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# OBESITY IN WOMEN WITH HYPOTHYROIDISM IN ANDIJAN DISTRICT OF ANDIJAN REGION

**Abstract:** In women with primary hypothyroidism living in the Andijan district (located in the Central part of the Andijan region) at the age of 30 - 60 years, the abdominal index, body mass index indicators are higher than the standard values. Indicators of the lipid spectrum — average levels of total cholesterol, triglycerides and the atherogenicity index are significantly higher, and high-density lipoproteins are significantly lower than in women without thyroid disorders. The study of thyroid status in women should be included in the list of mandatory examinations of obese patients. Women should be aware that a decrease in thyroid function can be a risk factor for overweight, obesity and the progression of complications.

***Key words:*** *hypothyroidism, thyroid-stimulating hormone, thyroid hormones, cholesterol, lipid spectrum, leptin, body mass index, obesity, overweight*

## Introduction

Obesity is considered not just as an excessive accumulation of fat in the body, but as a chronic multifactorial recurrent disease associated with a number of serious cardiac, metabolic, rheumatological, oncological and other complications, disorders of psychosocial status and leading to early disability, as well as premature death. [3, 4]

Obesity is a widespread metabolic disorder worldwide, acquiring the character of a global pandemic. In 2015, 604 million adults and 108 million children suffered from obesity. Since 1980, the prevalence of obesity has doubled in 73 countries around the world [8]. According to the United Nations (UN), Mexico ranks first in the world in terms of the number of obese patients (32.8%), the Russian Federation is in 19th place (24.9%). [9-11]

**Table №1**

| | **The proportion of people suffering from obesity** | **Average BMI value** | **Population in 2019** |
|---|---|---|---|
| Uzbekistan | 16,6% | 26,1 | 32 981 716 |
| Kyrgyzstan | 16,6% | 26,2 | 6 415 850 |
| Turkmenistan | 18,6% | 26,4 | 5 942 089 |
| Tajikistan | 14,2% | 25,4 | 9 321 018 |
| Kazakhstan | 21% | 27,4 | 18 551 427 |

**Central Asian countries showing the percentage of the population that suffers from obesity as of 2019.**[7]

If diseases of the cardiovascular system occupy a leading place among the causes of mortality in most developed countries, including Russia, obesity is among the potentially avoidable causes of fatal cardiovascular outcomes. [5]

However, obesity is not always indicated in the medical history. People suffering from overweight tend to exaggerate the width of their own figure, which leads to greater subjective dissatisfaction with the body image. [6]

Most often there is an exogenous-constitutional form of obesity caused by systematic overeating and irregular physical activity, a sharp restriction of physical activity without correcting the usual diet. Obesity is excess body weight, which is determined at a body mass index (BMI) ≥ 30 kg/m2. Complications associated with obesity include cardiovascular diseases (especially in people with excess abdominal fat), diabetes mellitus, certain malignancies, gallstone disease, fatty liver degeneration, cirrhosis, osteoarthritis, disorders of the reproductive system in men and women, psychological disorders and, in people with a BMI ≥35 kg/m2, premature death. The diagnosis is based on the determination of BMI. Treatment consists in lifestyle changes (for example, diet, physical activity and behavior), and for certain patients – in prescribing medications or in performing bariatric (weight loss) surgery.

The purpose of the study is to assess the incidence of obesity and features of lipid metabolism disorders in women with primary hypothyroidism aged 30-60 years in the Andijan district of Andijan region.

## MATERIAL AND MEHODS

The study involved 164 women living in the Andijan district of Andijan region, aged 30 to 60 years, the average age was 36.0±2.26 [Iu 34.5; 95% CI 31.6-40.5] years. The control group included 60 women of the same age without thyroid disorders. The average age is 32.4±3.69 [Iu 32.0; 95% CI 25.1-39.6] years. Body mass index, abdominal index were determined (according to WHO definition, abdominal obesity corresponds to a waist-hip ratio of over 0.85 for

women), thyroid hormone (T3, T4 free) and thyroid-stimulating hormone (TSH), lipid metabolism indicators were determined: total cholesterol (OHC), triglycerides (TG), high-density lipoproteins (CSLPVP), low-density lipoproteins (CSLPNP) with the calculation of the atherogenicity index (IA).

Exclusion criteria: pregnant and lactating women, patients with severe other endocrinological, somatic, neuropsychiatric disorders, smokers and persons taking thyroid hormone preparations and women taking drugs acting on body weight.

**RESULT AND DISCUSSION**

Based on the results of the survey, it was revealed: overweight was detected in 64 (39.02%) women, 24 (14.63%) suffered from I-II degree obesity, 16 (9.75%) had a body weight deficit, 60 (36.58%) women had a BMI within the normal range. Among 64 overweight women, thyroid hypofunction was detected in 28 (43.75%) women. Out of 24 patients (BMI > 30 kg/m2 norm 18.5-24.9 m/kg2), 10 (41.6%) women suffered from obesity. Patients with hypothyroidism, in comparison with the control group, had statistically significantly high levels of TSH (norm 0.17–4.05 mMU/l), and BMI, in comparison with the control group. Correlation was revealed between BMI and TSH level (R = 0.5; p = 0.01). Statistically significantly higher levels of total cholesterol (4.97±0.43 mmol/L vs 3.38±0.32 mmol/L; P=0.05) and TG (2.03±0.30 mmol/l vs 0.94±0.10 mmol/l; P= 0.05), as well as a higher IA (3.33±0.27 vs. 1.91±0.35; P=0.01). Whereas the levels of HDL (1.13±0.03 mmol/L) were significantly lower than in the group without pathology (thyroid gland) (1.91±0.35 mmol/l; P=0.05). The content of LDL in women with hypothyroidism was elevated (2.70±0.17 mmol/l vs 2.20±0.21 mmol/l; (P=0.14).

Adipose tissue is a complex, heterogeneous endocrine organ, an anatomical depot differing in metabolic and secretory profile and realizing a special

physiological function. It has an abundance of origin; development; proliferative ability; glucose and lipid metabolism; sensitivity to insulin, hormonal control, thermogenic capabilities, etc. Additional factors that determine the characteristics of adipose tissue are heredity, gender, age, environmental factors, compliance with the work and rest regime.

There is a link between thyroid hormones and obesity: just as primary hypothyroidism can affect changes in body weight, adipose tissue can change the level of thyroid hormones. The level of TSH in obesity is often elevated, which is associated with the action of leptin (a peptide hormone that regulates energy metabolism, which is mainly produced by fat cells and enterocytes in the small intestine. The hormone suppresses the feeling of hunger, which in turn reduces the accumulation of fat in adipocytes. [21] In the treatment of primary hypothyroidism with levothyroxine drugs, the weight loss is due to the loss of fluid, not fat. The correct use of selective analogues of thyroid hormones can help to reduce body weight by increasing energy consumption in overweight and obese patients while observing a hypocaloric diet, diet and proper lifestyle.

**CONCLUSION**

1. 64 (39.02%) women with primary hypothyroidism living in Andijan district of Andijan region were overweight, 24 (14.63%) suffered from obesity of I-II degree.

2. Among 64 overweight women, thyroid hypofunction was detected in 28 (43.75%) women. Out of 24 patients (BMI> 30 kg/m2 norm 18.5-24.9 m/kg 2), 10 (41.6%) women suffered from obesity.

3. A correlation was found between BMI and TSH levels, the average levels of OHS, TG and IA were significantly higher, and HDL cholesterol was significantly lower than in women without thyroid disorders.

4. Overweight and obese women should be advised to evaluate thyroid function, women should be aware that thyroid dysfunction can become a risk factor for

weight changes, the development of obesity and the progression of complications.

**LITERATURE**


1. NCD Risk Factor Collaboration (NCD-RisC). Worldwide trends in body-mass index, underweight, overweight, and obesity from 1975 to 2016: a pooled analysis of 2416 population-based measurement studies in 128·9 million children, adolescents, and adults // Lancet. 2017. Vol. 390. № 10113. P. 2627–2642.
2. WHO // www.who.int/topics/obesity/en/.
3. UMHS Obesity Prevention and Management, 2019 // med.umich.edu/1info/FHP/practiceguides/obesity/obesity.pdf.
4. Finer N. Medical consequences of obesity // Medicine. 2006. Vol. 34. № 12. P. 510–514.
5. Csige I., Ujvárosy D., Szabó Z. et al. The impact of obesity on the cardiovascular system // J. Diabetes Res. 2018. Vol. 2018. ID 3407306.
6. Дорожевец, А. Н. Искажение образа физического Я у больных ожирением и нервной анорексией: [арх. 15 января 2021] : дисс. … канд. Психол. Наук. / Факультет психологии МГУ. — М., 1986. — 194 с. — [Репринт: М.: РГБ, 2005 — (Из фондов Российской государственной библиотеки)]. — УДК 152.32:616-056.52:616.89-008.441.42(G).
7. World Population Review (англ.). worldpopulationreview.com. Дата обращения: 1 ноября 2019. Архивировано 1 ноября 2019 года.
8. Lee M-K, Han K, Kim MK, et al. Health Effects of Overweight and Obesity in 195 Countries over 25 Years. N Engl J Med. 2017;377(1):13-27. https://doi.org/10.1056/NEJMoa1614362.
9. Brandão AD, da Silva JH, Mariane Oliveira Lima S, et al. Short and long term effect of treatment non-pharmacological and lifestyle in patients with metabolic syndrome. Diabetol Metab Syndr. 2020;12(1):16. https://doi.org/10.1186/s13098-020-0522-y.

10. Bloomgarden ZT. Symposium: Debating the Metabolic Syndrome. Medscape Conference Coverage, based on selected sessions. American Diabetes Association 66th Scientific Sessions. Washington: DC; 2006; June 9-13.
11. Grundy SM, Cleeman JI, Daniels SR, et al. Diagnosis and Management of the MetabolicSyndrome. Circulation. 2005;112(17): 35-52. https://doi.org/10.1161/CIRCULATIONAHA.105.169405.
12. Лаптева Е. Н., Попова Ю. Р., Дмитриченко М. С., Дьячкова-Герцева Д. *С.* Ожирение, нарушение пищевого поведения и прокрастинация. Опыт врача-гастроэнтеролога // Ассоциация когнитивно-поведенческой психотерапии (Санкт-Петербург). Международный съезд (3; 2017). III Международный съезд Ассоциации когнитивно-поведенческой психотерапии: сборник научных статей / авт.сост.: Ковпак Д. В., Ковпак А. И. — Санкт-Петербург: СИНЭЛ, 2017. — С. 51—65. — 130 с. — ISBN 978-5-9909852-8-5.
13. Гельдер М., Гэт Д., Мейо Р. Оксфордское руководство по психиатрии / Пер. с англ. — К.: Сфера, 1999. — Т. 2. — 436 с. — 1000 экз. — ISBN 966-7267-76-8.
14. Jess Haines, Sheryl L. Rifas-Shiman, Nicholas J. Horton, Ken Kleinman, Katherine W. Bauer, Kirsten K. Davison, Kathryn Walton, S. Bryn Austin, Alison E. Field, Matthew W. Gillman. Family functioning and quality of parent-adolescent relationship: cross-sectional associations with adolescent weight-related behaviors and weight status (англ.) // International Journal of Behavioral Nutrition and Physical Activity. — 2016. — Vol. 13, iss. 1. — P. 68. — doi:10.1186/s12966-016-0393-7.
15. Thaler J.P., Yi C.X., Schur E.A., Guyenet S.J., Hwang B.H., Dietrich M.O., Zhao X., Sarruf D.A., Izgur V., Maravilla K.R., Nguyen H.T., Fischer J.D., Matsen M.E., Wisse B.E., Morton G.J., Horvath T.L., Baskin D.G., Tschöp M.H., Schwartz M.W. Obesity is associated with hypothalamic injury in

rodents and humans (англ.) // Journal of Clinical Investigation (англ.)рус. : journal. — 2012. — January. — P.153—162. — doi:10.1172/JCI59660. — PMID 22201683. Архивировано 16 августа 2012 года.

16. Харкевич Д. А. Фармакология. — 10 изд. — М.: ГЭОТАР-Медиа, 2010. — С. 458. — 908 с. — ISBN 978-5-9704-0850-6.
17. Thermogenic Weight Loss Products: FAQ And Price Guide. Дата обращения: 28 августа 2012. Архивировано 12 июля 2012 года.
18. E. W. Iepsen, J. Lundgren, C. Dirksen, J-Eb. Jensen, O. Pedersen, T. Hansen, S. Madsbad, J. J. Holst, S. S. Torekov. Treatment with a GLP-1 receptor agonist diminishes the decrease in free plasma leptin during maintenance of weight loss (англ.) // International Journal of Obesity. — 2015. — Vol. 39, iss. 5. — P. 834—841. — doi:10.1038/ijo.2014.177. — PMID 25287751.
19. Украинский, А. Новое лекарство против ожирения продемонстрировало эффективность: [арх. 11 фев.2021] // Медновости. — 2021. — 11 фев.
20. FDA Approves Novel, Dual-Targeted Treatment for Type 2 Diabetes : [англ.]. — U.S. Food and Drug Administration, 2022. — 13 May.
21. *Hany Akeel Al-hussaniy, Ali Hikmate Alburghaif, Meena Akeel Naji.* Leptin hormone and its effectiveness in reproduction, metabolism, immunity, diabetes, hopes and ambitions // Journal of Medicine and Life. — 2021-01. — Т. 14, вып. 5. — С. 600–605. — ISSN 1844-3117 1844-122X, 1844-3117. — doi:10.25122/jml-2021-0153.