General Pathology & Disease Processes

Pathology examines diseases by looking at changes in cells, tissues, and organs, which helps in understanding clinical medicine.

Types of Pathology

- Gross pathology involves observing visible changes in organs or tissues, such as tumors and abscesses.
- Histopathology is the study of cells and tissues under a microscope.
- Clinical pathology involves examining blood, urine, and body fluids to understand health conditions.
- Comparative pathology studies diseases and how they affect various species, showing differences and similarities in disease processes.

Cell Injury & Death

- Reversible injury means cells can heal if the problem is fixed, like swelling from lack of oxygen.
- Irreversible injury causes cell death.
    - Necrosis is uncontrolled cell death with inflammation
    - apoptosis is programmed cell death without inflammation.

Causes of Disease

- Infectious agents include bacteria, viruses, fungi, and parasites.
- Physical causes are trauma, heat, cold, and radiation.
- Chemical causes involve toxins, poisons, and drugs.
- Nutritional causes include deficiencies, like lack of Vitamin E or selenium which can lead to white muscle disease in calves.
- Genetic causes refer to inherited disorders.
- Immune-mediated issues are due to hypersensitivity or autoimmunity.

Inflammation

- Inflammation is the body's protective response to injury or infection. It can be acute or chronic.
- Acute inflammation is fast and short-lived, causing redness, swelling, heat, and pain.
- Chronic inflammation lasts longer and often results in fibrosis, which is the formation of scar tissue.

Healing & Repair

- Regeneration is the process where cells, like those in the skin and liver, are replaced with the same type of cells.

- On the other hand, fibrosis involves scar formation, where collagen is deposited.

- Factors affecting healing include blood supply, infection, age, and nutrition.

Neoplasia (Tumors)

- Benign tumors grow slowly and do not spread to other parts of the body,

- while malignant tumors are invasive and can spread.

- Examples of malignant tumors include lymphoma in cats and squamous cell carcinoma in horses.