

Non-governmental Organization
International Center of Scientific Research



PROCEEDINGS OF THE
VIII INTERNATIONAL SCIENTIFIC
AND THEORETICAL CONFERENCE

SCIENTIFIC FORUM:
THEORY AND PRACTICE
OF RESEARCH

21.03.2025

SAN FRANCISCO
USA

 **SCIENTIA**
COLLECTION OF SCIENTIFIC PAPERS

with the proceedings of the

VIII International Scientific and Theoretical Conference


**Scientific forum: theory
and practice of research**

21.03.2025

San Francisco, USA

San Francisco, 2025

UDC 082:001
S 40

 <https://doi.org/10.36074/scientia-21.03.2025>




Chairman of the Organizing Committee: Goldenblat M.

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S 40 **Scientific forum: theory and practice of research:** collection of scientific papers «SCIENTIA» with Proceedings of the VIII International Scientific and Theoretical Conference, March 21, 2025. San Francisco, USA: International Center of Scientific Research.

ISBN 979-8-89660-286-6 (series)  Bowker

DOI 10.36074/scientia-21.03.2025

Papers of participants of the VIII International Multidisciplinary Scientific and Theoretical Conference «Scientific forum: theory and practice of research», held on March 21, 2025 in San Francisco are presented in the collection of scientific papers.

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ISBN 979-8-89660-286-6

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SECTION 19.

MEDICAL SCIENCES AND PUBLIC HEALTH

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PECULIARITIES OF DIAGNOSIS AND TREATMENT OF AUTOIMMUNE THYROIDITIS IN CHILDREN

Introduction. Autoimmune thyroiditis (AIT), also known as Hashimoto's goiter or lymphocytic thyroiditis, is a chronic disease based on an autoimmune process that gradually leads to destruction of the thyroid gland (THG) tissue and, consequently, a decrease in its function. In Ukraine, the prevalence of AIT is 43.1 per 100,000, while the actual prevalence is almost 10 times higher - 421.2 per 100,000 [1].

The basis for the development of AIT is the loss of immune tolerance to thyroid autoantigens - thyroid peroxidase (TPO) and thyroglobulin (TG). Clinically, the disease is manifested by goiter (depending on the phase) and impaired thyroid hormone production, which can lead to hypothyroidism.

Since the second half of the twentieth century, the disease has been diagnosed more and more often, especially in school-age children, namely girls. According to various authors, the prevalence of AIT among children and adolescents ranges from 0.3 to 9.6% [1]. The peak of the first clinical manifestations of AIT occurs during puberty. The ratio between boys and girls in terms of the frequency of AIT detection is 1:3 [2].

The causes are considered to be an increase in stress levels and environmental degradation. Quite often, AIT is latent or patients do not pay due attention to the minimal manifestations of the disease, which makes it difficult to establish a diagnosis [1]. That is why the question arises as to the aspects of modern timely diagnosis and proper treatment of the disease.

Objective: analyze the main diagnostic criteria for the diagnosis of AIT in childhood and to determine the role of levothyroxine and selenium in the treatment

of children with AIT.

Materials and methods. The study used scientific articles from PubMed, Cochrane Library, Web of Science, Scopus databases published in the period from 2019 to 2024. The study analyzed domestic and foreign randomized controlled trials, group studies, meta-analyses, and review articles on the diagnosis and treatment of AIT in children and adolescents, in particular on the use of levothyroxine and selenium

Results and discussion. For the correct diagnosis of AIT, special attention should be paid to family history, as the role of a genetic factor is quite common. Physical examination assesses the following: thyroid size (presence of goiter), mobility, difficulty swallowing, presence or absence of pain on palpation, consistency of the gland, presence of nodules [2, 3].

The gold standard for the laboratory diagnosis of AIT is the determination of antibodies to thyroperoxidase and thyroglobulin (AT-TPO and AT-TG, respectively), determination of thyroid-stimulating hormone (TSH), free and total triiodothyronine (T3) and thyroxine (T4) [3].

Among the instrumental diagnostic methods, ultrasound examination (US) of the thyroid gland is informative. This method can assess the structure of the gland (uneven echogenicity), determine the presence, size, and number of nodules [2].

Levothyroxine (trade names: euthyrox, L-thyroxine, etc.) is the drug of choice for the treatment of AIT with decreased thyroid function. Levothyroxine helps to reduce the volume of the thyroid gland in children diagnosed with AIT. It also lowers TSH levels, reduces autoimmune activity and lymphocytic infiltration of the thyroid gland. The effect on the level of antibodies (AT-TPO) remains controversial: some studies show stabilization, while others do not record significant changes [4]. In patients without treatment, the volume of the gland may gradually increase, which is associated with progressive hypothyroidism.

Regarding the effect of L-selenmethionine and selenium, in particular, it has been proven that the use of 200 mcg/day of the drug for 6 months in children and adolescents with AIT leads to a significant reduction in the level of AT-TG compared to placebo. Selenium is involved in the functioning of enzymes such as glutathione peroxidase, which protects thyroid tissue from oxidation. The effect on AT-TPO levels was not statistically significant. No effect on thyroid volume was observed [5, 6].

Another study (Hisbiyah Y et al) showed that selenium supplementation also significantly reduces BP-TPO in children and adolescents with AIT [7].

Conclusions. The main diagnostic criteria for the diagnosis of AIT are a burdened family history, objective examination, laboratory parameters (TSH and

TSH, TSH level, free and total T3 and T4 levels), and instrumental studies (ultrasound).

As for treatment, the following conclusions can be drawn: the results of using L-selenomethionine indicate its potential benefit, but further long-term studies are needed. L-selenomethionine has a greater effect on reducing antibody levels, especially AT-TG, but practically does not change thyroid volume. Levothyroxine has a greater effect on structural changes in the thyroid gland (decrease in its volume) than on immunological parameters. The combined use of both approaches may be promising, but requires further research to provide a more evidence-based basis.

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