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# Cellular Injury and Death II - Lecture

Thursday, April 10, 2008

1:00 PM

- **Viruses – 3 Effects**
  - **Lethal injury** – kills cell
  - **Cytopathic** – changes **shape of cell**, doesn't proliferate or kill
  - **Oncogenic** – stimulate cellular proliferation (cancer)
- **Cytomegalovirus**
  - Occurs only in **immunocompromised patients** (AIDS, transplant, young/old)
  - Commonly occurs in **lungs**, also present in **liver, GI tract, salivary glands**
  - Involves presence of **large macrophages** having a **granular cytoplasm (inclusions)**
- **HPV**
  - Occurs as **skin warts** – usually either on **hands, oropharynx, or genitals**
  - Involves the presence of **koilocytes** – cells with **cleared-out cytoplasm**, shriveled **raisin-like nucleus**
- **Other Viruses**
  - **Herpes Esophagitis** – occurs in esophageal tissue, proliferation?
  - **Herpes Hepatitis** – large macrophages in liver tissue
  - **Rabies** – occurs in cerebral cortex tissue
  - **Measles** – involves presence of **Warthin-Finkeldey cells** – “**mulberry**” clusters
  - **Hepatitis B** – can detect through **antibody & stain** --> visualize indirectly
- **Fate of Necrotic Tissue**
  - **Inflammatory response** – leads to **scarring**, after macrophages **phagocytose** and fibroblasts rebuild
    - **Renal infarct** – often will form **scar tissue** after inflammatory response over
  - **Separation** – autoamputation of tissue means tissue falls off body (ex: toes from frostbite)
  - **Persistence** – remains, and undergoes **dystrophic calcification**, forming **granuloma**
    - Lymph nodes can calcify from **carbon debris**
    - Heart valves can also calcify
- **Calcification Types – Dystrophic, Metastatic; Ductal**
  - **Dystrophic** – caused from **dead tissue**
  - **Metastatic** – caused from **hypercalcemia**, stimulate by **hypersecretion of PTH** – increased serum  $Ca^{2+}$
  - Ductal carcinomas of breast can often lead to **microcalcifications** on x-ray, **comedonecrosis** in duct
  - **Purple Under Microscope** – can be **karyorhectic debris** or **bacterial endocarditis**
- **Deposits – Intracellular (2), Extracellular Intrinsic & Extrinsic**
  - **Intracellular deposits** – include primarily **hemosiderin** (iron from lysed RBCs), and **melanin** (melanoma)
    - Also include lipid, water, carbohydrates, hyaline droplets, lipofuscin
  - **Extracellular Deposits** with intrinsic source – **cholesterol/urate crystals, amyloid**
    - **Cholesterol crystals** – from **atherosclerotic plaques**
    - **Urate crystals** – causes **gout**
    - **Amyloid** – protein often from **abnormal proliferation of plasma cells** (often mult. myeloma)
      - ◆ Means “starch-like”, but not a carbohydrate; instead a **protein**
      - ◆ Has a **pink hyaline appearance**, appears between **vessel walls**
      - ◆ Can deposit during **high levels of plasma cells**, or from **chronic infections/age**
      - ◆ Occurs in **kidney, heart, spleen**, etc. & causes shit to **bounce**
  - **Extracellular Deposits** with extrinsic source – **tattoo**