracellular deposition :

1 – Necrotic tissues 2 – Cartilage calcification in old ages .

3 - Blood vessels - atherosclerosis , calcification of thrombus .

– Calcification of tumors .

Metastatic calcification :



Deposition of calcium salts in certain tissues ;

Causes :

1 – Parathyroid adenoma 2 - Hyper-vitaminosis

3 – Hyper – parathrodism 4 – Hydatid cysts (Liver and Lung).

Gout :

Gout happen when high level of urate build up in our body for long period of time which can then form needle shaped crystals

In and around the joints , this lead to inflammation of joint called arthritis

Causes :

This occur due to diet / food rich I red meat and organs such as liver kidney
Alcohol stimulate gout occurrence .

