Pathology

Second Year- First Semester course

LECTURE 1

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Underlined sentences refer to anything that was mentioned in the record but not in the slides.

Introduction

❖ **Disease:**

- It is the **"**State in which an individual exhibits an anatomical, physiological, or biochemical deviation from the normal"
- Multiple changes from the normal state at the cellular level and at the tissue level (structural, biochemical, and functional changes.)

❖ **Pathology**:

- The study (logos) of suffering or disease (pathos).
- The study of the **structural, biochemical, and functional** changes in **cells, tissues, and organs** that are involved by disease.
- A bridge between the basic sciences and clinical medicine (paraclinical).

❖ **The main work of pathologists** is to see and detect abnormal changes in cells and tissues under the microscope (glass slides in hospitals or labs).

Pathologists in hospitals supervise the examination of biopsies taken from different parts of the body and determine if a biopsy is normal or abnormal that leads to the best treatment of the patient.

❖ **General pathology VS Systemic pathology**:

- **General pathology**: reactions of **cells and tissues** to abnormal stimuli. Cell injury, inflammation and repair, hemodynamic disorders, genetic disorders, immune system diseases, infectious disease and environmental diseases.
- **Systemic pathology**: alterations in **specialized organs** and tissues in diseased status.

Aspects of disease

1. **Epidemiological aspects**: How often diseases occur in different groups of people and why.

2. **Etiology/ cause**: The answer of the question of why a disease happens

   i. **Genetic:** mutations (inherited factors)
   ii. **Acquired:** environmental, infectious, nutritional, chemical agents.

3. **Pathogenesis (mechanism):**
   - The answer of the question of how a disease occurs (e.g. in genetic mutation, how the mutation evolves at a molecular level then what happens during gene expression and the what happens at acellular level etc…)
   - The sequence of events in the response of cells or tissues to the etiologic agent, from the initial stimulus (origin of disease) to the ultimate expression of the disease (what is shown upon the patient).
   - Pathogenesis is important in **1)** understanding a disease and **2)** the treatment of a disease (target the specific stage at which abnormalities occur then treat those abnormalities with a specific drug)

4. **Molecular and morphologic changes:**
   - Molecular aspects of the disease/tissue/organ (mainly on the level of the gene).
   - Morphological aspects: Structural alterations in cells or tissues (what we see, either by the naked eye or microscopically).

5. **Pathological & clinical features**: including biochemical tests, and radiological findings.

6. **Complications & sequelae:** what happens if a disease is not treated or if it does not totally heal.

   Events taken during the disease process that may impair full recovery

7. **Treatment:** (what drugs should be given, life style instructions)

8. **Prognosis:**

   - Predicting the condition and outcome of the a certain disease
   - Expected outcome of the disease, it is the clinician's estimate of the severity and possible result of a disease.

9. **Functional derangements and clinical manifestations:** the end results of changes in cells and tissues. (functional abnormalities leading to the clinical manifestations of disease and the way it progresses).

Classification of Pathology

1. **Anatomical/surgical pathology:** Gross examination and microscopic examination to reach a diagnosis.

   i. Histopathology: histology is the study of tissues and histopathology is the study of abnormal tissues
   ii. Cytopathology: the study of abnormal cells as one unit not as a tissue
   iii. Autopsy: the study of dead bodies, and organs that are defected.
   iv. Subspecialties: the next step after general pathology like neuropathology, dermatopathology, oral pathology……

2. **Clinical pathology:** hematology, microbiology, immunology and biochemistry.

Diagnosis in Histopathology

1. **Biopsies:** excisional and incisional: When the entire tumor is removed, the procedure is called an **excisional biopsy**. If only a portion of the tumor is removed, the procedure is referred to as an **incisional biopsy. *Notice (figure 1-1)***
2. **Smears: exfoliative** (we don't take anything from the tissue we just swap it when the tissue is acceable). ***Notice figure (1-2)*** and fine needle aspiration. ***Notice figure (1-3) and figure (1-4)***

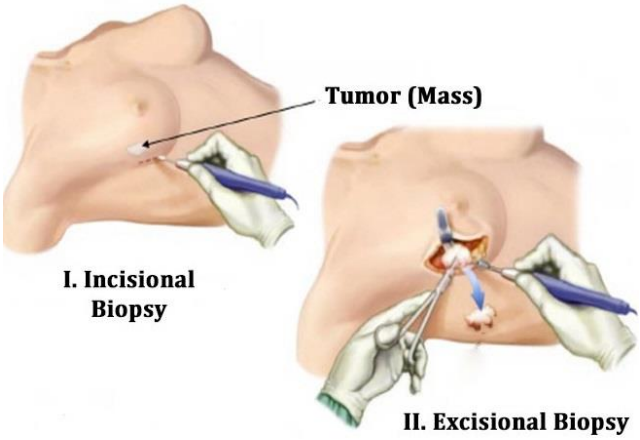

Figure (1-1)

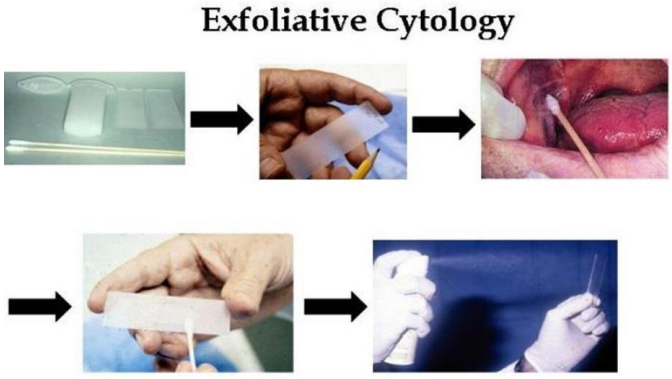

Figure (1-2)

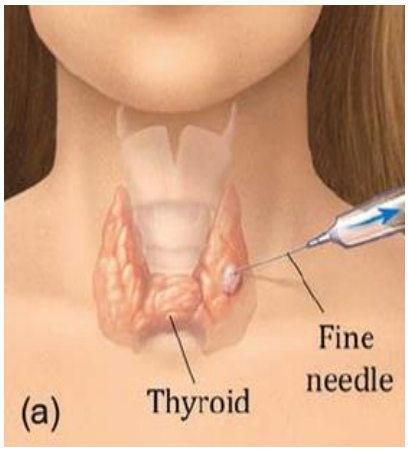

Figure (1-3)

Figure (1-4) squamous tissue

❖ **Hematoxyline and eosin stain:** The nucleus stains blue and the cytoplasm stains red. ***Notice figure (1-5)***

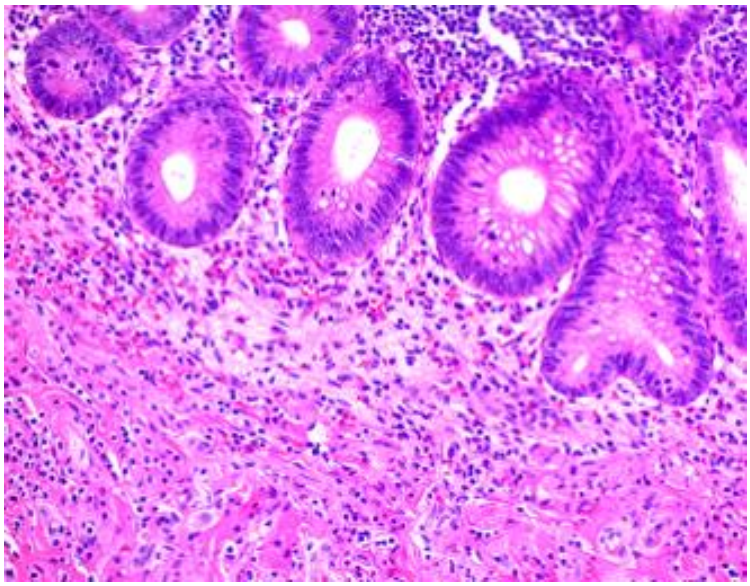

Figure (1-5)

lecture one- done.