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THE ROLE OF THYROID HORMONES (T3 AND T4) IN THE FEMALE BODY

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Abstract:
The work examines the influence of thyroid hormone during pregnancy. It is also shown that non-treatment in time can lead to several diseases, for example, the most common symptoms such as hypothyroidism.

Keywords: Hormone, thyroid gland, hypothyroidism, triiodothyronine, tetraiodothyronine, thyroxine, Hashimoto's thyroiditis, deficiency, iodine.

Introduction

Various thyroid dysfunctions are diagnosed more and more often these days. Moreover, they are detected less often in men than in women. Meanwhile, the thyroid gland and its health are closely related to reproductive function. Various pathologies of the organ can lead not only to menstrual cycle disorders, but also to problems with conception and pregnancy. They also affect the health of the fetus, disrupting its full development and leading to the appearance of various anomalies.
It is the thyroid hormones:
Affect sexual development
Provide protein synthesis
They influence metabolic processes, as well as tissue growth.
Promotes ovulation and menstruation
The work of the heart, brain, and muscles depends on them. They determine our physical activity, mental abilities, bone strength, appetite, sleep, hair and skin condition, weight, and other important characteristics of the body.
It is especially important to monitor thyroid hormones during pregnancy and when planning it. T3 and T4 are important not only for the mother, but also for the fetus. They help it develop normally.

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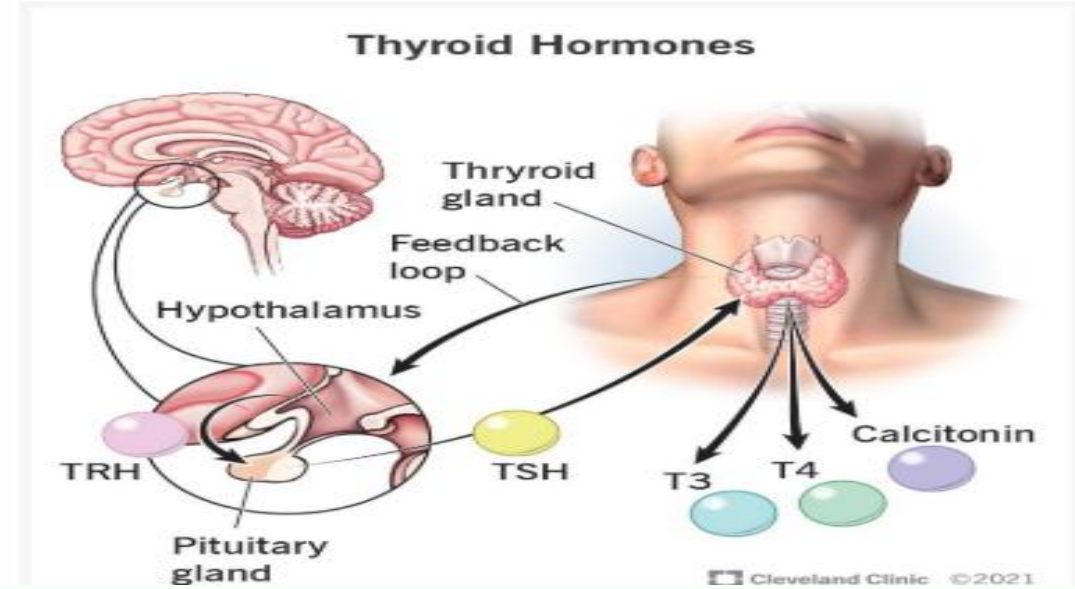
It is important to take into account the fact that during pregnancy the thyroid gland experiences serious overload. The organ increases by approximately 0-10%. At the same time, it normally produces 2 times more hormones. If pathologies develop, the main ones of which include hypo- and hyperthyroidism (thyrotoxicosis), problems with bearing a fetus arise, the health of the future baby is at risk. Of course, the expectant mother also suffers.



In thyrotoxicosis, for example, patients complain of symptoms such as:
Increased irritability and nervousness
Weight loss
Hand tremor
Intolerance to high temperatures
Bowel dysfunction
With hypothyroidism, women suffer from:
Constant feeling of fatigue
Weight gain
Pain in muscles and joints
Feelings of chilliness
The disease may be accompanied by the development of PCOS (polycystic ovary syndrome).
To eliminate the problem, women should do the following:

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Consult a gynecologist and endocrinologist. These specialists will tell you how the thyroid gland affects pregnancy, provide information about the main hormones and their role.

Undergo a comprehensive examination. It includes not only laboratory but also instrumental diagnostics. Usually, thyroid gland control during pregnancy is possible with special tests (for TSH, T4, etc.) and ultrasound of the organ.

Receive the necessary recommendations for eliminating the identified pathologies or preventing diseases. As a rule, women are recommended to take iodine preparations. If necessary, additional medications are prescribed

Not treating such a disease in time:

Menstrual cycle disorders

Absence of ovulation

Infertility

For this reason, it is very important to treat them in a timely manner. You need to see a doctor at the first signs of pathology. An endocrinologist will prescribe the necessary examination and then select the appropriate therapy tactics. To achieve its maximum effect, a gynecologist will also monitor the treatment. If necessary, he will also prescribe the necessary drugs.

It should be understood that problems with hormonal imbalances and thyroid diseases can also arise in men.

The function of the organ is also important when using assisted reproductive technologies. All women planning to use them undergo a hormone level test. An ultrasound of the gland is also performed. If necessary, hormonal therapy is prescribed. It allows increasing the effectiveness of the assisted reproductive technologies used. Diagnostics are also performed in case of successful conception. This is due to the fact that ovarian stimulation in some cases can provoke hypothyroidism.

Almost every tenth woman suffers from hypothyroidism. This means that women suffer from this disease significantly more often than men. Our chief physician of the department of general and visceral surgery at Helios Hospital in Rottweil explains which symptoms are particularly characteristic for women and what patients should pay attention to.

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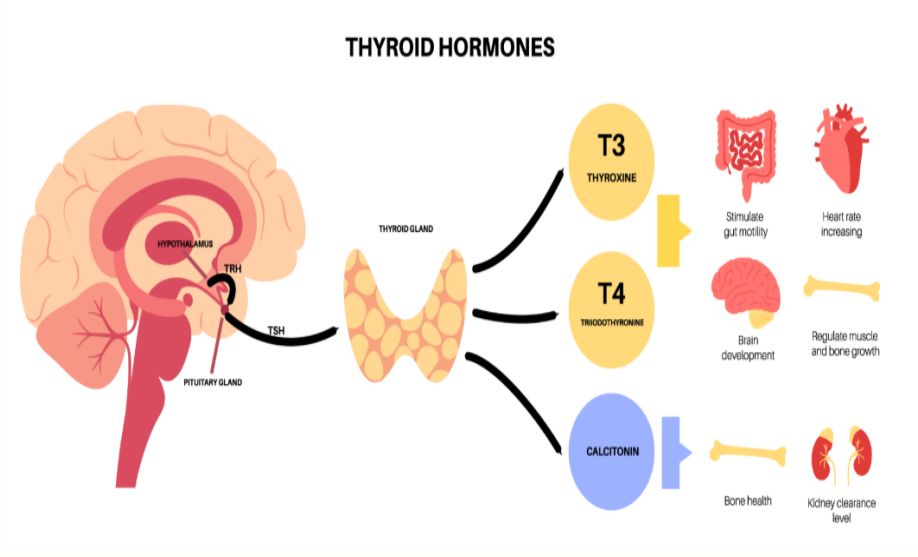
The female body is subject to various hormonal fluctuations throughout life. Whether it is pregnancy, which disrupts the hormonal balance, menopause, or taking hormonal contraceptives.

An important role in this is played by a small organ located under the larynx - the thyroid gland. It produces two thyroid hormones T3 (triiodothyronine) and T4 (tetraiodothyronine or thyroxine) and releases them into the body. In hypothyroidism, hormone production is disrupted.

Hypothyroidism is generally incurable, but responds well to medication. Therefore, it is even more important to know how this metabolic disorder manifests itself in women.

Thyroid hormones affect the cardiovascular system, many metabolic processes, and the psyche. Therefore, their impact can affect the entire body.



The most common symptoms of hypothyroidism in brief:

Weakness in work

Lack of concentration

Constant fatigue

increased sensitivity to cold

Hair loss

Depressive moods

Weight gain

Swollen limbs

Constipation

Dry, rough skin

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Circulatory disorders
Cycle disorders
Loss of libido
Heavy menstruation
Infertility
Hypothyroidism can have various causes. There are both congenital and acquired disorders of this metabolic organ.
Experts distinguish between primary and secondary faults:

Primary failure: The cause of hypothyroidism lies in the thyroid gland itself. This form is the most common.

Secondary Dysfunction: Secondary hypothyroidism is less common and can have a variety of causes, most of which involve the pituitary gland or hypothalamus.

Congenital thyroid diseases
If thyroid dysfunction is already congenital, then this defect affects the patient throughout life.
Disruption of congenital thyroid function can be caused by the following factors:
The thyroid gland produces too little hormone or no hormone at all
Thyroid tissue changes with loss of function
Absence of the thyroid gland (athyroidism)
Pregnant woman receives too high a dose of hyperthyroidism therapy, causing her fetus to develop hypothyroidism in utero

Acquired thyroid diseases
Even a healthy thyroid gland can malfunction during life. This can be caused by various reasons:
Thyroiditis Hashimoto : Hypothyroidism can be a consequence of chronic inflammation of the metabolic organ. In autoimmune disease - thyroiditis Hashimoto - the body produces special antibodies that attack its own thyroid tissue. As a result, the amount of thyroid hormones becomes insufficient. Why the body produces antibodies in an autoimmune disease has not yet been scientifically determined.

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Treatment errors: Acquired hypothyroidism can also be the result of previous treatment. For example, if hyperthyroidism was treated "too strongly". Then hyperthyroidism can turn into hypothyroidism. In addition, it is possible that irradiation of the thyroid gland with radioactive iodine or an incorrectly selected dose of a drug disrupts hormone production so much that an inactive thyroid gland develops.

Thyroid surgery: Thyroid surgery, such as for goiter, can also lead to hypothyroidism if the surgery fails to preserve enough healthy thyroid tissue.

Iodine deficiency: The thyroid gland needs iodine to produce thyroid hormones. People who get too little of this micronutrient due to poor nutrition may develop iodine deficiency and, as a result, hypothyroidism. In Germany, iodine deficiency caused by poor nutrition is very rare.

What Women with Hypothyroidism Should Pay Attention to

An underactive thyroid gland can affect many areas of women's health. Insufficient secretion of T3 and T4 hormones can cause menstrual irregularities, hair loss, skin changes, and even sexual dysfunction. It also reduces the likelihood of pregnancy. Undetected hypothyroidism during pregnancy is very serious. Thyroid hormone deficiency can lead to miscarriages and premature births, and can cause serious harm to the health of the unborn child.

Therefore, it is important for women suffering from this disease to regularly check their blood counts and maintain close communication with their doctor. The individual situation should be discussed in a gynecological practice, especially if the woman wants to have a child.

Hypothyroidism therapy

Hypofunction of this metabolic organ must be treated throughout life. However, adapted hormonal therapy in the form of tablets allows patients to lead a normal life without restrictions.

Treatment with L-thyroxine

In hypothyroidism, the body's own hormone L-thyroxine (levothyroxine) must be replaced with tablets. This is also called replacement therapy. The hormone contained in the tablets corresponds to the body's own thyroid hormone. The

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replacement normalizes the metabolic balance, and the patient can lead a normal life. The artificial hormone acts like the natural thyroid hormone thyroxine (T4) and is partially converted in the body into the hormone T3. Side effects when taking L-thyroxine are rare. However, it is important that a specialist selects the correct dose for the patient and checks it regularly. In addition, a patient suffering from thyroid pathology must reliably take the tablets. The time when a woman needs thyroid hormones depends on factors such as age, concomitant diseases or possible pregnancy.

L-thyroxine should be taken before breakfast on an empty stomach. With rare exceptions, it should be taken for life.

Treatment of hypothyroidism in pregnant women

Pregnancy means many hormonal changes for the expectant mother. The thyroid gland also adapts to the new situation. "Due to the increased metabolic processes, the need for thyroid hormones during pregnancy can increase by 50%," explains chief physician Renée Hodina . Therefore, an enlarged thyroid gland is considered normal during pregnancy. A pregnant woman's need for iodine, which is 200 mcg per day, is significantly higher than that of a woman who is not expecting a child. Therefore, in some cases, after consultation with a doctor, it may be necessary to take iodine in tablet form. An increase in the level of pregnancy hormones hCG (human chorionic gonadotropin) and estrogens also changes the hormonal parameters of the thyroid gland. Therefore, when examining the thyroid gland during pregnancy, it is necessary to determine not only the TSH hormone, but also the free thyroid hormones T3 and T4. In addition, an ultrasound examination of the thyroid gland during pregnancy can be useful.

Thyroid conditions may also first become apparent during pregnancy. Regardless of whether hypothyroidism is diagnosed during pregnancy or before, it is important to closely monitor all thyroid indicators. This is because the thyroid metabolism is also constantly changing due to the growth of the child. If you ensure sufficient iodine intake and well-regulated thyroid metabolism, then despite hypothyroidism, the child can develop physically and mentally healthy.

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Thyroid gland of lactating women

A mother with hypothyroidism can breastfeed without restrictions, even if she takes L-thyroxine - provided that the dose is chosen correctly. While the sick mother is breastfeeding, hormone levels should be checked approximately every three months.

Hormonal imbalance in the thyroid gland can lead to too little milk being produced. As a result, the baby does not gain weight well. Therefore, it is very important to choose the right medication for the woman.

While a mother is breastfeeding, she should not be tested or treated with radioactive iodine. However, alternative testing options may be used.

Untreated hypothyroidism can lead to severe disruption of all processes in the body with pronounced physical and psychological symptoms. The desire to have children is disrupted, and an existing pregnancy is at great risk. The psychological impact can be extensive. Thus, hallucinations and delusions may occur, and often the self-perception and perception of the environment are greatly affected. The face, eyes or tongue can swell significantly, and in severe cases there is water retention in the body tissues (edema). If the metabolic organ is insufficiently active and there is no treatment, the heart can also be damaged. Renée Hodina , who also heads the intestinal center at the Helios clinic Clinic Rottweil , says: "In addition, depending on the severity of hypofunction, the metabolism slows down, which makes it difficult for the body to absorb vitamins and minerals. Thus, deficiency symptoms often occur." In extreme cases, the symptoms can lead to a comatose state.

References

1. И.М. Скударнова, Н.В. Соболева, Н.В. Мычка. Гормоны щитовидной железы «Век тор-Бест». 2006. С. 32.
2. Elmurotova D.B., Nishonova N.R., Kulueva F.G., Uzoqova G.S., Xo‘jamberdiyeva J.N., Jo’rayeva Sh.A. Mashaits: islamic interpretation of the greek philosophical heritage // South Eastern European Journal of Public Health (SEEJPH), (ISSN: 2197-5248) V.XXV, S2, 2024, Posted:05-12-2024, P.516-522, https://www.seejph.com/index.php/seejph
3. Shodiev A.A., Mussaeva M.A., Nishonova N.R., Elmurotova D.B., Islamova D.X. Improving Structure and Superconductivity of Coated Cuprate Tapes by

EduVision: Journal of Innovations in Pedagogy and Educational Advancements
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brightmindpublishing.com
ISSN (E): 3061-6972

Irradiation with Electrons and Gamma-Rays // Nanotechnology Perceptions, ISSN 1660-6795, V.20, N.7 (2024), P. 209-126, https://nano-ntp.com/index.php/nano/article/view/3822

4. Mullojonov, Q.I. Narziqulova , V.G. Makhsudov , E.Ya. Ermetov, D.B. Elmurotova, M.I. Bazarbayev. Study of the appearing molar volume of electrolyte solutions and its application in health-biological processes // MedForum: Int. Conf. on Patient-Centered Approaches to Medical Intervention 2024, Dr. Tanima Bhattacharya et al. (eds) © 2024 Taylor & Francis Group, London, P.38-40.
5. M.I. Bazarbayev, B.T. Rakhimov, Sh.A. Isroilova, D.B. Elmurotova, D.I. Sayfullayeva. Enhancing biophysics problem-solving skills in medical students through a targeted three-step strategy // MedForum: Int. Conf. on Patient-Centered Approaches to Medical Intervention 2024, Dr. Tanima Bhattacharya et al. (eds) © 2024 Taylor & Francis Group, London, P.112-114.
6. М.И. Базарбаев., Д.Б. Элмуротова., Ш.К. Нематов., Ш.Ш. Азимов., Т.З. Даминов., А.Р. Махкамов. Современные подходы к гигиене рук медицинского персонала //The journal of humanities & natural sciences, Issue 8, V.1, 2024. P.208-217.
7. Elmurotova D.B., Odilova N.J., Jumanov Sh.E. Semmelweis against puberner fever in hungary // Western European Journal of Linguistics and Education, V.2, Iss1, January-2024 ISSN (E): 2942-190X, P.56-59, Germany. https://westerneuropeanstudies.com/index.php/2/article/view/255
8. Элмуротова Д.Б., Элмуратов Э.Б. Исследование и совершенствование техники и технологии по освоению скважин в сложных горно-геологических условиях на месторождениях Республики Узбекистан // Лучшие интеллектуальные исследования, Ч-13, Т.5, Январь-2024, С.11-23, Россия. http://web-journal.ru/index.php/journal/issue/view/89
9. Elmurotova D.B., Sayfullayeva D.I., Isroilova Sh.A. Terms of medical information system, World Bulletin of Public Health (WBPH), V.34, May, P.91-92, 2024 ISSN: 2749-3644, Berlin. https://www.scholarexpress.net
10. Elmurotova D.B, Majlimov F.B., Zuparov I.B., Kayumova K.S., Xudoyberdiyev B.A. A modern approach to hand hygiene in medicine // European Journal of Humanities and Educational Advancements (EJHEA), V.5

EduVision: Journal of Innovations in Pedagogy and Educational Advancements
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brightmindpublishing.com
ISSN (E): 3061-6972

N.05, May 2024 ISSN: 2660-5589, P.51-53, Spain. https://www.scholarzest.com

11. Elmurotova D., Arzikulov F., Egamov S., Isroilov U. Organization of direct memory access // Intent Research Scientific Journal-(IRSJ), ISSN (E): 2980-4612, V.3, Is.10, October – 2024, P. 31-38., Philippines, https://intentresearch.org/index.php/irsj/article/view/345
12. Elmurotova D., Arzikulov F., Izzatullayev I., Olimov A., Abdurahmonov J. The role of remote diagnostics in medicine // World Bulletin of Public Health (WBPH), V.39, October 2024, ISSN:2749-3644, P.102-105. Germany, https://scholarexpress.net/index.php/wbph/article/view/4664
13. Elmurotova D., Fayziyeva N.A., Urmanbekova D.S., Bozorov E.H. Implementation of the method of teaching x-ray therapy in higher educational institutions // Web of Teachers: Inderscience Research, V.2, Issue 10, October-2024, ISSN (E):2938-379X, P.18-23. Spain. https://webofjournals.com/index.php/1/article/view/1868
14. Elmurotova D.B., Esanov Sh.Sh., Abduraxmonov S.A., Ulug'berdiyev A.Sh., Umarov J.S. Medical device reliability and measuring instrument specifications // Eurasian Journal of Engineering and Technology, EJET, V.34, October-7, 2024, ISSN: (E) 2795-7640, P.10-13, Belgium. https://geniusjournals.org/index.php/ejet
15. Shodiev A.A., Mussaeva M.A., Elmurotova D.B. Magnetic resistance and mobility of carriers of HTSC – YBCO tapes irradiated with 5 MeV electrons // Eurasian Journal of Physics, Chemistry and Mathematics, EJPCM, V.35, October-26, 2024, ISSN: 2795-7667, P.25-33, Belgium. https://geniusjournals.org/index.php/ejpcm/article/view/6393
16. Elmurotova D.B., Fayziyeva N.A., Odilova N.J. Properties of electron and neutron therapy // Web of Medicine: Journal of medicine, practice and nursing, V.2, Issue 10, October-2024, ISSN (E): 2938-3765, P.137-141, Spain.
17. Elmurotova D.B., Yoqubboyeva E.Z., Orifqulova M.F., Imanova L.N. Application of computer technologies in medicine // Western European Journal of Medicine and Medical Science, V.2, Issue 11, ISSN (E): 2942-1918, November-2024, P.1-12. Germany. https://westerneuropeanstudies.com/index.php/3.