REACTIVITY

it is an endogenous condition
of the disease

REACTIVITY– the ability of the body to change its vital functions in response to environmental influences.

SPECIES REACTIVITY

- Seasonal migration of birds and fish
- The hibernation of animals
- The second signal system

GROUP REACTIVITY

- Sexual
- Age
- Constitutional
- Type of higher nervous activity
- Blood group

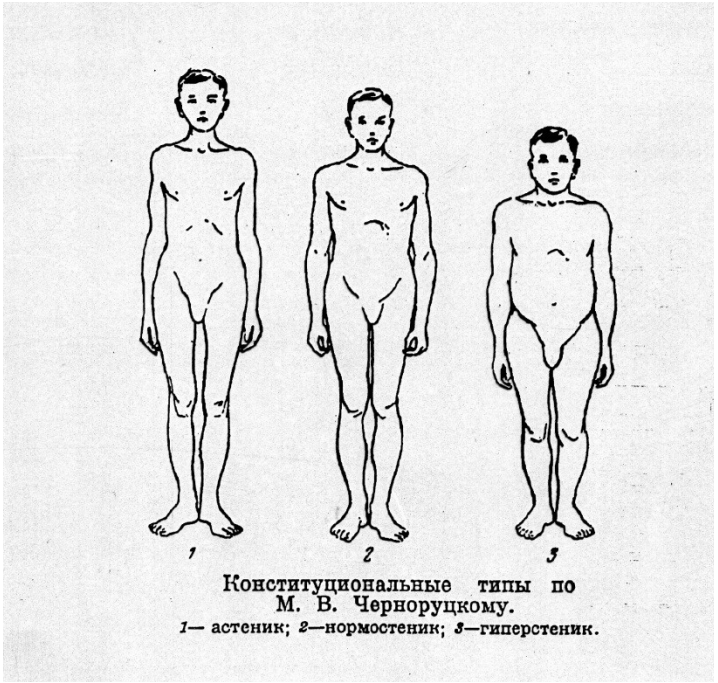
Sexual reactivity

- the female body is more resistant to hypoxia, blood loss, and starvation
- the male body is more resistant to physical exertion.

Constitutional reactivity - related to the type of constitution.

Type of constitution - a set of relatively stable morphological and functional characteristics of the human body, due to heredity and living conditions.

There are 3 types of constitution (according to
M. V. Chernorutsky):
- asthenic,
- normosthenic,
- hypersthenic.



Конституциональные типы по М. В. Черноруцкому.
1— астеник; 2—нормостеник; 3—гиперстеник.

People with asthenic type are characterized by

- increased excitability of the nervous system,
- predisposition to neurosis,
- hypotension,
- respiratory diseases,
- peptic ulcer disease.

People with hypersthenic type are predisposed to

- obesity,
- diabetes,
- hypertension,
- coronary heart disease
- cholelithiasis.

Reactivity in children

- the younger the child, the fewer specific signs of the disease, and non-specific manifestations come to the fore;
- the presence of innate (transplacental) immunity within 6 months after delivery;
- protective barriers in newborns are not sufficiently developed and differentiated – there is a greater risk of infection;
- the degree of maturity of individual systems varies, hence the features of their functioning and resistance to the action of pathogenic factors.

Reactivity in the elderly

- multimorbidity;
- immune failure, but the occurrence of autoagression;
- weakening of nervous control over the work of internal organs;
- increasing the role of humoral regulation factors;
- changes in reactivity to humoral factors (sensitivity increases, but reactivity decreases).

Individual reactivity: specific (related to the immune system)

physiological	**pathological**
Resistance Immunity	Allergic Immunological: immunodeficiency States immunosuppressive States

Individual reactivity: nonspecific

- to the action of factors: physical, chemical, biological, psychogenic.

Non-specific pathological reactivity is characteristic of the patient's body (in shock, collapse, coma). Reflects a decrease in the adaptive capacity of the body.

BODY RESISTANCE - the body's resistance

A special case of reactivity.

There are passive and active resistance.

Passive resistance

due to the functioning of barriers:

- external (skin, mucous membranes),
- internal (histohematic barriers, mononuclear-phagocytic system, cell membranes).

Active resistance

- it is provided by protective and adaptive reactions under the action of exogenous factors.

Classification of active resistance:

- by functional systems in which there is (in hypoxia - an increase in respiratory rate, an increase in blood flow rate, blood output from the depot);
- according to the physiological systems in which it occurs (in the respiratory system - an increase in the respiratory rate, expansion of the bronchi, the participation of additional alveoli).

Cross-resistance – an increase in the body's resistance not only to the primary factor that causes a protective reaction, but also to other influencing factors, the response to the action of which has similar mechanisms to the primary effect. For example, hardening.

INDICATORS OF REACTIVITY

- irritability, excitability, functional mobility;
- the reaction of the blood system;
- rate of antibody formation;
- determination of biologically active substances; investigation of the bactericidal properties of the skin;
- study of motor activity of the ciliated epithelium;
- phagocytic activity of leukocytes;
- **functional tests**.

FUNCTIONAL TESTS

- these are various dosed loads or disturbing effects that allow you to objectively assess the body's reserves and the ability to compensate for damage to the body during illness.

They are used to evaluate PROTECTIVE-ADAPTIVE (in healthy people) and protective-compensatory (in sick people) REACTIONS'.

Adaptation syndrome

- protective neurohumoral generalized reaction of the body to the action of super-strong stimuli.

Adaptation syndrome-consists of a specific component (depending on the stimulus) and a non-specific component (the same for all stimuli).

Stress reaction

- is a typical non-specific protective reaction that occurs in response to the action of super-strong stimuli.

Studied G. Selye.

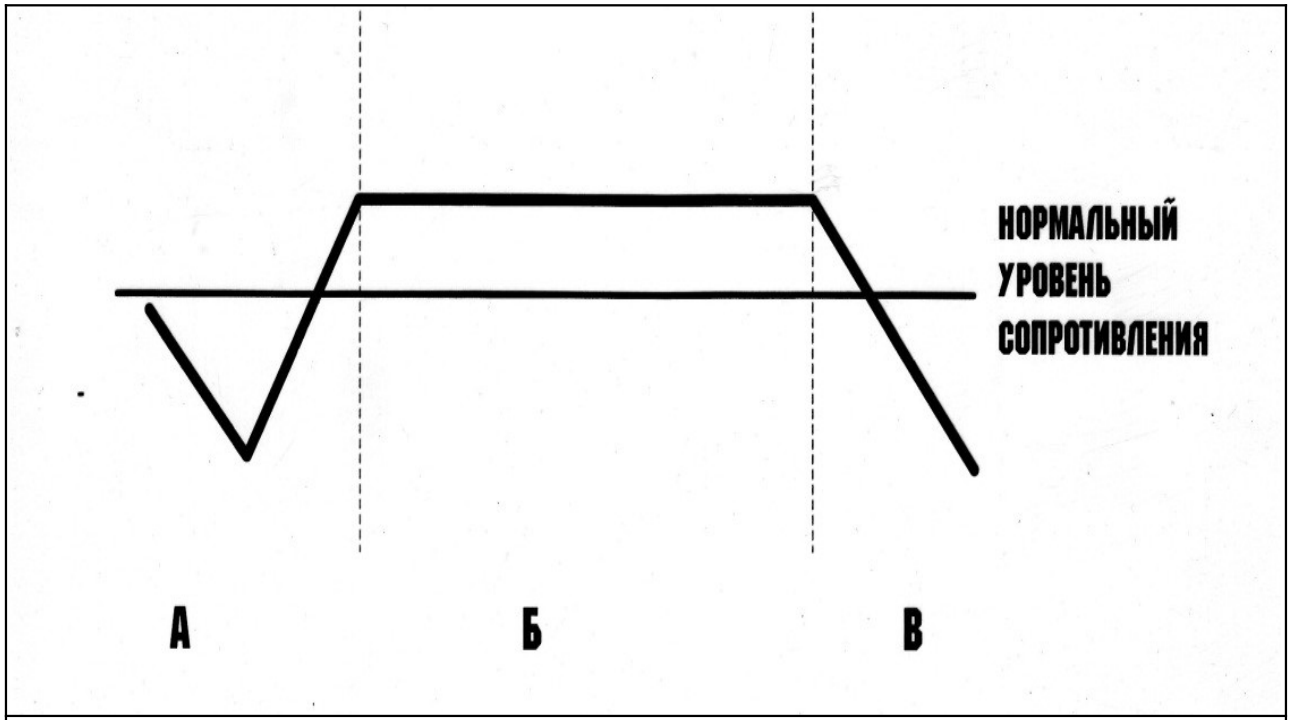
Stages of the stress response

1. Alarm stage:

- The shock phase – a drop in blood pressure, hypoglycemia, a decrease in the weight of the adrenal glands, hemorrhages in the gastrointestinal tract.
- Antishock phase – increased blood pressure, adrenal hypertrophy, hyperglycemia, hemorrhage in the gastrointestinal tract.

2. Resistance stage: the activity of all body systems is restored at a new level due to hyperfunction of adaptive hormones.

3. Stage of exhaustion: a drop in blood pressure, hypoglycemia, a decrease in the weight of the adrenal glands, damage to various organs and systems, leading to the death of the body.



Stress reaction: A-stage of anxiety, B - stage of resistance, C-stage of exhaustion

Stress-implementing mechanisms

Under the action of an extreme stimulus, the cortex of the large hemispheres is excited. It, in turn, stimulates the activity of the hypothalamus centers responsible for the activation of the sympathetic nervous system, the production of adrenocorticotropic hormone in the pituitary gland and the synthesis of vasopressin. As a result, the production of catecholamines and glucocorticoids by the adrenal glands increases. The body's protective functions are enhanced.

Stress-limiting system

In the course of evolution, mechanisms have appeared in the body that prevent side effects of the participants in the stress reaction or reduce the intensity of their impact on target organs.

These mechanisms include:

- gamma aminobutyric acid,
- endogenous opioids,
- prostaglandins,
- the antioxidant system.

Self-assessment questions

1. Give the definition of reactivity.
2. Give examples of species reactivity.
3. List the features of age-related reactivity in children.
4. List the features of age-related reactivity in the elderly. 5. What are the features of sexual reactivity?
6. Define the type of Constitution.
7. What are the features of reactivity in asthenics?
8. What are the features of hypersthenic reactivity?
9. Explain the concept of "non-specific pathological reactivity".
10. what does the concept of passive resistance include?
11. What is the classification of active resistance based on? 12. Name the stages of the stress response.
13. List the stress-implementing mechanisms.
14. Name the components of the stress-limiting system.

INDEPENDENT WORK OF STUDENTS IN THE CLASSROOM

Goal: to study the change in the body's sensitivity to oxygen starvation with moderate muscle load.

Method: one mouse is forced to swim in a vessel of water for 3-5 minutes. The second mouse serves as a control. Then both mice are placed under the bell of the air pump and the barometric pressure is lowered. Monitor the condition of mice and take into account the degree of rarefaction at which the mice develop impaired coordination of movements, convulsions and respiratory arrest.