



THE SUBJECT MATTER OF PATHOPHYSIOLOGY. GENERAL NOSOLOGY

Doctor of medical sciences, Professor of the Department,
associate Professor Ivanova Anastasiya Sergeevna,
asivanova@mail.ru



PATHOPHYSIOLOGY – THE SCIENCE OF THE NATURE OF DISEASES

PATHOS – ILLNESS, DISEASE

PHYSIS – ESSENCE

LOGOS - TEACHING

PATHOLOGY

GENERAL

PATHOLOGICAL ANATOMY

PATHOPHYSIOLOGY


PRIVATE (basis for clinical disciplines)

THERAPY

SURGERY

PEDIATRICS

OBSTETRICS AND GYNECOLOGY



PATHOPHYSIOLOGY- the science of the vital activity of a sick organism, considering the General laws and basic mechanisms of the occurrence, development and outcomes of diseases, in order to find effective methods of prevention, diagnosis and treatment of diseases.




Pathophysiology consists of 3 sections

- ▶ nosology (the doctrine of disease);
- ▶ general part-typical pathological processes (inflammation, hypoxia, fever, carcinogenesis). Typical are pathological processes that contribute to the pathogenesis of many diseases and syndromes, and serve as their significant and inseparable part.;
- ▶ pathophysiology of organs and systems. Similar to typical pathological processes typical forms of pathology of specific organs and organ systems are also components of various diseases.



Problems of pathophysiology

1. Study of etiology (causes and conditions of diseases)
 2. Study of nosogenesis (mechanisms of disease occurrence)
 3. Search for effective methods of prevention, diagnosis, and treatment of diseases.
 4. Development of the theoretical foundations of medicine.
 5. Participation in the formation of the foundations of clinical thinking.
- 



Methods of pathophysiology

- Observation
- Experimental modeling-reproduction of individual disorders of organs and systems on animals, obtaining models of diseases. The Founder Is K. Bernard.
- Comparative pathology-study in the comparative (evolutionary) aspect of fever, inflammation, hypoxia, etc. The Founder Is I. I. Mechnikov.
- Physical and mathematical modeling - modeling of pathological processes using special computer programs.
- Clinical and pathophysiological methods (functional tests, laboratory, electrophysiological methods) - for the purpose of pathophysiological analysis of clinical situations.

Experiment – provoked observation.

Advantages:

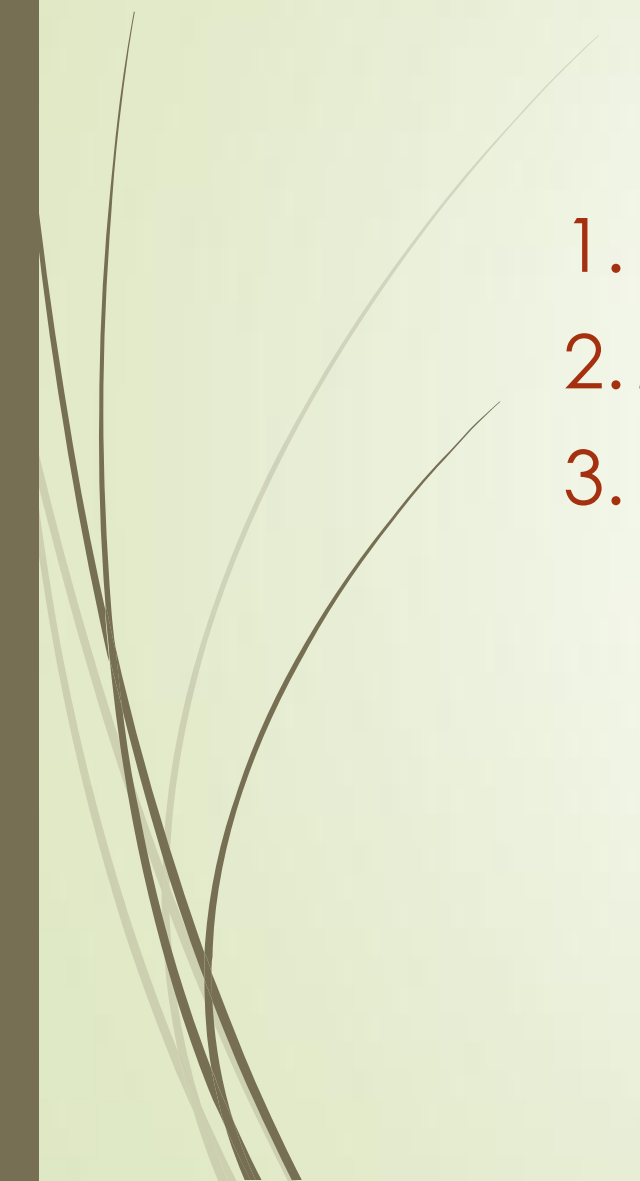
- allows you to trace the disease from beginning to end.
- you can change the effect of the pathogenic factor;
- you can change the treatment methods.

Disadvantages:

- there is a certain lack of natural selection in human society;
- the role of social factors is huge;
- animals do not have a second signaling system, which plays a large role in the processes of adaptation and protection in humans;
- in a number of diseases (peptic ulcer and hypertension, gout, coronary heart disease), only individual manifestations can be obtained in the experiment;
- some human diseases (measles, scarlet fever) can not be reproduced in the experiment at all.




Stages of experimental modeling

1. Defining the purpose of the study.
 2. Method.
 3. Evaluation of results from the point of view of mathematical statistics and theory.
- 





Elements of the methodology


1. The choice of the object (the similarity with the person, sensitivity, reproductive characteristics).
 2. Source data.
 3. Reproduction of the pathological process.
 4. Control experiment.
 5. Processing of results.
 6. Conclusions.
- 



Forms of pathological processes reproduction

- irritation - by various actions change the functions of a particular organ (for example, when the vagus nerve is irritated, bradycardia occurs);
- shutdown - removal or damage to an organ and comparison of the symptoms with the clinical picture of the disease in the case of suspected damage to the function of the same organ in a person (removal of the pancreas, administration of alloxan);

- 
- 
- inclusion - introduction of various substances, extracts from tissues, hormones into the body of animals and comparison of these results with the results of exposure to certain human diseases (introduction of thyroid hormones-symptoms of thyrotoxicosis);
 - the method of isolated organs (isolated heart, liver, lungs, etc.) allows you to assess the true nature, depth of damage to this organ and its contribution to the development of circulatory, digestive, respiratory failure, etc.;
 - the method of tissue cultures-allows you to study the processes of malignancy and evaluate the effectiveness of antitumor drugs;transplantation – transplantation of tumor cells.





HEALTH - IS THE NORMAL LIFE
ACTIVITY OF AN ABLE-BODIED
PERSON ADAPTED TO CHANGES IN
THE ENVIRONMENT (I. R. PETROV).

NORM- THESE ARE THE LIMITS OF OPTIMAL FUNCTIONING OF
A LIVING SYSTEM, THE BIOLOGICAL OPTIMUM OF LIFE
ACTIVITY.



Health criteria:


- integrity, consistency of systems of the body;
 - adaptation of the body to the environment;
 - the ability of a person to fully perform social functions (ability to work).
- 



The DISEASE is a qualitatively new state of the body, manifested by a violation of normal life: the integrity of the body, adaptation to the environment, the ability to perform their social functions.


COMPONENTS OF THE DISEASE:

1. Pathological reaction
2. Pathological process
3. Pathological condition



A pathological reaction is a biologically inappropriate response of the body that is inadequate to the strength or nature of the stimulus.


For example, an allergic reaction.



The pathological process is a dynamic complex of interrelated pathological and protective-compensatory changes, which is an integral part of the disease.

The typical pathological process


- ***occurs in the process of evolution,***
- ***may be caused by various reasons,***
- ***develops at certain stages regardless of the cause,***
- ***accompanies many diseases,***
- ***includes a set of protective and compensatory mechanisms.***



A pathological condition is a permanent change in the structure and function of the body that is innate or acquired as a result of a pathological process.
For example, a heart defect.



Elements of the disease:

- damage;
 - protective and compensatory reactions;
 - compensation (favorable outcome) and decompensation (adverse outcome).
- 




Irritant classification

indifferent

adaptogenic → protective and adaptive responses

pathogenic → damage → protective and compensatory reactions



Stage of disease

1. Latent period (incubation) - until the first signs of the disease appear. Determines the duration of the quarantine.
2. Prodromal period-from the first signs to the height of the disease.
3. The period of the height of the disease.
4. The final period (of outcomes).



THE DISEASE OUTCOMES

RECOVERY

- complete

- incomplete

 - transition to a chronic form

 - transition to a pathological state

 - complication

DEATH

- clinical (duration depends on the sensitivity of cortical cells to hypoxia)

- biological



QUESTIONS FOR SELF-CONTROL OF KNOWLEDGE

1. To reveal the essence and tasks of pathophysiology.
2. List the criteria for health.
3. What is the disease characterized by?
4. Name the main elements of the disease.
5. Give examples of typical pathological processes.
6. A person has warts on the skin of his hands that violate his ability to work. How will You call that violation?
7. After an eye injury of a person has developed blindness. What is the name of such a violation?
8. Are all diseases characterized by the prodromal period?
9. List possible outcomes of diseases.