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EFFECTIVENESS OF THE INFLUENCE OF THYROID DRUGS (IODOMARIN, LEVOTHYROXINE) ON ANTHROPOMETRY INDICATORS IN ADOLESCENTS (BOYS) WITH A DELAY IN PHYSICAL AND SEXUAL DEVELOPMENT AGAINST THE BACKGROUND OF IODINE DEFICIENCY DISEASES

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Abstract:
After 3, 6 and 12 months after treatment with thyroid drugs, a significant improvement in hormonal parameters, namely, the mean values of TSH, free T4 (P <0.05) was observed in patients with IDD + CPPS. If the growth rate in patients with IDD + Before the treatment, the SFPR was 5.3 ± 0.2 cm / year, then after 12 months of treatment with thyroid gland drugs averaged 6.3 ± 0.3 cm / year (6.6-9.6 cm / year), and the absolute increase in growth over 12 months averaged: 8.1 ± 0.4 cm. Thus, on the basis of the study performed, it can be concluded that therapy with drugs idnoy cancer patients with IDD + ZFPR contributes to significant improvement in both hormonal and anthropometric indicators, which confirms the need for primary prevention of IDD among children and adolescents.

Keywords: thyroid drugs, iodomarin, levothyroxine, iodine deficiency.

Introduction. One of the most common non-infectious diseases in humans is diseases associated with iodine deficiency. [1-13].

Currently, the problem of iodine deficiency is global. This is due to the prevalence of iodine deficiency diseases (IDD) in many countries and the large number of people involved in it. In the world, 2 billion people are at risk of iodine deficiency [1,2]. These authors found that the use of the drug Iodomarin® 100 for 6 months, 100 μg (1 tablet) per day in young children leads to an optimization of the linear growth rates, especially among boys, and positive shifts in the psycho-emotional sphere. The improvement of sound pronunciation, social contacts with peers and adults, such indicators of the cognitive sphere, as memory, attention, thinking, was noted [1].

In terms of iodine deficiency, in addition to increasing the volume of the thyroid gland, the physical, intellectual and sexual development of children is impaired (A. A. Baranov, 2001). In iodine-deficient regions, reproductive function is impaired in women, the number of miscarriages and stillbirths increases, perinatal and infant mortality increases (EP Kasatkina,

2000), the risk of radiation-induced thyroid diseases increases (EA Troshina, 2003).

The presence of endemic goiter in children significantly increases the risk of developing chronic diseases (LA Scheplyagina, 2003).

However, in the literature, including foreign, not enough attention is paid to the study of biomedical and socio-hygienic factors affecting the formation of goiter in children [5], as well as analyzing the frequency of violations of the physical and sexual development of adolescents in iodine-deficient regions. All this was the reason for conducting this study.

The purpose of the study is to study the dynamics of anthropometric and hormonal indicators of adolescent boys with delayed physical and sexual development (SFPR) against the background of iodine deficiency diseases (IDD) who were treated for 12 months with thyroid gland replacement therapy (iodomarin, L-thyroxin, Berlin-Chemie)).

Material and research methods. We examined and examined just for the period from May 30, 2012 to October 15, 2013, 1066 adolescent boys in various regions of Uzbekistan. At the same time, in the city of Bukhara and 4 districts of the Bukhara region, 523 teenagers (boys) were examined, in the Namangan region - 200, in the city of Tashkent - 343, aged 11 to 17 years. The main contingent was students of colleges and schools.

In the further selected 163 patients with various disorders of growth and sexual development, a range of studies was carried out, which included the study of endocrine status, clinical, biochemical, hormonal (STH, LH, FSH, prolactin, TSH, testosterone, cortisol, free thyroxin, etc.) in the laboratory radioimmune hormonal studies of the National Scientific Practical Center for Endocrinology of the Ministry of Health of the Republic of Uzbekistan; 20 healthy individuals constituted the control group). The study was carried out with the sponsorship of the Berlin Hemi Representative Office in Uzbekistan.

The obtained data were processed using computer programs Microsoft Excel and STATISTICA_6. The mean values (M), standard deviations of the mean (m) were calculated. The significance of differences in the level between the groups was estimated by the magnitude of the confidence interval and

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Student's criterion (p). Differences were considered statistically significant at $p < 0.05$.

The results of the study. A total of 1066 adolescents were identified 696 adolescents with various disorders of growth and development, of which 412 (38.6%) - patients with iodine deficiency disorders (IDD) of the thyroid gland: diffuse goiter (DG) 1st degree - 270 bx (25, 3%), diffuse goiter grade 2 - 101 bx (9.8%), autoimmune thyroiditis - 38 (9.2%). At the same time, DG, euthyroidism was observed in 189 patients (50.9% of 371 patients with DZ 1 and 2 tbsp.), And DG with hypothyroidism - in 182 (49.0%).

Depending on the nature of the pathology, 696 patients were divided into 5 groups. Group 1 included 191 adolescents with delayed puberty (DP) of various degrees (17.9%), group 2 included isolated growth retardation (GR) in 134 teenagers (12.5%), group 3 - 126 cases (11, 8%) with a delay in physical and sexual delay of development (PSDD), 83 (7.8%) patients with various congenital anomalies of the genital organs (varicocele, anorchia, cryptorchism, inguinal hernia, hydrocele, muscular stenosis, hypoplasia of the testicles, micropenia) were in group 4., Group 5 consisted of patients with delayed physical, sexual and mental development (PSMDD) - 13 cases (1.2%). The remaining 149 patients made up the underweight group. This distribution was also made in order to differentiate the nature of growth and development disorders.

We studied the average values of anthropometric indices, which were calculated on the basis of the international growth-weight maps of Tanner-Whitehouse and percentile tables on 5 stages of puberty (Table 1). Data standards - by N.P. Shabalov / Diagnosis and treatment of endocrine diseases in children and adolescents // M., 2009, 527 p.

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Table 1. Average values of anthropometric indices by 5 stages of puberty in the regions among 1066 examined.

Height, sm	Height, sm	Height, sm	Height , sm	SDS 1	SDS 2	SDS 3	SDS 4
H	A	B	C	H	A	B	C
135,6±2,7	123,3±3,6	122,7±2,2	121,8±2,9	5,3	2,4*	1,9*	2,0*
140,5±3,3	126,8±5,1	127,2±3,2	123,5±3,6	5,7	2,5*	2,2*	2,3*
152,3±4,5	135,7±3,4	138,3±2,6	134,9±2,6	7,3	3,6*	3,3*	3,4*
159,9±2,4	144,5±4,7	143,5 ±3,3	144,6 ±4,1	8,1	4,7*	4,3*	4,4*
166,7±3,7	151,8±6,8	152,5±3,2	150,5±3,4	7,7	5,1*	4,6*	5,0*

Note: * - P - significance of differences for growth, when <0.05, SDS Growth-1 - the average standard deviation for growth is normal for a given age, SDS Growth-2 - the average standard deviation for growth among those examined in Tashkent, . SDS Growth-3 - for the city of Bukhara and the region, SDS Growth-4 - for the Namangan region, A - the city of Tashkent, B – g. Bukhara and Bukhara region, C - Namangan region, H - healthy faces. SDS is calculated for patients and groups of healthy children using tabular standards.

As can be seen from table 1, in all groups there was a significant reduction in growth compared with the healthy group.

From the number of these patients, we selected further 60 adolescents with PSDD (delayed physical and sexual development) + IDD from the city of Bukhara and the Bukhara region who underwent additional studies (TSH, T4, radiograph of the hand, skull, EEG, Echo and others) and anthropometric calculations in the dynamics before and 12 months after replacement therapy with thyroid preparations (iodomarin 100, 150 μg / day, L-thyroxin 25, 50 μg day).

Table 2 presents the average values of anthropometric indicators of 60 patients with PSDD + IDD from the city of Bukhara and the Bukhara region before treatment.

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Table 2. The average values of anthropometric indicators in 60 patients with IDD and PSDD from the city of Bukhara and the Bukhara region before treatment.

Height, sm, patients	Height of healthy	Weight, кg of patients	Weight, kg, healthy	SDS height-1	SDS weight 1	SDS height 2	SDS weight 2	P 1	P 2
143,5 ±3,3	159,9± 2,4	38,9 ±2,6	47,70 ±5,7	8,1	5,22	-1,7	3,4	< 0,05	< 0,05

Note: P1 is the significance of differences for height, P2 is the significance of differences for weight, SDS Height-1 is the average standard deviation for growth normal for a given age, SDS Weight-1 is the average standard deviation for weight normal for a given age , SDS Height-2 is the average standard deviation for growth in the examined, and SDS Weight-2 is the average standard deviation for the weight in those examined.

Table 3 shows the dynamics of average values of anthropometric indices in 60 patients with IDD + PSDD during treatment with thyroid gland in the dynamics before and after 12 months of therapy. The patients' age was within 14.7 ± 1.1 years. At the same time, in table 4 these standards are presented for the age of 14.7 ± 1.1 years (2).

As can be seen from the data presented in Table 4, improvement in growth and weight indices was noted in patients with IDD + ZPR during treatment with thyroid gland in the dynamics before and after 6 months of therapy, namely height and body weight, as well as SDS growth and BMI (body mass index).

If the growth rate before treatment was 5.3 ± 0.2 cm / year, then after 12 months of treatment it averaged 6.3 ± 0.3 cm / year (6.6–9.6 cm / year), and the absolute an increase in growth over 12 months averaged: 8.1 ± 0.4 cm

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Table 3. Dynamics of average values of anthropometric indices of patients with IDD + PSDD on the background of treatment with thyroid drugs in the dynamics before and after 12 months. Therapy.

Indicators	0	3 months	6 months	12 months
Growth of patients, cm	143,5 ±3,3	144,8±3,2	147,5±3,6	151,6±3,4
Growth is normal, cm	159,9	161,7	163,5	165,2
P	<0,05	<0,05	<0,05	<0,05
SDS patient growth	-1,3	-1,1	-0,9	+1,2
SDS growth is normal	8,1	8,1	8,1	8,0
P	<0,01	<0,01	<0,01	<0,01
Weight of patients, kg	25,6±1,8	26,3±1,7	29,4±1,9	31,1±1,2
Weight is normal, kg	47,70±2,3	49,35±2,1	51,00±3,4	52,50±3,3
P	<0,05	<0,05	<0,05	<0,05
BMI of patients, kg / m2	17,0±0,7	17,1±0,5	18,4±0,7	18,4±0,7
BMI is normal, kg / m2	18,55±0,3	18,74±0,4	18,94±0,5	19,11±0,7
P	> 0,5	> 0,5	> 0,5	> 0,5
Growth rate	5,3 ± 0,2	5,3 ± 0,2	6,3 ± 0,3	6,3 ± 0,3
Patients, cm / year	9,46±1,20	9,46±1,20	8,20±1,18	8,20±1,18
P	> 0,5	> 0,5	> 0,5	> 0,5

Note: P is the reliability of differences compared to the values before treatment, for BMI, standards are taken to be 50 centiles (3). All standards are taken for patient age: 14.7 ± 1.1 years (3).

There is a significant difference between the initial growth and SDS growth (p <0.01). In addition, mean body weight values also increased (within normal limits) and the mean BMI increased (p> 0.5): from 17.0 ± 0.7 kg / m2 to 18.4 ± 0.7 kg / m2 (in normal from 18.5 to 24.9 kg / m2).

Table 5 gives indicators of hormonal studies (TSH, free thyroxin, GH) in 60 patients with IDD and PSDD on the background of treatment with thyroid drugs in the dynamics.

From these data, it follows that replacement therapy for thyroid gland with IDDs in patients with PSDD has a positive effect, significantly influencing changes in the basal levels of various TSH and free thyroxin.

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Table 5. Indicators of hormonal studies (TSH, free T4, plasma STH) in 60 patients with IDD + PSDD during treatment with thyroid drugs in dynamics

Indicators	The norm	0	3 months	6 months	12 months
TSH	0,17-4,2 ME/ L	4,91± 0,3	3,8± 0,5	2,4±0,6	2,3±0,7*
P		<0,05	> 0,5	> 0,5	> 0,5
T4 free	11,5-23nmol/l	9,5± 0,2	12,4±0,4	18,6±0,4	19,2±0,8
P		<0,05	> 0,5	> 0,5	> 0,5
STH	2-5 ng/ml	2,8 ± 0,4	2,7±0,3	2,8±0,6	2,6±0,3
P		> 0,5	> 0,5	> 0,5	> 0,5

Note: P - significance of differences compared with the norm.

Discussion of the results. As can be seen from the data presented in Table 4, after 3, 6 months and 12 months after treatment with thyroid gland, in patients with IDD + PSDD, there was a significant improvement in hormonal parameters, namely, the mean values of TSH, free T4 (P <0, 05).

Thus, on the basis of the study performed, it can be concluded that therapy with thyroid drugs in patients with IDD + PSDD contributes to a significant improvement in both hormonal and anthropometric parameters, which confirms the need for primary prevention of IDD in children and adolescents.

Findings:

1) After 3, 6, and 12 months after treatment with thyroid drugs, a significant improvement in hormone levels, namely, the mean values of TSH, free T4 (P <0.05) was observed in patients with IDD + PSDD.

2) If the growth rate in patients with IDD + PSDD before treatment was 5.3 ± 0.2 cm / year, then after 12 months of treatment with thyroid gland drugs averaged 6.3 ± 0.3 cm / year (6.6 -9.6 cm / year), and the absolute increase in growth over 12 months averaged: 8.1 ± 0.4 cm.

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