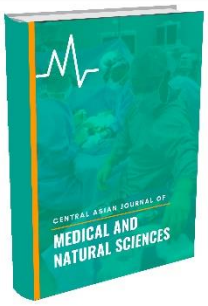
CENTRAL ASIAN JOURNAL OF MEDICAL AND NATURAL SCIENCES



Volume: 01 Issue: 03 | Sep-Oct 2020 ISSN: 2660-4159

www. cajmns.centralasianstudies.org/index.php

EFFICIENCY OF APPLICATION OF PHYTO- AND VITAMINOTHERAPY IN THE COMPLEX TREATMENT OF ENDEMIC GOITER

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Received 26th July 2020,
Accepted 17th August 2020,
Online 28th September 2020

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ABSTRACT: A corrective method for the treatment of endemic goiter has been proposed, including anise powder and elecampane root, 1 teaspoon 3 times a day for 1 month, along with a complex of B vitamins (B1, B2, B6), nicotinic (vitamin PP) and ascorbic acid (vitamin C) in the form of a rosehip tincture for 3-5 days, depending on the severity of the disease. It has been shown that the corrective method of therapy for endemic goiter leads to restoration of intestinal microbiocenosis, elimination of iodine and vitamin deficiencies, disappearance of clinical symptoms of the disease and normalization of the level of thyroid hormones.

KEYWORDS: endemic goiter, iodine deficiency, stress, impaired intestinal absorption, intestinal microbiocenosis, phyto- and vitamin therapy.

RELEVANCE

Endemic goiter is a thyroid gland caused by iodine deficiency in the body. The disease is widespread throughout the world, including in the Republic of Uzbekistan. According to the WHO (World Health Organization), more than 2 billion people of the Earth live in regions with iodine deficiency, more than 740 million people suffer from endemic goiter, 43 million people of the world suffer from mental retardation, and as a result, endemic goiter is “one of the most common human disasters ”[1,2,10,11]. Studies have shown that 1.5 billion of the world's inhabitants are at risk of developing iodine deficiency diseases (IDD) [3,4,7,15]. In this regard, the solution of global problems associated with iodine deficiency requires the identification of the main risk factors leading to the development of endemic goiter and the development of more effective methods of therapy and prevention, which is relevant in medicine.

OBJECTIVE

Identification of the main causes of the development of endemic goiter, based on the literature data, the development of more effective methods of therapy based on phyto- and vitamin therapy for this pathology.

It is known that the main cause of iodine deficiency is irrational (unbalanced) nutrition, i.e. insufficient consumption of meat, fish, dairy products, oatmeal and buckwheat, etc., since due to nutrition, the human body receives about 90% of the daily need for iodine.

Another reason for the development of endemic goiter are diseases of the gastrointestinal tract (GIT), since it is in the intestine that iodine is absorbed [1,3]. In case of intestinal diseases, the absorption of iodine, vitamins, microelements, as a rule, is disturbed and as a result, the body lacks nutrients, including iodine. In children with a syndrome of impaired intestinal absorption (cystic fibrosis, celiac disease, disaccharidase deficiency, etc.), despite the regular intake of drugs containing iodine, it is not possible to increase the saturation of the body with iodine [3,5,9].

Diseases of the intestine or stomach lead to the development of endemic goiter as iodine deficiency is observed, even if the diet of patients contains foods rich in iodine. Studies have shown that an insufficient amount of iodine in the body of children and adolescents leads to dysfunction of the thyroid gland (TG), accompanied by a violation of the synthesis of thyroid hormones, and without them adequate physical and neuropsychic development is impaired [5,7,12].

According to the literature, the transferred stress is also one of the main reasons for the development of this pathology [4,6,14]. Indeed, in recent years, stressful conditions have been constantly growing due to the growth of various information and it is difficult to protect oneself from them. Stressful situations are always traumatic and, as a result, the body gets lost from its normal work habit and adapts to constantly changing conditions. In such conditions, the functioning of the endocrine glands suffers first of all, and this contributes to the development of endemic goiter [4,6,14,16]. Under the influence of various factors, under the influence of stress, there is a change in homeostasis and, at the same time, a pronounced character of the body's responses is observed [2]. On the part of the endocrine system, under the influence of stress factors, a number of hormonal parameters change [5]. The activation of the autonomic nervous system, disorders of immunological and hormonal mechanisms play a significant role in the development of these reactions of the body [3,8].

With this pathology, there is also a lack of vitamins, which stimulate chemical reactions, actively participate in the formation and functioning of enzymes and contribute to the normal development of the whole organism as a whole.

Consequently, the lack of vitamins is accompanied by metabolic disorders, decreased physical and mental performance, weakness, rapid fatigability, impaired appetite, negatively affects the growth and development of the body [3,8]. Deficiency of vitamins reduces the ability of the immune system to resist the action of pathogenic microorganisms and the adverse effects of environmental factors [1,8,13,16].

Trace elements such as selenium, zinc, calcium, cobalt, molybdenum, bromine, copper, lithium, lead and mercury and chromium play an important role in the metabolism of iodine. For example, selenium is an integral part of the enzyme iodothyronine defodinase, which is responsible for the conversion of T4 to T3 in the liver and kidneys; its deficiency is accompanied by incomplete iodine metabolism.

It is known that microelements are also involved in such important biochemical processes as redox reactions, lipid peroxidation, protein synthesis, differentiation and growth of tissues, interaction with nucleic acids and their constituent monomers [7,10,17].

There are numerous relationships between micronutrients and vitamins. For example, vitamin D is needed for the absorption of calcium, and vitamins A and C contribute to a better absorption of iron.

Pyridoxine (vitamin B6), to a greater extent than other vitamins, is able to be synthesized by the intestinal microflora. In patients with prolonged use of broad-spectrum antibiotics and sulfonamides, as well as intestinal infections and other diseases of the gastrointestinal tract, this synthesis is impaired [8,11].

Since iron is involved in the conversion of L-phenylalanine to L-tyrosine in regions with endemic goiter, the low efficiency of iodine therapy in conditions of iron deficiency has been proven. It has been proven that in patients with hypothyroidism during treatment with retinol (vitamin A), there is a positive dynamics of the disease [6,8]. With an irrational diet, especially if there is a decrease in the content of vitamin A in food, there is a violation of the structure of thyroglobulin, the synthesis of thyroid hormones, and this leads to metabolic disorders, including iodine.

Especially negatively, the lack of iodine affects the body of children. From the first months of life in children with iodine deficiency, differences in psychomotor development begin to appear. It is clearly seen in young children and older in the form of stunted growth and development and learning difficulties. If iodine deficiency is observed during intrauterine development, it also subsequently negatively affects the child's ability to learn. In children, the motivation for achievement, the implementation of the school program decreases, the general cognitive function decreases [11].

Summarizing the above data, it can be noted that the main reasons leading to the development of endemic goiter are:

- violation of intestinal absorption;
- stressful conditions;
- unbalanced diet i.e. rare consumption of meat, fish, seaweed, dairy products, oatmeal and buckwheat;
- deficiency of some microelements that promote the assimilation of iodine and the normal synthesis of thyroid hormones (zinc, selenium, cobalt, copper);
- contamination of drinking water with impurities that impede the assimilation of iodine;
- low iodine content in the environment and drinking water;
- mutations in genes responsible for the synthesis of thyroid hormones;
- development of infectious and inflammatory processes (helminthic invasions, chronic diseases);
- unsatisfactory sanitary and hygienic and social conditions;
- autoimmune reactions.

In this regard, the development of effective methods of therapy, taking into account the above factors, is relevant in medicine.

MATERIALS AND RESEARCH METHODS

The studies were carried out in 171 students of Samarkand State University aged 18 to 25 years, who, before participating in the study, underwent a medical examination at the Samarkand Endocrinological Dispensary of the Republic of Uzbekistan. Students measured systolic and diastolic blood pressure, heart rate and the calculation of the Kerdo index, determination of the hormonal profile. The Kerdo index is an indicator used to assess the activity of the autonomic nervous system. If its value is greater than zero, then sympathetic influences prevail in the activity of the autonomic nervous system, if it is less than zero, then parasympathetic influences prevail, if the index is zero, then this means functional balance. Clinical laboratory, biochemical (TSH, T3, T4), instrumental (UTT) and microbiological studies were carried out in all examined patients to determine the degree of the disease and assess the effectiveness of therapeutic

measures. The hormone content was determined by ELISA (enzyme-linked immunosorbent assay) using an SF-46 photometer. The stress state was assessed using a questionnaire and determination of the adrenaline content by high performance liquid chromatography. The data obtained were subjected to statistical processing using Excel at p = 0.95.

The patients examined by us were divided into 2 groups:

Group I (87 patients) - received iodine preparations against the background of traditional treatment.

Group II (84 patients) - received phyto- and vitamin therapy in complex treatment.

Complex therapy of endemic goiter also included vitamins of group B, PP, C, pumpkin and elecampane seeds, depending on the severity of the disease.

The results obtained and their discussion. The results of studies of patients with endemic goiter before and after treatment are shown in Table 1.

Table 1.Indicators of T3, T4 and adrenaline with endemic goiter

Indicators, nmol/l	Control	Group	Treatment	
			Before treatment	After treatment
T_3	1,65±0,12	I	2,01± 0,17	1,84±0,13
		II		1,62±0,11
T_4	86,2±7,5	I	118,6±10,4	104,6±8,8
		II		92,4±8,1
Adrenalin	2,22±0,12	I	3,54±0,10	2,68±0,16
		II		2,41±0,14

Studies have shown that the content of triiodothyronine (T3) in patients before treatment was 2.01 ± 0.17 nmol / L (in healthy people - 1.65 ± 0.12), and after the proposed treatment (phyto- and vitamin therapy) in patients of group I it decreased to 1.84 ± 0.13, and in patients of group II it was 1.62 ± 0.11 nmol / l, i.e. there was a downward trend in this indicator.

The content of thyroxine (T4) in patients before receiving treatment was 118.6 ± 10.4 nmol / l (in healthy people - 86.2 ± 7.5), after treatment it was 104.6 ± 8.8 in patients I group, and in group II - 92.4 ± 8.1 nmol / l, i.e. there was also a tendency towards normalization of this indicator.

The adrenaline content before receiving treatment was 3.54 ± 0.10 nmol / l (in healthy people - 2.22 ± 0.12 nmol / l), and after treatment it decreased to 2.68 ± 0.16 in patients of group I, and in group II, this indicator was 2.41 ± 0.14 nmol / l.

In patients of group I (87 patients), before treatment, grade I of the disease was diagnosed - in 45 patients, grade II - in 42 patients.

In group II (84 patients), before treatment, grade I disease was observed in 39 patients, grade II disease in 45 patients.

The complex of therapeutic measures for endemic goiter was carried out depending on the severity of the disease.

We recommended the use of anise and elecampane root (as a source of bioiodine) in the form of a powder, 1 teaspoon 3 times a day for 1 month, along with a complex of B vitamins (B1, B2, B6), nicotinic (vitamin PP), ascorbic acid (rosehip tincture) within 3 days, depending on the severity of the disease.

The use of phyto- and vitamin therapy to restore impaired intestinal absorption improved the absorption of iodine in the intestine and proved to be an effective method of therapy (Figs. 1 and 2). It was proposed to exclude margarine and food products made on its basis (confectionery, chocolate, coffee, etc.) from the diet of the examined students, since margarine in the body does not undergo hydrolysis, forming a thin film in the intestines, which leads to a decrease in iodine absorption in the intestine [10,15,16,19].

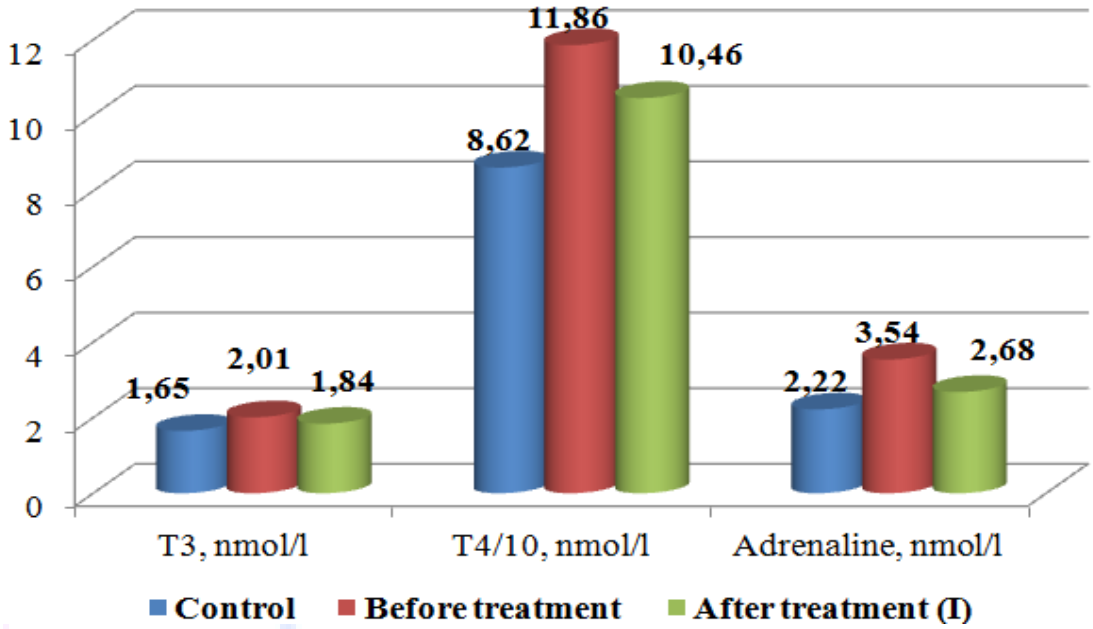

Figure 1. Changes in T3, T4 and adrenaline levels after using the traditional method of treatment (I)

The mechanism of the therapeutic effect of the phyto- and vitamin therapy proposed by us is to restore the disturbed intestinal absorption, which helps to improve the absorption of iodine and eliminate the vitamin deficiency in the body.

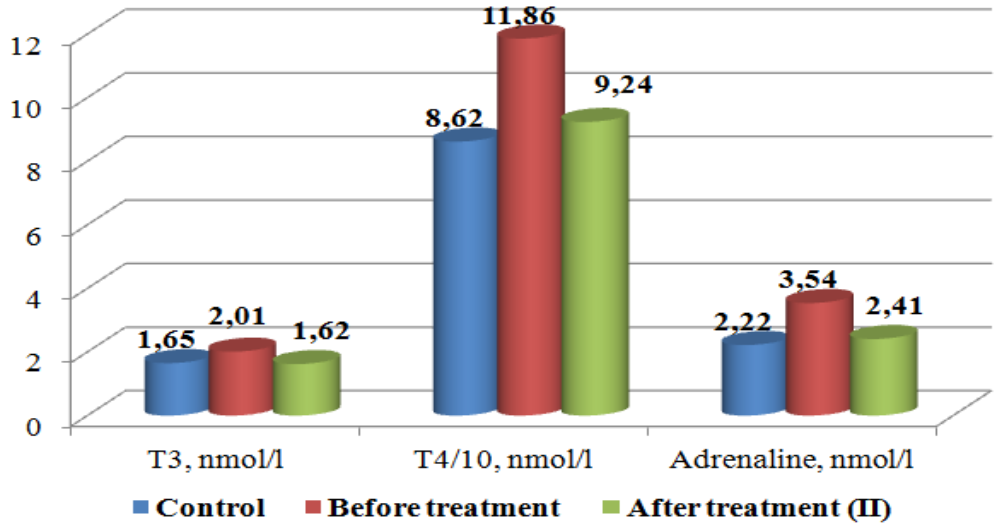

Figure 2. Changes in T3, T4 and adrenaline levels after a corrective method of therapy with phyto- and vitamin therapy (II)

Based on the data obtained, it was revealed that in the examined patients of group I, who were on the traditional method of treatment and received iodine preparations after treatment, the T3 level was 11.5%, T4 - 21.3%, and the adrenaline content was 20.7%. more compared to the control group. 56 patients (64.4%) re-applied with this pathology.

In almost all patients of group II, after the corrective method of treatment, clinical manifestations of the disease disappeared, the disturbed microbial biocenosis of the intestine was restored, the absorption of iodine in the intestine improved and the level of thyroid hormones returned to normal.

In group II, after applying the corrective method of treatment, the T3 level was 1.8%, the T4 level was 7.2%, and the epinephrine content was 8.6% higher than in the control group. There were only 4 patients who reapplied (4.8%).

In (89%) of those examined with endemic goiter, intestinal dysbiosis of varying severity was revealed, associated with a decrease in the amount of obligate microflora and an increase in the spectrum of opportunistic bacteria, which justifies the need to use phyto- and vitamin therapy to restore the disturbed microbial biocenosis of the intestine.

Thus, the main reasons for the development of endemic goiter are: disorders of intestinal absorption (r = 0.866), stressful conditions (r = 0.912), lack of trace elements (in particular iodine) and vitamins (r = 0.748). The results of treatment of patients with phyto- and vitamin therapy showed that restoration of intestinal microbiocenosis leads to the elimination of iodine and vitamin deficiencies, the disappearance of the clinical symptoms of endemic goiter and the normalization of the level of thyroid hormones.

CONCLUSIONS

1. A corrective method for the treatment of endemic goiter has been proposed, including anise powder and elecampane root, 1 teaspoon 3 times a day for 1 month and a complex of B vitamins (B1, B2, B6), vitamin PP, ascorbic acid for 3 days depending on the severity of the disease.
2. It has been shown that the use of phyto- and vitamin therapy in the treatment of endemic goiter leads to restoration of intestinal microbiocenosis, elimination of iodine and vitamin deficiencies, disappearance of clinical symptoms of endemic goiter and normalization of thyroid hormone levels.

REFERENCES:

[1]. Balabolkin M.I. Solved and unresolved issues of endemic goiter and iodine deficiency diseases / M.I. Balabolkin // Problems of endocrinology. 2005. - T. 51, No. 4. - S. 31-37.
[2]. Baranov A.A. Iodine Deficiency in Mother and Child: Diagnosis, Treatment and Prevention Scientific and Practical Program of the Union of Pediatricians of Russia A.A. Baranov, JI.A. Shcheplyagina // Russian Pediatric Journal. - 2005.2.S. 61-65.
[3]. Berotneva C.B. Assessment of the level of physical development and somatic morbidity in children with endemic goiter / C.B. Berotneva, O.E. Konovalov, I.I. Dubinin // Materials of the IV All-Russian Thyroidological Congress. - M., 2007 .-- S. 17.
[4]. Bulatova EM Intestinal microbiota: modern concepts / EM. Bulatova, N.M. Bogdanova, E.A. Lobanova et al. // Pediatrics. 2009. - T. 87, No. 3.-C. 104-110.
[5]. Grebneva O. P. Influence of intestinal dysbiocenosis on the degree of iodine deficiency in children with endemic goiter / O.P. Grebneva, L.I. Anchikova // Problems of endocrinology. -

2001. T. 47, No. 1. - S. 26-28.
[6]. Daminov FA et al. Surgical tactics for the treatment of diffuse-toxic goiter // Academic journal of Western Siberia.– 2013.– V. 9.– No. 1. - S. 21-25.
[7]. Zainiev A. F., Yunusov O. T., Suyarova Z.S. Results of surgical treatment of patients with nodular goiter // Bulletin of Science and Education.– 2017.– Vol. 1.– No. 6 (30). –S.107-111.
[8]. Ibatova Sh.M., Islamova DS, Tugilova SN Some aspects of etiopathogenesis, clinical picture, diagnosis and treatment of endemic goiter in children.// Problems of Biology and Medicine. - 2019. - No. 2 (109), -S. 190-192.
[9]. Ibatova Sh.M. Mukhamadiev N.K. Evaluation of the effectiveness of vitamin phytotherapy in the treatment of diffuse toxic goiter. "Topical issues of pharmacology: from the development of drugs to their rational use." Bukhara. 2020, -S.35-36
[10]. Kazmin V.D. Diseases of the thyroid and parathyroid glands. St. Petersburg. Phoenix, 2009.256 p.
[11]. Mukhamadiev N.K., Fazlieva N.T., Sayitkulov Sh.M., Khalilov K.F., Sulaimonov E.S. Determination of iodine content in medicinal plants (monograph) - Samarkand: SamSU, 2014 .-- 92 p.
[12]. Shirolapov, I.V. Features of immunological indicators in conditions of examination stress / I.V. Shirolapov, O. V. Lavrov, V.F. Pyatin. - Medical immunology .– 2012.–14.– No. 1–2 .– P.133–138.
[13]. Isowa, T. Immune, endocrine and cardiovascular responses to controllable and uncontrollable acute stress / T. Isowa, H. Ohira, S. Murashima. - Biol. Psychol.– 2006.– Vol.71.– P.202–213.
[14]. The effect of examination stress conditions on the cortisol content of saliva - a study of students from clinical semesters / T. Krahwinkel [et al.] - Eur. J. Med. Res.– 2004.– Vol.9.– No. 5. – P.256–260.
[15]. Fazlieva N.T., Mukhamadiev N.K. Determination of iodine content in medicinal plants by ion chromatography // Bulletin of SamSU, 2018. - No. 3 (109), pp. 89-93.
[16]. Fazlieva N.T., Mukhamadiev N.K., Sayitkulov Sh.M. Study of iodine content in Berberis Vulgaris L. and Xanthium Strumarium L. by ion chromatography // Bulletin of SamGU, 2014. - N 3 (85), pp. 65-69.
[17]. Yusupov S.A. et al. Long-term results of surgical treatment of thyroid nodules // Zdobutki klinichno i experimental medicine. - 2017. - No. 1.
[18]. Delange F., Gutekunst R. Iodine deficiency disorders in eastern Europe // Report on behalf of ICC IDD.UNISEF, 2011. - V. 110.
[19]. Zimmermann M.B., Andersson M. Update on iodine status worldwide. Curr Opin Endocrinol Diabetes Obes 2012, 19: 392-397.