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Cognitive And Psychoemotional Disorders In Hypothyroidism And The Possibilities Of Cognitive-Behavioral Therapy

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Abstract: Hypothyroidism is one of the most common endocrine diseases after diabetes mellitus and is characterized not only by somatic manifestations but also by cognitive and psycho-emotional disorders. A study conducted at the Khorezm Regional Endocrinology Dispensary with the participation of 104 women of reproductive age revealed a high prevalence of cognitive impairments (68%) and psycho-emotional disorders (54%), including depression, anxiety, and aggressiveness. An inverse correlation was found between TSH levels and cognitive functions ($r = -0.41$; $p<0.05$). The use of cognitive-behavioral therapy (CBT) significantly reduced the severity of depression and anxiety, improved memory and attention indicators, and enhanced patients' quality of life. Adapted CBT demonstrated greater effectiveness compared to the standard method. Economic analysis showed that the average length of hospitalization decreased by 4.5 days and the cost of treatment per patient was reduced by 2.85 million UZS. The results of the study confirm that integrating CBT into the standard treatment of hypothyroidism is both clinically and economically justified.

Keywords: hypothyroidism, cognitive disorders, psycho-emotional disorders, cognitive-behavioral psychotherapy

Actuality

Hypothyroidism is one of the most common endocrine diseases after diabetes. According to global statistics, its prevalence is 2–10% [3,13,23,32] in the general population and reaches 15–18% among women over 60 [1,38,43,45]. Women are affected 2–3 times more often than men, due to differences in their immune system and hormonal status.

The clinical presentation of hypothyroidism is varied, ranging from classic somatic manifestations (fatigue, weight gain, dry skin) to cognitive and psychoemotional disorders, which often remain underestimated by physicians [6,7,8,26,29]. Modern research indicates that even subclinical hypothyroidism can lead to memory impairment, decreased attention, and the development of anxiety and depressive disorders. With the increasing incidence of chronic non-communicable diseases and increasing life expectancy, the problem of timely diagnosis and correction of such disorders is particularly important [10,11,14,25,34].

Psychoemotional symptoms are common in patients with hypothyroidism, and the study of this close relationship between the two conditions has generated considerable interest in both psychiatry and endocrinology [4,5,24,39]. One of the greatest concerns in patients with acquired hypothyroidism is the inevitable risk of developing depression, which will worsen the patient's condition and their therapeutic treatment [12,15,27,28,44].

At the same time, we must not forget about anxiety disorder, which is characterized by excessive fear, worry, and associated behavioral disturbances. Fear is an emotional reaction to a real or perceived imminent threat, while anxiety is the anticipation of future threats. Such anxious reactions are disproportionate to the context or provoking stimuli and can significantly interfere with a person's daily life [2,17,18,19,20]. The psychoemotional structure of patients with hypothyroidism has many facets and remains an open question for scientists due to its complex structural dynamics.

Cognitive behavioral therapy (CBT) is considered an effective method of psychotherapy, reducing the severity of psychoemotional symptoms and improving patient adaptation [9,16,21,22,30]. However, data on its use in patients with hypothyroidism are extremely limited in the Russian literature, making this study relevant.

Materials and methods

The study was conducted at the Khorezm Regional Endocrinology Dispensary. The sample included 104 women of reproductive age (18–44 years) diagnosed with overt hypothyroidism (autoimmune thyroiditis and post -thyroidectomy conditions). Inclusion criteria included a confirmed diagnosis, informed consent, and absence of severe mental illness. Exclusion criteria included pregnancy, severe somatic complications, and use of psychotropic medications within 3 months prior to the study.

To identify the main cognitive and psychoemotional disorders, all patients were divided into a main group (n = 104) and a control group (n = 44). To monitor the quality of the psychotherapy used, the study group was divided into two comparison groups: Group 1 (n = 52), in which patients received standard Beck's CBT, and Group 2 (n = 52), in which patients received adapted CBT.

Cognitive functions were assessed using Addenbrooke 's Cognitive Examination (ACE), emotional state - according to the PHQ -9 and GAD -7 scales, aggressiveness and hostility - according to the Buss - Durkee questionnaire Hostility Inventory (BDHI) [31,33,35].

The psychotherapeutic intervention included a 10-12-session course of cognitive behavioral therapy aimed at restructuring maladaptive beliefs, developing stress management skills, and increasing self-control. Statistical analysis was performed using nonparametric statistics (Mann-Whitney and Kruskal - Wallis tests) and correlation analysis to identify relationships between hormonal parameters and psychometric results [36,37,39,40,41,42].

Results

In the examined women with hypothyroidism, cognitive impairment was detected in 68% of patients. The most common impairments were memory loss (43%), decreased concentration (36%), and slowed thinking (29%). Correlation analysis revealed an inverse relationship between TSH levels and ACE results ($r = -0.41$, $p < 0.05$) (Table 1.).

Table 1. Frequency of cognitive impairment

Type of violation	Frequency (%)	p-value
Memory loss	43%	<0.05
Decreased attention	36%	<0.05
Slow thinking	29%	<0.01

Psychoemotional disorders were common in 54% of patients: anxiety in 46%, depression in 54%, and aggression in 24%. After the course of CBT, a significant decrease in the severity of symptoms was noted: the average PHQ -9 score decreased from 15.6 to 8.3, and the GAD -7 score from 12.0 to 4.0 ($p < 0.001$). Quality life according to SF-36 increased by 25–30%. (Table 2.).

Table 2. Psychoemotional disorders

Violation	Frequency (%)	p-value
Depression (PHQ-9)	54%	<0.01
Anxiety (GAD-7)	46%	<0.01
Aggression (BDHI)	24%	<0.05

An assessment of character traits was also made according to the type of aggressiveness and responsibility (Table 3.).

Table 3. Average indicators of levels of aggression and irritability according to BDHI

Groups	**Balls**
Main group (n=104)	27.8(±3.2)
Control group (n=44)	4.5(±2.6)

At baseline, no significant differences were observed between the groups. All women with hypothyroidism of fertile age had high scores on the Bass–Darkie scale

(over 18 points). The mean scores of women with hypothyroidism (27.8 (±3.2)) were also not significantly different from each other. In the control group, the mean score was 4.5 (±2.6), which was within the normal range.

The condition after the applied psychotherapy showed that adapted CBT provides reliably effective dynamics among patients with hypothyroidism (Fig. No. 4).

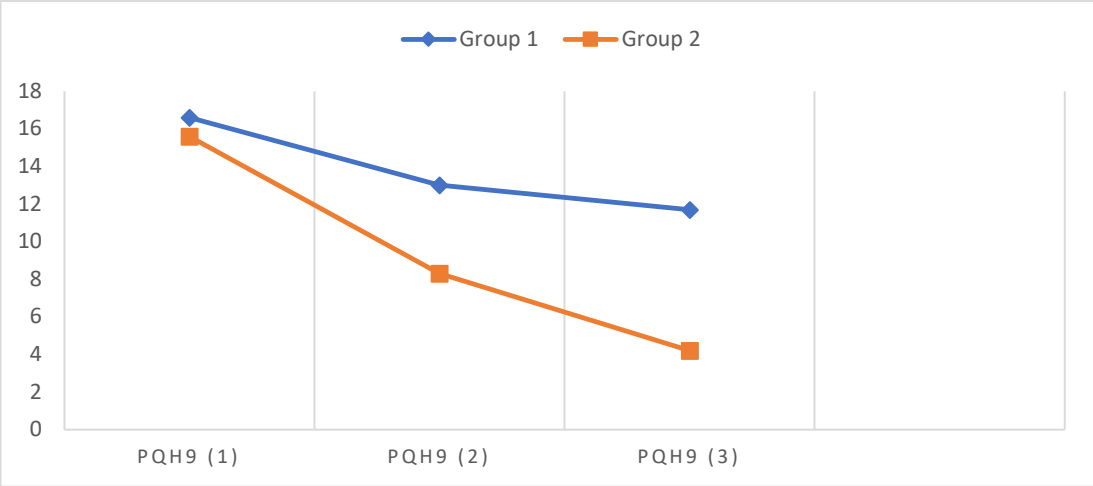

Figure 4. Changes in depression indicators over time

According to the analysis of the presented data, at the primary examination (PHQ-9 (1)), comparison group I (16.6 points) and comparison group II (15.6 points) had significantly higher depressive symptoms than the control group (4.5 points). At the secondary examination (PHQ-9 (2)), although the scores decreased in all groups, the rate of decrease was significantly greater in the group that underwent specific CBT (from 15.6 to 8.3), while the decrease was relatively slow in the group that received basic psychotherapy (from 16.6 to 13.0).

GAD -7 indicators also reflected positive dynamics in the group with adapted CBT (Fig. No. 5).

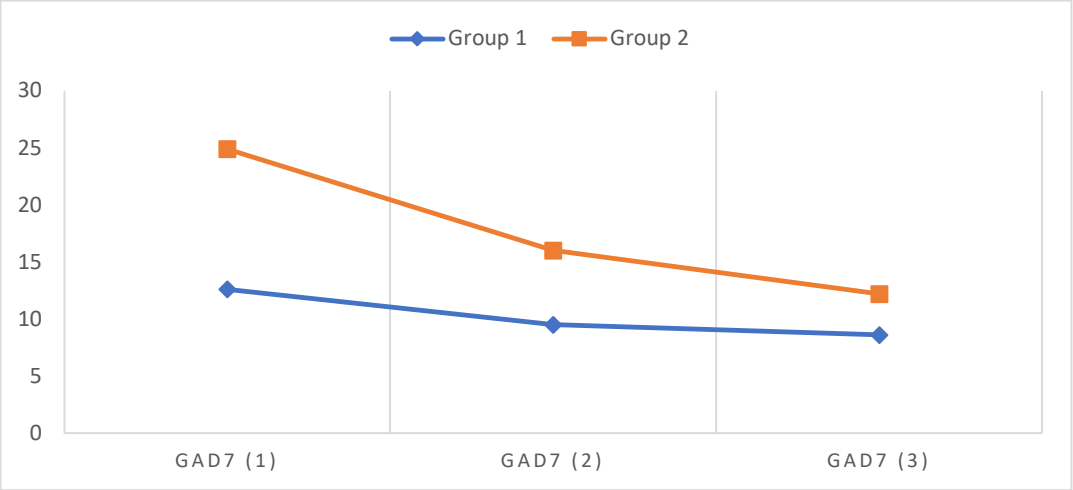

Figure 5. Changes in anxiety indicators over time

According to the above data analysis, in the group that used specific CBT in dynamics, the level of anxiety decreased by ~3 times, while in the group that used basic CBT it was only ~1.2 times. These results indicate that specific cognitive-behavioral psychotherapy is effective in reducing anxiety disorders.

An economic analysis showed that the introduction of psychotherapeutic methods reduced the average length of hospitalization by 4.5 days, reducing healthcare costs per patient by an average of 2.85 million soums. Thus, the use of cognitive behavioral therapy for hypothyroidism is not only clinically but also economically effective.

Discussion and Conclusions

The study results confirmed that hypothyroidism is accompanied by a high incidence of cognitive and psychoemotional impairment. The findings are consistent with international studies (Flores - Rebollar et al ., 2021; Larina et al ., 2014), confirming the relationship between thyroid hormones and cognitive and emotional functions. CBT has demonstrated high efficacy as an adjunctive method in complex treatment: significant reductions in anxiety and depression, improvements in memory and attention, and an increase in quality of life were observed. The practical significance of this study lies in the fact that integrating psychotherapy into standard hypothyroidism treatment can reduce treatment costs, shorten hospitalization periods, and improve patients' social adaptation.

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