Cell injury

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good
morning

Code: SOM1-1

• Cell injury

Adaptation: The cell achieves a new steady state with preserved viability and function.

It occurs when cells exposed to physiologic or pathologic stress

Definition of cell injury:

These are the visible changes that occur in cells as a result of exposure to causative agents of disease,

- **Cells injury can be divided into:**

1. **Reversible cell injury:**

   Cell Changes will regress and disappear when the injurious agent is removed

   Irreversible cell injury:

   Occur when the injury persists or when it is sever and exceed the ability of adaptation.

- **Causes of cell injury:**

1. Hypoxia
2. Infection
3. Physical agents
4. Hypersensitivity
5. Chemical agents
6. Immunologic reactions
7. Nutritional imbalances.
8. Genetic derangements

- **CELL DEATH**

- **Types of cell death:**

A. Necrosis
B. Apoptosis

- **Necrosis:** death of group of cells in living tissue**,**
  Types:

Coagulative necrosis

Liquefactive necrosis,

Fat necrosis,

Caseation (caseous)

Gangrenous necrosis.

• Intra and Extracellular Accumulation

• Amyloidosis

- **Definition:** Amyloidosis is extracellular deposition of abnormal fibrillary protein in many tissues
- **Causes of amyloidosis:**
- -Primary: with multiple myeloma (plasma cell tumor).
- -Secondary to chronic disease e.g. chronic abscess, TB, rheumatoid arthritis, tumor.
- **Clinical pictures of amyloidosis:**
- **-**The disease may be systemic or limited (localized) to a single organ.
- -Early cases the disease has no symptoms
- -The most serious symptom is renal failure due to renal amyloidosis.

- **Organ amyloidosis**
- **Grossly:** any organ affected by amyloid deposition is firm, pale brown waxy, with sharp edges.

1. Kidney is involved in systemic amyloidosis

2. **Renal amyloidosis** is fatal form of amyloidosis.

3. **Tongue …..** Macroglossia

4. **Gingiva is** Thickened

5. Mucosa of stomach and intestine…amyloid deposition in mucosal blood vessels…atrophy of epithelial cells

• Pathologic Calcification

- **Definition:** It is deposition of calcium salts in sites other than bone and teeth.
- **Types**
- **1. Dystrophic calcification:**
- **2. Metastatic calcification**:
- **3. Stone formation**
- **4. Tumoral calcinosis**

- **1- Dystrophic Calcification**:

a) Necrotic tissue-

b) Atherosclerosis-

c) Cells….Psammoma bodies

d) Damaged or aging heart valves

- **- Metastatic Calcification**
- Calcification of tissue associated with high calcium level .

- **<u>Sites for calcium deposition are in organs with relatively alkaline media:</u>**

1. Lungs- respiratory failure
2. Kidneys- nephrocalcinosis
3. Stomach
4. Arteries

• Pathological pigmentation

- **Exogenous pigments**:
- -**Inhalation**: anthracosis.
- -**Ingestion:** lead poisoning ,there is blue black pigmentation of the gums
- - **Inoculation**: Tattoo

- **Endogenous pigments**

- 1-Lipofuscin 2-Melanin 3-Bilirubin
  4-Hemosidrin

  - **Hemosidrin:**
  - -It is an iron containing pigment consisting of aggregates of ferritin.


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