ISSN: 2582-4686 SJIF 2021-3.261,SJIF 2022-2.889,
2024-6.875 ResearchBib IF: 8.848 / 2024

THE MULTIDISCIPLINARY JOURNAL OF SCIENCE AND TECHNOLOGY

VOLUME-4, ISSUE-5

MORPHOFUNCTIONAL CHANGES OF THE THYROID GLAND IN ACUTE EXPERIMENTAL ENDOTOXICOSIS

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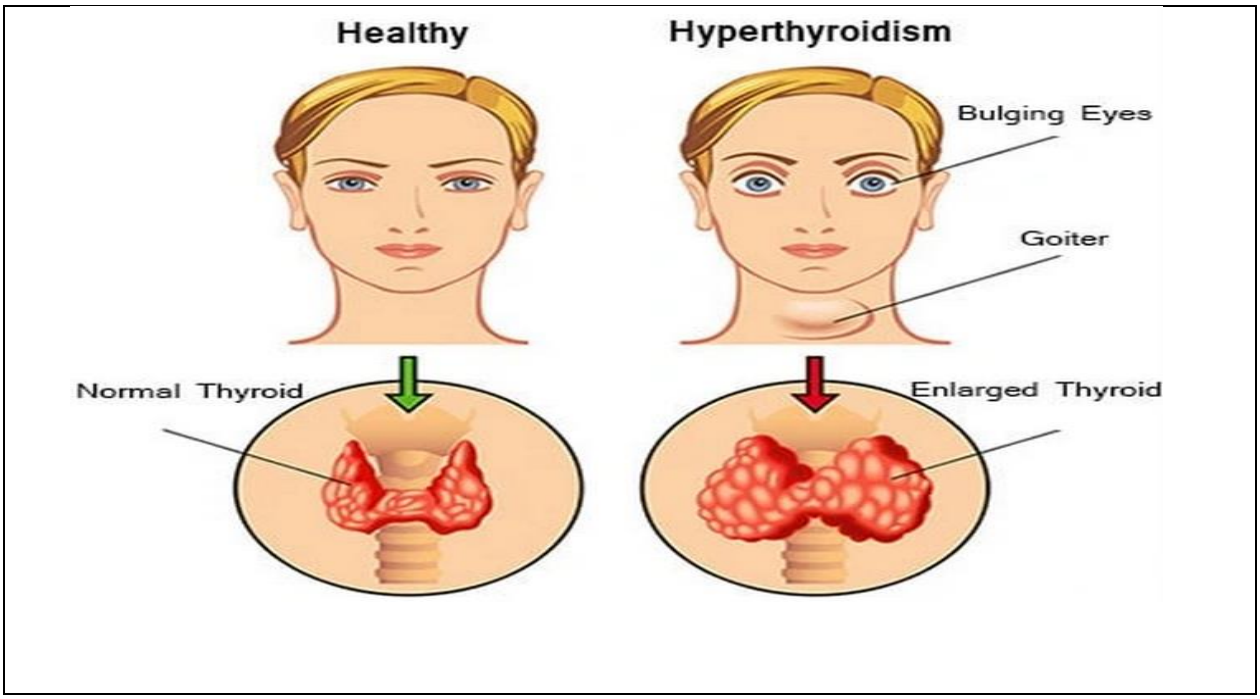
ABSTRACT. The aim of the study was to study the morphofunctional changes in the thyroid gland and its hormonal status in rats with non-thyroid diseases caused by acute endotoxicosis. Morphological and morphometric studies of the thyroid gland carried out on the 1st and 7th days of the disease revealed that the earliest sign of non-thyroidal diseases is the separation of synthetic processes and the release of thyroglobulin into the cavity of the follicle and its resorption, that is, the synchronization of the phases of cell secretion, and the thyroid It consists in separating the direction of morphodynamic processes in the central and peripheral zones of the gland.

Keywords: Thyrotoxicosis, thyroid gland, exophthalmos, tachycardia, atrial fibrillation, lacrimation, photophobia, pressure in the eyes, diffuse toxic goiter.

Thyrotoxicosis is a clinical syndrome caused by an increase in the level of thyroid hormones in the blood. The abundance of these hormones affects the work of various organs and systems. Patients complain of dry skin, brittle hair, swollen face, eyelids, fingers, and even the whole body may tremble slightly. There is a slight change in temperature, increased nervous excitability, sweating, a feeling of heat and restlessness. There are sudden attacks of muscle weakness. Sleep disorders are observed[1].

The patient has swelling and darkening of the skin of the upper eyelids, lacrimation, photophobia, pressure and feeling of "sand" in the eyes, swelling of the eyes (exophthalmos). With moderate or severe damage to the eye, patients cannot close the eyelids, so damage to the cornea and sclera (ulcer, infection) develops [4].



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In some patients, damage to the skin and subcutaneous fat tissue develops on the front surface of the leg. Men sometimes have thickening of the phalanges of the fingers due to tissue swelling. Due to the effect of thyroid hormones on the cardiovascular system, patients are concerned about heart rhythm disorders (tachycardia, extrasystole, atrial fibrillation).

Gastrointestinal disorders are common. Body weight decreases due to accelerated metabolism even with increased appetite. Abdominal pain, vomiting, stool disturbances and sometimes constipation may occur. In severe cases, the liver is affected - its enlargement, pain and, rarely, jaundice are noted[2].

A thyrotoxic crisis can occur under the influence of provoking factors (stressful situations, physical overstrain, infectious diseases, surgery). As a result of the sudden release of large amounts of thyroid hormones into the blood, patients become restless, the body temperature rises significantly, tachycardia increases sharply, breathing becomes more frequent, and blood pressure rises. There are several types of thyrotoxicosis:

I. Thyrotoxicosis caused by an increase in thyroid hormones:

* Graves' disease (diffuse toxic goiter);

*Multinodular toxic goiter;

*Toxic adenoma of the thyroid gland;

*Thyroid cancer;

*TSH-producing pituitary adenoma.

II. Thyrotoxicosis caused by the production of thyroid hormones outside the thyroid gland:

*Chorioepithelioma;

*Struma ovari (ovarian tumor);

*Functional metastases of thyroid cancer.

III. Thyrotoxicosis not associated with excessive production of thyroid hormones:

*Thyrotoxicosis caused by drugs;

Thyrotoxic stage of destructive thyroiditis (subacute, postpartum).

Depending on the severity of the course, mild, moderate and severe forms of thyrotoxicosis are distinguished. In the mild form of thyrotoxicosis, the heart rate does not exceed 100 beats per minute, the loss of body weight does not exceed 5 kg, the eye symptoms are absent or mild. In the average form - the heart rate is 100-120 beats per minute, weight loss - 8-10 kg, pronounced tremor (shaking), an increase in systolic blood pressure and a decrease in diastolic pressure are observed. Without treatment, a severe form develops with long-term thyrotoxicosis. The pulse rate is 120-140 times per minute, weight loss reaches the level of exhaustion, damage to the cardiovascular system, liver and adrenal glands is observed[1].

An increase in thyroid hormones in the blood can be observed for several reasons:

* as a result of increased production of thyroid hormones in the thyroid gland;

* as a result of the destruction of thyroid tissue and the release of large amounts of thyroid hormones into the blood;

*as a result of an overdose of thyroid hormone drugs or a side effect of drug therapy with amiodarone.

Diffuse toxic goiter (Graves' disease) is the most common cause of increased thyroid hormone production. Depending on the nature of the expansion of the thyroid gland, diffuse toxic goiter (diffuse expansion of all parts of the gland) and nodular toxic goiter (focal

enlargement of the thyroid gland) are distinguished. If there is only one node that produces a large amount of hormones, they talk about a toxic adenoma. Diffuse toxic goiter is an autoimmune disease in which antibodies to components of the thyroid gland's own cells appear. Antibodies are special immunoglobulin proteins (Ig) produced by the immune system in response to any foreign agent entering the body to fight it. In this case, the immune system recognizes the thyroid tissue as foreign. These antibodies have a stimulating effect on the thyroid gland, which causes its hyperfunction with an increase in the size, weight and, as a result, the concentration of thyroid hormones in the blood. Antibodies are able to cross the placental barrier and cause thyrotoxicosis in newborns. Therefore, the detection of antibodies in pregnant women is of great importance for the unborn child[3].

Failure in the production of thyroid hormones affects hormonal synthesis in other endocrine glands. Thus, long-term thyrotoxicosis, if not corrected, can lead to the development of infertility or diabetes mellitus.

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