MODERN MEDICINE AND PRACTICE
https://inovatus.es/index.php/ejmmp
EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE
Vol. 3 No. 11 (Nov - 2023) EJMMP ISSN: 2795-921X

PHYSIOLOGY OF THE ENDOCRINE GLANDS

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Annotation: Hormones play an important role in humoral control of the body's life activity. These substances are produced in endocrine glands, also called endocrine glands. Usually, endocrine glands mean glands that synthesize special physiologically active substances - hormones and release them directly into the internal environment of the body - blood and tissue fluid. Hormones are produced in the cells of the endocrine glands, they pass directly to the blood in the vessels that supply the gland, spread throughout the body and strengthen or weaken the activity of various organs. This article is about the hormones released by the endocrine glands and their importance in the body.

Key words: endocrine gland, cell, organ, tissue fluid, hormone.

INTRODUCTION

All glands in the body are divided into two large groups depending on their secretion:

1. External secretory glands, i.e. exocrine glands
2. Endocrine glands are divided into endocrine glands.

Exocrine glands are glands with independent excretory ducts that secrete fluids and juices to the body surface, alimentary canal, urinary tract, or other spaces connected to the external environment. Endocrine glands, i.e. endocrine glands, are glands that do not have independent secretions.

RESEARCH MATERIALS AND METHODOLOGY.

Hormones have several unique properties:

- each hormone released into the blood affects a specific organ and its functions, causing specific characteristics in them.
- hormones are biologically active substances. For example, 1 g of adrenaline can increase the work of the isolated heart of 10 million frogs.
- hormones have a distant effect, that is, the hormone entering the blood goes to the relevant organ and exerts its effect.
- hormones break down in the tissues rather quickly, so it is necessary to have enough hormones in the body and to always leave the sebaceous gland.
- hormones affect processes occurring only in cells or their special structures.

In addition, there are four types of effects of hormones on the body:

1. Metabolic (effect on metabolism)

2. Morphogenetic (influence on growth, development, formation)
3. Kinetic (effect related to the activity of certain organs)
4. Corrective (effect on the intensity of activity of organs and tissues)

To date, the structure of many hormones has been studied and can be obtained artificially in laboratory conditions. Hormones are divided into 3 types depending on the generality of their structure, physico-chemical and physiological properties:

1. Steroid hormones
2. Hormones composed of amino acid derivatives
3. Protein-peptide compound hormones

RESEARCH RESULTS

The activity of the endocrine glands is controlled through several ways. The first of them is that whatever substance the hormone controls in the blood, this substance can directly affect the activity of the endocrine glands and change the intensity of its work. As an example, let's consider the activity of the thyroid gland. If the concentration of calcium in the blood increases, then the amount of parathormone released from the hormone decreases, on the contrary, if the concentration of calcium in the blood decreases, then the stimulation of the hormone increases. But in most cases, control of endocrine gland activity, i.e. hormone secretion, is carried out not directly, but through neurohormones or purely hormonal mechanisms.

All endocrine glands are closely related to each other and form a single functional system, whose activity is controlled by the nervous system. Nervous control of the endocrine glands is carried out through the hypothalamus and its neurohormones. Direct nerve effects on secretory cells are usually absent. It is manifested by controlling nerve fibers of gland cells, controlling the tone of blood vessels in the gland and improving blood supply.

Secretion of hormones and their transport in the blood. Hormones entering the blood form a compound with proteins in the plasma. Only 5-10% of hormones are free in the blood and only these can establish contact with receptors. Specific hormone-binding proteins include thyroxine, testosterone, estrogen-binding globulin, thyroxine-binding globulin, and others. Aldosterone usually does not form a combination with "carrier" proteins, it is always combined with albumin. Methods of examining the activity of the endocrine glands.

The activity of endocrine glands is studied using experimental and clinical methods. Below are the most important of them.

1. Extermination - surgically removing the corresponding endocrine gland and observing the changes that occur in the body after that.
2. Transplantation - endocrine gland transplantation (auto, homo and hetero transplantation).
3. Studying the observed changes by injecting the appropriate hormone or extracts prepared from the endocrine gland into the body.
4. Parabiosis - formation of biological unity between two organisms.
5. The method of angiostomy, determining the physiological activity of the blood flowing to and from the gland being studied, and comparing it with each other.

DISCUSSION

If the chemical structure of hormones is known, the amount is indicated by weight. If the chemical structure of the hormone is unknown, its quantity is expressed in conditional biological units. One biological unit refers to the amount of hormone required to produce special physiological changes in an animal.

Hypophysis. The pituitary gland consists of three parts: anterior (adenohypophysis), posterior (neurohypophysis) and intermediate lobes.

The anterior lobe of the pituitary gland (adenohypophysis) produces 6 hormones, 4 of which are: 2 tropic hormones (adenocorticotropic or corticotropin, thyrotropin or thyrotropin) and 2 gonodotropic hormones (folliculostimulating and luteinizing). The other 2 are effector hormones (somatotropic hormone and prolactin).

There are also many neuroglial cells from the posterior pituitary. This part of the gland produces three different hormones, vasopressin, octytocin and octididenrevin. It is considered that the hormones of the hypophysis are not produced directly in the hypophysis itself, but are released into the hypophysis through the hypothalamus superoptic hypophyseal pathway.

Vasopressin. Except for the kidney and brain arteries, it narrows all other blood vessels in the body and increases blood pressure.

Antidiuretic. Increases the reabsorption of water from the kidney tubules and causes a decrease in daily urine output.

Thyroid gland. The main hormones of the thyroid gland are thyroxine and triiodothyronine, which contain iodine. Thyroid hormones are of great importance in the growth and development of the organism, in the metabolism of proteins, fats, carbohydrates, water and salts. These hormones affect energy exchange, nervous system, heart and reproductive glands. Thyroxine, triiodothryonine, triiodteroacetic acid and some other iodinated compounds formed in the thyroid gland accelerate the oxidation process and protein metabolism. Especially it accelerates the oxidation process in the mitochondria of cells.

Adrenal glands. Adrenal glands consist of cortex and medulla, they are internal secretory glands with different structure and function, the hormones released from them also differ in terms of their effects. Adrenal cortex cells are genetically close to epithelial cells. They form three areas: the outer ball area, the middle tufted area and the inner mesh area.

Mineralocorticoids are synthesized in the glomerulus area, the most active of which is aldosterone. Glucocorticoids are synthesized in the tufted area. A small amount of sex hormones are synthesized in the reticular area

The medulla of the adrenal glands synthesizes adrenaline and non-adrenaline hormones. Hormone secretion is 80% adrenaline, 20% non-adrenaline.

CONCLUSION

Internal secretion of gonads. In addition to delivering sperm or egg cells, gonads produce a number of hormones into the blood. Male sex hormones or androgens include testosterone, andosterone, isoandrosterone, dehydroandrosterone, and others. Testosterone is the most active of these hormones. Female sex hormones. Estrogens and progesterone are produced from female sex hormone glands.

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