1 Concepts of Health and Disease

CONCEPTS OF HEALTH AND DISEASE

- Health
- Disease
- *Etiology*
- *Pathogenesis*
- *Morphology and Histology*
- *Clinical Manifestations*
- *Diagnosis*
- *Clinical Course*

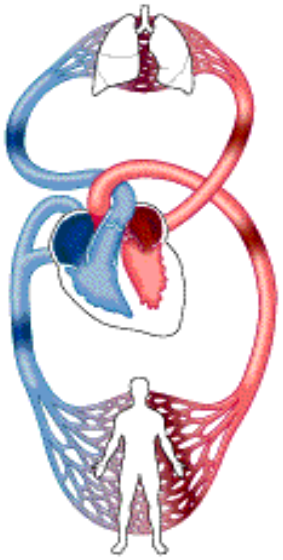
Introduction

- Pathophysiology is a term that combines the words pathology and physiology.

❖ Pathology: ***Pathos*** means disease, i.e. is the science which deals with the study of **structural** and **functional** changes in cells, tissue and organs of the body that cause or are caused by **disease**.

❖ Physiology deals with the **function** of the human body.

✓ Thus pathophysiology deals with the **effect** of the changes in cells or organs that occur with **diseases on total body function**. (Example: traumatic injury causes atrophy of the brain and degeneration of neurons in the brain resulting in Alzheimer's disease)



✓ Or it may be defined as the physiology of altered health

CONCEPTS OF HEALTH AND DISEASE

- Health: a “state of complete physical, mental, and social well-being and not merely the absence of disease and infirmity”.
- Disease: an interruption, cessation or **disorder** in the **function** of the body organ or system (physiological dysfunction).
- Each disease is characterized usually by a recognized **etiologic** agents, an identifiable group of **signs** and **symptoms** or consistent **anatomic alteration**.

- **There are six aspects for the disease process:**

1. **Etiology** (**causes**).
2. **Pathogenesis** (**mechanism**)
   (the origination and development of a disease).
3. **Morphological changes** (**changes** in the **form** and **structure**).
4. **Clinical Manifestation** (**signs** and **symptoms**).
5. **Diagnosis** (**identifying** the disease).
6. **Clinical Course** (**evolution** of a disease).

✓ Etiology

The causes of the disease are known as **etiologic factors**, among these factors are:

- ❖ Biological agents (bacteria, viruses).
- ❖ Physical forces (trauma, burn , radiation).
- ❖ Chemical agents (poison, alcohol).
- ❖ Genetic inheritance.
- ❖ And nutritional excesses or deficit.

- **Most** of the **disease do not have a single cause**, instead the majority are **multifactorial**, and many different agents can **cause** a **disease** for a **single organ**.
- **some** disease-causing **agents** are nonspecific or unknown (**idiopathic**).

✓ **Etiology** (continued)

- The multiple factors that predispose to a particular disease or increase the risk or susceptibility of a disease are called **risk factors**

Ex: **obesity** increase the risk of **heart diseases**.

- Differentiate between **cause** and **risk factors.**
- Other way to view the factors that cause disease are by grouping them according to whether they are present at birth (**Congenital condition**) or acquired in later life (**Acquired defect**).

✓ **Etiology** (continued)

- **Congenital** conditions are defects that are present at birth, although they may not evident till later in life.

Ex: **sickle cell anemia**.

- **Acquired** defects are those that are caused by events that occur after birth.

Ex: ***injury***, exposure to infection (HBV, inflammation, hepatitis).

✓ Pathogenesis

- The sequence of cellular and tissue events that take place from time of initial contact with an etiologic agents until the expression of the disease.
- **How** the disease process evolves.
- Differentiate between **etiology** and **pathogenesis**. Ex. atheroscelerosis is cited as the cause of the coronary artery disease while the progression of fatty streak to the occlusive vessel lesion seen in people with CAD represents the pathogenesis of the disorder.

✓ Morphology

- Morphology: refers to the fundamental **structure** or form of **cells** or tissues.
- Morphologic changes are concerned with both the **gross anatomic** and **microscopic changes** that are characteristic of the **disease**.
- Histology: deals with the study of cells and extracellular matrix of the body tissues. (**Histologic sections** play an important role in diagnosis of many types of cancer).

✓ Clinical Manifestations

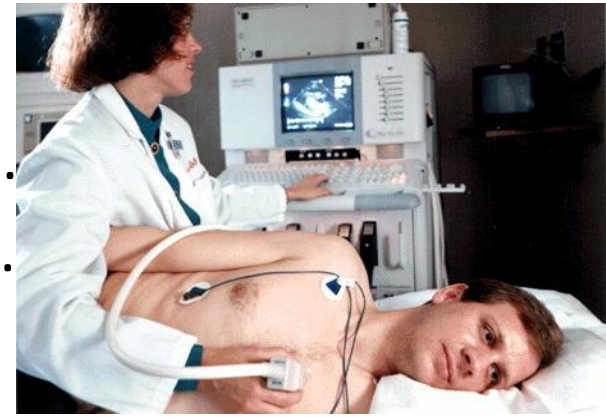
- **Disease** can be **manifeste**d in a number of ways including signs and symptoms. Sometimes the condition produces manifestations, such as **fever**, that makes it evident, that the person is sick. Other diseases are **silent** at the onset and are detected during examination or after the disease is far advanced
- **Symptoms:** are **subjective** complaint that is noted by the person with the disorder.(ex: pain, difficulty in breathing and dizziness).
- **Signs:** are **objective** manifestation that are noted by an observer.(ex: elevated temperature, rash,).
- Signs and symptoms are used to describe the structural and functional changes that accompany a disease.
- A syndrome is a compilation of signs and symptoms or is a group of signs and symptoms that occur together and characterize a particular abnormality or condition (*e.g., c*hronic fatigue syndrome and Down syndrome).

✓ Diagnosis (Question: how we can diagnose and purpose of each one and finally what can do?)

- The process of identifying the cause of the disease.
- It is done through examination of the patient including: taking patient **history**, **physical examination** and findings of **lab tests**.

- **Purposes of doing lab test:**

1. To validate a problem or confirm a diagnosis.
2. To determine other related health problems.



✓ Clinical Course

- It describes the **evolution** of the disease, the steps of the disease, how the disease behave over time, which may be **acute, subacute and chronic.**
- **Acute disease:** is relatively **sever** but self-limiting. It appears suddenly and worsen rapidly.
- **Chronic disease:** implies a continuous, **long term** process: it can present either with **exacerbation** (aggravation of symptoms and severity of the disease) or **remission** (a period during which there is a decrease in severity and symptoms). It develops gradually and worsens over an extended period of time.
- **Subacute:** it is **between** acute and chronic it is not as sever as acute and not as prolonged as chronic.

Position

Pathophysiology is an important subject bridging Basic sciences and clinical medicine.

bridge subject

Perspective on health and disease in population:

- **Epidemiology:** is the study of diseases occurrence in population and the extent of spread of infectious disease.
- Epidemiology is also involved in the study of risk factors (smoking, alcohol) for multifactorial diseases (e.g. heart disease and cancer).
- It looks for the patterns of people who are affected with particular disorder (such as age, race, life style).
- **Incidence:** The **number of new cases** arises in a population during a specified time.
- **Prevalence:** is the **number of people (new and pre-existing)** in a population who have a particular disease at a given point of time or period.

Perspective on health and disease in population: Continued

- **Mortality:** statistics provide information about the **number of death** in a certain disease at a specific period of time.
- **Morbidity:** statistics provide information about the **functional effect** (clinical course) of a certain disease on a person's life at a specific period of time.