УДК 616.61 – 002.151: 616. 152 – 057.12
DOI: 10.15643/faaigi-2020-22

FEATURES OF THYROID STATUS AMONG PATIENTS WITH INTESTINAL FORM OF ASCARIASIS

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The thyroid status and the level of thyroid-stimulating hormone of the pituitary gland in patients with intestinal stage of ascariasis before and after dehelmentation were studied in comparison with the control group of practically healthy people. A significant decrease in triiodothyronine, thyroxine and an increase in the thyroid stimulating hormone of the pituitary gland during the intestinal stage of ascariasis were revealed. The dynamics of thyroid hormone levels improved after dehelmentation.

Key words: *triiodothyronine, thyroxine, thyroid-stimulating hormone, ascariasis.*

Introduction: Ascariasis is one of the most common geohelminthoses not only in Russia, but also in the world. According to the WHO up to 1.3 billion people in the world are affected by ascariasis every year [3]. Ascariasis is also a common geohelminthosis in the Republic of Bashkortostan. Considering the fact that thyroid hormones are involved in the compensatory-adaptive reactions of the body and change with some infectious diseases [4, 5], the goal of the study was to study the functional state of the thyroid gland in patients with ascariasis.

Materials and methods

The study included 104 patients aged 18 to 59, who were on outpatient therapy at the municipal institution "City Clinical Hospital No. 13" in Ufa. People, suffering from endocrinological diseases, as well as those having concomitant chronic diseases in the exacerbation phase, were excluded from the study. The diagnosis of ascariasis was made on the basis of fecal ovoscopy using the native smear method and the Kato method described by R. G. Zayats and others. (2002) [2].

The levels of thyroid stimulating hormone (TSH), triiodothyronine (T3) and thyroxine (T4) were quantified by the enzyme-linked immunosorbent assay (ELISA) in the study of blood serum before and after dehelmentation.

Treatment of patients with intestinal stage of ascariasis consisted in the appointment of anthelmintic drugs (nemazole 400 mg 2 times a day for 3 days), antihistamines, eubiotics.

For effective deworming, those cases were taken when, 2 weeks after the end of treatment, a three-fold ovoscopy of feces with an interval of 10 days revealed the absence of ascaris eggs [1].

The control group consisted of 30 healthy individuals, comparable by sex and age.

Mathematical processing of the results was carried out using the standard statistical software package Statistica 7.0 for Windows. The degree of correlation between the signs was evaluated by Spearman correlation analysis by calculating the correlation coefficient (r). Differences were considered statistically significant at $p < 0.05$.

Results and discussion

The main symptoms of the disease identified in patients with ascariasis in the intestinal stage are presented in table 1.

Table 1

Clinical symptoms of ascariasis in the intestinal period of the disease

№ п/п	Clinical symptoms	Symptoms frequency	
		Абс.	%
1	Weakness	115	90,6
2	Headache	19	15,0
3	Fever (low-grade)	15	11,8
4	Sleep disturbance	11	8,6
5	Allergic syndrome	78	61,2
6	Dry cough	25	19,3
7	Gastrointestinal dysfunction	82	64,5
8	Constipation	16	12,9
9	Unstable stool	26	16,1
10	Abdominal pain	94	74,1
11	Disorders of appetite	22	17,2
12	Nausea, bitterness in the mouth	16	12,9
13	Anal itching	11	8,6
14	hair loss	12	9,5
15	Liver enlargement	16	12,6
16	Enlarged lymph nodes	12	9,5
17	Brittleness of nails	12	9,5

The table shows that the most common complaint was weakness (90.6%). Other manifestations of intoxication syndrome include complaints of headache (15%) and low-grade fever (11.8%), sleep disturbance (8.6%).

74.1% of patients complained about abdominal pain. Impairment of functions of the gastrointestinal tract organs was noted by 64.5% of patients. Most often, these disorders were manifested by unstable stools (16.1%),

constipation (12.9%), 17.2% of patients noticed appetite decrease, nausea, bitterness in the mouth among 12.9% of patients.

Allergic syndrome was detected among 61.2% of patients with intestinal stage of ascariasis. Usually it manifested itself in the form of itchy rashes on the skin of various localization. 19.3% of patients complained about a dry cough, often appearing before bedtime.

8.6% of patients had complaints about anal itching. 9.5% of patients noted hair loss and brittleness of nails.

In 12.6% of cases, an increase in the liver was detected, in 9.5% - an increase in lymph nodes.

There were no significant violations in the biochemical analysis of blood. In 7.9% of cases, a slight increase in the activity of alanine aminotransferase and aspartate aminotransferase was observed. In 3.9% of cases, bilirubin was increased to 30 μmol / L.

In almost all patients in the late stage of ascariasis, more than one symptom was observed.

Thus, the clinical manifestations of the intestinal stage of ascariasis were characterized by general intoxication syndrome, damage to the gastrointestinal tract, and allergic syndrome. Among the laboratory parameters most appearing change was in the content of hemoglobin, which manifested itself as deficiency anemia of the first degree.

In the study of TSH and thyroid hormones T3 and T4 in patients with a chronic stage of ascariasis before the start of anthelmintic therapy, we revealed an increase in serum TSH by 1.7 times and a decrease in the content of thyroid hormones T3 by 33%, T4 by 25%. After treatment, the level of TSH remained elevated by 1.3 times, with a general tendency to increase the content of T3 and T4 (see table 2).

Table 2

The content of TSH, thyroxine and triiodothyronine in blood serum in patients with ascariasis

Hormones	Control n=30	Before treatment n=104	After treatment n=104
ТТГ (мМЕ/л)	1,25 ± 0,01	2,12±0,02*	1,54±0,03
Т3 (мкг/л)	0,98 ±0,04	0,65±0,03*	0,79±0,04
Т4 (мкг/л)	87,2±1,2	65,4±2,2*	72,2±1,4

Note: * significance of differences with control ($p < 0.05$).

The data obtained indicate that in patients with the intestinal stage of ascariasis, the secretion of thyroid-stimulating hormone is enhanced and thyroid status is impaired. With a decrease in the content of triiodothyronine and thyroxine, TSH secretion naturally increases, which indicates the presence of laboratory signs of hypothyroidism. At the same time, the presence of a number of clinical symptoms in patients with ascariasis such as weakness, increased fatigue, impaired gastrointestinal tract function, dry skin, peeling, brittle nails and thinning of hair may be a consequence of impaired thyroid function in patients with ascariasis.

Thus, in patients with the intestinal stage of ascariasis, we revealed a violation of thyroid status characterized by a decrease in the content of triiodothyronine ($p < 0.05$) and thyroxine ($p < 0.05$), which is naturally accompanied by an increase in the secretion of thyroid-stimulating hormone (feedback system). Apparently, a decrease in the thyroid hormone content in patients with ascariasis occurs as a result of the suppression of thyroid function by toxins produced by ascarids. And also as a result of a violation of the absorption of iodine from the gastrointestinal tract due to the presence of a chronic inflammatory process with ascariasis.

Conclusions.

1. In patients with the intestinal stage of ascariasis, there is a violation of thyroid status, in the form of a decrease in triiodothyronine ($p < 0.05$), thyroxine ($p < 0.05$) and an increase in thyroid-stimulating hormone ($p < 0.05$).

2. Identified violations indicate the need for correction of thyroid function in patients with ascariasis.

This work was supported by the Russian Foundation for Basic Research (№ 15-04-20833).

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