Lec. 1

Pathophysiology

Pathophysiology is the study of functional changes in the body that occur in response to disease or injury. For example, if someone ingests a toxin, that toxin might be associated with a variety of physical changes, such as inflammation in the stomach lining or necrosis of the extremities. The field is designed to help people study the progress of disease so that they can quickly identify diseases and consider various treatment options.

There are two separate medical fields involved in pathophysiology. The first is physiology, the study of the body and its functions. The second is pathology, the study of disease and its impact on the body. When combined, students look at how the progress of a disease changes the body, and how the changes can be treated or reversed.

Disease

A **disease** is a particular abnormal, pathological condition that affect part or all of an organism. It is often construed as a **medical condition** associated with specific symptoms and signs. It may be caused by factors originally from an external source, such as infectious disease, or it may be caused by internal dysfunctions, such as autoimmune diseases. In humans, "disease" is often used more broadly to refer to any condition that causes pain, dysfunction , distress, social problems, or death to the person afflicted, or similar problems for those in contact with the person. In this broader sense it sometimes includes injuries, disabilities, disorders, syndromes, infections ,isolated symptoms, .
deviant behaviors and atypical variations of structure and function,

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the term disease is used to refer specifically to infectious diseases, which are clinically evident diseases that result from the presence of pathogenic microbial agents, including viruses, bacteria, fungi, protozoa, multicellular organisms, and aberrant proteins known as prions. An infection that does not and will not produce clinically evident impairment of normal functioning, such as the presence of the normal bacteria and yeasts in the gut, or of a passenger virus, is not considered a disease. By contrast, an infection that is asymptomatic during its incubation period, but expected to produce symptoms later, is usually considered a disease. Non-infectious diseases are all other diseases, including most forms of cancer, heart disease, and genetic disease..

There are four main types of disease: **pathogenic disease, deficiency disease, hereditary disease, and physiological disease**. Diseases can also be classified as communicable and non-communicable. The deadliest disease in humans is ischemic heart disease (blood flow obstruction), followed by cerebrovascular disease and lower respiratory infections respectively.

Illness

Illness and sickness are generally used as synonyms for disease. However, this term is occasionally used to refer specifically to the patient's personal experience of his or her disease. In this model, it is possible for a person to have a disease without being ill (to have an objectively definable, but asymptomatic, medical condition), and to be ill without being diseased (such as when a person perceives a normal experience as a medical condition, or medicalizes a non-disease situation in his or her life). Illness is often not due to infection, but a collection of evolved responses—sickness behavior by the body—that helps clear infection. Such aspects of illness can include lethargy, depression, anorexia, sleepiness, hyperalgesia,and inability to concentrate.

Disorder

In medicine, a **disorder** is a functional abnormality or disturbance. Medical disorders can be categorized into mental disorders, physical disorders, genetic disorders, emotional and behavioral disorders, and functional disorders. The term disorder is often considered more value-neutral and less stigmatizing than the terms disease or illness, and therefore is a preferred terminology in some circumstances. In mental health, the term mental disorder is used as a way of acknowledging the complex interaction of biological, social, and psychological factors in psychiatric conditions. However, the term disorder is also used in many other areas of medicine, primarily to identify physical disorders that are not caused by infectious organisms, such as metabolic disorders.

Stages of disease

In an infectious disease, the incubation period is the time between infection and the appearance of symptoms. The latency period is the time between infection and the ability of the disease to spread to another person, which may precede, follow, or be simultaneous with the appearance of symptoms. Some viruses also exhibit a dormant phase, called viral latency, in which the virus hides in the body in an inactive state. For example, varicella zoster virus causes chickenpox in the acute phase; after recovery from chickenpox, the virus may remain dormant in nerve cells for many years, and later cause herpes zoster.

- **Acute disease**

An acute disease is a short-lived disease, like the common cold.

- **Chronic disease**

A chronic disease is one that lasts for a long time, usually at least six months. During that time, it may be constantly present, or it may go into remission and periodically relapse. A chronic disease may be stable

(does not get any worse) or it may be progressive (gets worse over time). Some chronic diseases can be permanently cured. Most chronic diseases can be beneficially treated, even if they cannot be permanently cured.

- **Flare-up**

A flare-up can refer to either the recurrence of symptoms or an onset of more severe symptoms.

- **Refractory disease**

A refractory disease is a disease that resists treatment, especially an individual case that resists treatment more than is normal for the specific disease in question.

- **Progressive disease**

Progressive disease is a disease whose typical natural course is the worsening of the disease until death, serious debility, or organ failure occurs. Slowly progressive diseases are also chronic diseases; many are also degenerative diseases. The opposite of progressive disease is stable disease or static disease: a medical condition that exists, but does not get better or worse.

Cure

A cure is the end of a medical condition or a treatment that is very likely to end it, while remission refers to the disappearance, possibly temporarily, of symptoms. Complete remission is the best possible outcome for incurable diseases.

Scope of disease

- **Localized disease**

A localized disease is one that affects only one part of the body, such as athlete's foot or an eye infection.

- **Disseminated disease**

A disseminated disease has spread to other parts; with cancer, this is usually called metastatic disease.

- **Systemic disease**

A systemic disease is a disease that affects the entire body, such as influenza or high blood pressure.

Causes and Transmissibility

Only some diseases such as influenza are contagious and commonly believed infectious. The micro-organisms that cause these diseases are known as pathogens and include varieties of bacteria, viruses, protozoa and fungi. Infectious diseases can be transmitted, e.g. by hand-to-mouth contact with infectious material on surfaces, by bites of insects or other carriers of the disease, and from contaminated water or food (often via fecal contamination), etc. In addition, there are sexually transmitted diseases. In some cases, microorganisms that are not readily spread from person to person play a role, while other diseases can be prevented or ameliorated with appropriate nutrition or other lifestyle changes.

Some diseases, such as most (but not all) forms of cancer, heart disease, and mental disorders, are non-infectious diseases. Many non-infectious diseases have a partly or completely genetic basis (see genetic disorder) and may thus be transmitted from one generation to another.

Prevention

Many diseases and disorders can be prevented through a variety of means. These include sanitation, proper nutrition, adequate exercise, vaccinations and other self-care and public health measures.

Treatment

Medical therapies or treatments are efforts to cure or improve a disease or other health problem. In the medical field, therapy is synonymous with the word treatment. .
Common treatments include medications, surgery, medical devices, and self-care. Treatments may be provided by an organized health care system, or informally, by the patient or family members.

A prevention or preventive therapy is a way to avoid an injury, sickness, or disease in the first place. A treatment or cure is applied after a medical problem has already started. A treatment attempts to improve or remove a problem, but treatments may not produce permanent cures, especially in chronic diseases. Cures are a subset of treatments that reverse diseases completely or end medical problems permanently. Many disea`ses that cannot be completely cured are still treatable. Pain management (also called pain medicine) is that branch of medicine employing an interdisciplinary approach to the relief of pain and improvement in the quality of life of those living with pain