Rating psychoemotional sphere and quality of life in patients with subclinical hypothyroidism

Abstract. Background. The impact of the so-called minimal thyroid dysfunction is actively discussed today among the scientific community. More and more data are published about the impact of subclinical hypothyroidism (SCH) on different organs and systems. Not given the fact that a number of publications is quite controversial, the role of SCH in the emergence and progression of mental illness is of particular concern to it self, because there is no specific clinical picture of manifestations. However, the quality of life (QoL) of such patients also suffers quite often, especially if it is young, able-bodied people. The purpose of the study: to assess and analyze the psycho-emotional state and the QoL of patients with SCH. Materials and methods. According to the results of the comprehensive examination, 2 groups of patients were distinguished, depending on the thyroid dysfunction, and the TSH and freeT4-specific changes for the AIT: Group 1 - 94 patients with SCH: 17 men (18.09%) and 77 women (81.91%); the average age is 31.86 ± 4.2 years; 2nd group with euthyroidism - 20 patients: 4 men (20%) and 16 women (80%); the average age is 32.35 ± 4.69 years. The comparison group consisted of 20 practically healthy persons - 5 (25%) men and 15 (75%) women - an average age of 33.68 ± 4.33 years. The mean TSH level in the I group was 7.62 ± 0.91 μU/mL, in the second group it was 2.32 ± 1.22 μU/mL and 1.87 ± 1.14 μU/mL respectively in group III. All patients responded to the HADS scale. This scale consists of 14 statements, and includes two parts: the first part - anxiety, part II - depression. The QoL evaluation was performed using the adapted questionnaire sf-36. This questionnaire allows you to evaluate both the physical and the psychological component of health. Statistical processing of the results was performed using the Statistic 6.0 for Windows software package. Results. Patients with SCH had significantly higher rates of subclinical anxiety and depression in contrast to patients in the euthyroid and control group. The incidence of QoL in patients with SCH is significantly lower than that of the control group. Conclusions. The issue of early screening of minimal thyroid dysfunction in young people is emerging. Comprehensive assessment of the general condition with the identification of other risk factors for the timely and correct using of medicinal drugs. Keywords: subclinical hypothyroidism; quality of life; life quality assessment; anxiety, depression.

Introduction

Recently, the attention of researchers and clinicians has seized a problem called "non-thyroid pathology." The fact is that those or other manifestations of thyroid pathology occur in almost a third of humanity. Peripheral insufficiency of thyroid hormones can cause various clinical signs too far from the classic manifestation of hypothyroidism. Subclinical course of hypothyroidism is masked under other somatic or even mental illnesses [1]. Therefore, insufficient number of thyroid hormones can lead to irreversible disorders from the central nervous system [2].

The brain is extremely sensitive to the deficiency of thyroid hormones in the body [8]. It is probable that with subclinical hypothyroidism (SCH), as with hypothyroidism, the exchange and production of some mediators, for example 5-hydroxytryptamine, which leads to the development of depression, is also disturbed [4,8]. Often, patients or doctors do not notice symptoms. Yes, patients "get used" to drowsiness, lethargy, slowness, forgetfulness, dry skin, etc. [2,3]. The frequency of symptomatology is as follows: vulgarity, drowsiness, dryness, coarsening of the skin, slowing down the pronunciation, puffiness of the face, hair loss (up to 90 %); chilly (up to 64 %), bradycardia (58–70 %); memory loss, weight gain, voiced voices (50–70 %), paresthesia (up to 52 %), constipation (up to 48 %), hearing loss (up to 22 %) [1]. In addition, this condition is characterized by depressed mood, severe depression, and a feeling of tension, which can not be explained [8,16].

Depression in SH differs from depression without SCH, panic and less antidepressant treatment. Among
patients with refractory depression, 52 % were diagnosed with SCH [5,8].

Most often during the latent hypothyroidism the emotional sphere is affected. Deficiency of thyroid hormones, mainly in women, leads to depressed mood, unmotivated tiredness and even severe depression. At the same time, males (boys) are more likely to be aggressive [2]. More than 90 % of patients under the supervision of psychoneurologists for depression have thyroid failure, which increases under the influence of antidepressants. At SCH the cognitive function decreases, memory and attention loss and the intelligence decreases [2,6,8]. According to some authors, SCH is not the cause of depression, but it can lower the threshold for the development of depressive state [7,8].

Today, scales and questionnaires are used to assess the psycho-emotional sphere. For the most general idea of the presence of anxiety and depression in patients, the Hospital Alert and Depression Scale (HADS), developed by A. S. Zigmond and R. P. Snaith in 1983, was used to detect and assess the severity of anxiety and depression for GPs-family physicians. The advantages of this scale are simplicity in use and processing of the data. Filling this scale does not require a long time and does not cause problems in patients that allows to recommend it for general practitioners - family doctor’s s for initial detection (screening) of anxiety and depression in patients [12]. Answering the question of the HADS scale, the patient chooses the answer that best describes his condition at the moment.

In recent years, more and more attention has been paid to the indicators of quality of life (QoL) with different thyroid function disorders [14,15]. Therefore, in order to assess the state of health of patients, a widely used evaluation is nowadays a reliable and simple method for assessing the general condition of a person using general or specific questionnaires [9,11]. Special questionnaires for a specific disease have a greater sensitivity to the general questionnaire. While the use of general QoL questionnaires allows to compare various diseases with those of the general population and if necessary, to evaluate the treatment that was carried out [10,11].

S. Gulseren and co-authors in their work showed that patients with SCH and with patients with manifestation of hypoproidism and hyperthyroidism, had a significant decrease in the indicators assessing QoL. At the same time, patients who riche euthyroidism in the background of substitution therapy levothyroxine were accompanied not only by the improvement of QoL, but also by a decrease in the number of points on the basis of the HADS [13,15]. However, during the meta-analysis of studies aimed at the study of the necessity and appropriateness of substitution therapy with levothyroxine in SCH, no improvement in QoL in these patients was shown when normalizing thyroid status [15].

The purpose of the study: to assess and analyze the psycho-emotional state and the QoL of patients with SCH.

Materials and methods

Careful selection of patients allowed to choose patients with autoimmune thyroiditis (AIT) with the same basic characteristics, which made it possible to reliably identify and assess the peculiarities of changes in the psycho-emotional state, quality of life, and analyze them according to the thyroid status.

The results of a comprehensive survey has been allocated 2 groups of patients depending on the thyroid dysfunction and AIT characteristic changes TSH and freeT4: 1st group - 94 patients with SCH - 17 men (18,09 %) and 77 woman (81,91 %); the average ages 31,86 ± 4,2 years ; The second group is in the stage of euthyroid status - 20 patients: 4 men (2%) and 16 women (80 %); the average age is 32,35 ± 4,69 years). The comparison group was 20 practically healthy persons - 5 (2,5 %) men and 15 (7,5 %) of women - the average age is 33,68 ± 4,33 years . The mean TSH level in the I group was 7,62 ± 0,91 μIU/MI, in the second group it was 2,32 ± 1,22 μIU/MI and 1,87 ± 1,14 μIU/MI respectively in group III.

All patients independently answered the questions on the HADS scale. This scale consists of 14 statements, and includes two parts: the first part - anxiety, part II - depression. For interpretation it is necessary to add up separately the points for each part. The score from 0 to 7 indicates no signs of anxiety / depression, 8-10 points - indicates a subclinical expression of anxiety / depression and 11 or more points - a clinical expression of anxiety / depression.

The QoL evaluation was performed using the adapted questionnaire sf-36. This questionnaire allows you to evaluate both the physical and the psychological component of health. Each health component includes 4 scales. According to the standards of processing the results, the values of each scale has its normalized number of points and ranges from 0 to 100, where 0 is the worst, and 100 is the best QoL.

Statistical processing of the results was performed using the Statistic 6.0 for Windows software package. The data is presented in the form of an average and standard deviation (M ± m). The hypothesis of the discrepancy in quantitative groups with normal distribution of values was verified using the Students t-criterion. The relationship between two variables was determined using linear Pearson correlations. Correlation (r) two variables was determined in the presence of a direct statistically significant positive (0.7 < r < 0.99), mean (0.5 < r < 0.69) positive statistic, weak (0.2 < r < 0.49) positive statistical communication.

Results and discussion

In the HADS scale, it was found that 81 patients (86.17 %) had a subclinical anxiety (14 men and 67 women), and 11 (11.7 %) patients had clinically significant anxiety (3 men and 8 women), and only 2 (13 %) patients (women) have no signs of anxiety.

In group II – 35 % (7 patients: 1 person and 6 women) patients have subclinical anxiety, 65 % (13 patients)
have no signs of anxiety. Group III - only 5% (1 woman) has a subclinically expressed anxiety (Fig. 1).

As shown in Fig. 2, in group I - 53 (56.39%) patients have subclinical depression (10 men and 43 women), 1 (1.06%) patient has clinically expressed depression (female) and 42.55% (40 and III do not have signs of depression, patients including 7 men and 33 women) without signs of depression. In contrast, groups II

Despite the fact that patients with SCH have no specific clinical picture of the disease, the severity of anxiety and depression is significantly higher than in patients with euthyroidism and in healthy people (Table 1).

In addition, there is a direct correlation between high TSH and the results of anxiety and depression surveys \((r = 0.76; p = 0.001 \text{ and } r = 0.66; p = 0.001)\) among patients with SCH.

The analysis of QoL data in accordance with the questionnaire SF-36 showed that SCH significantly reduces the patient’s QoL. Significant decrease in the psychological component of health, namely, decrease in vital activity, social functioning with restriction of social contacts and role-playing, which is caused by an emotional state with a limitation of the daily work (Table 2).

The general health status of the questionnaire SF-36 is a subjective sensation for each questioned. In the I group, 30.85% (29 respondents) of this indicator is below the average - 42.8 ± 4.52, while in 69.15% (65 respondents) - 55.6 ± 7.84. In the II group, 45% (9 respondents) assessed their general health 45.3 ± 2.5 points, and 55% (11 respondents) - 53.45 ± 5.43. In the 3rd group - all respondents estimated their general health as higher than average - 60.1 ± 5.05. The survivability in the 1st group of all the respondents below the average is 23.67 ± 13.1, in the second group, below the average, 55% (11 respondents) and is 30.45 ± 6.5. In the 3rd group, 95% (19 respondents) had a viability level of 65 ± 5 points. Social functioning in the I group is 39.36% (37 respondents) below the average and is 36.1 ± 3.9 points, while in II and III groups it is above the average. The index of emotional functioning is the lowest in the I group - 42.55% (40 respondents) and 0 points, in 28 (29.78%) - 33.3 ± 0 points and only in 26 (27.67%) - 66.7 ± 0 points. In the II group, only 6 in the surveyed 33.3 ± 0 points and in the third group above the average in all respondents. The psychological component of health in the I group is above average only in 5.3% (5 respondents) and is 65.6 ± 7.79 bal. In the 2nd group, 55% (11 respondents) have a psychological health lower than the average and is 39.63 ± 2.95 points. In the 3rd group, the score of mental health is 76.88 ± 16.4 points of health, namely, decrease in vital

![Fig. 1 The quantitative characteristic of the alarm on the HADS scale](image1)

![Fig. 2 Quantitative description of depression in the HADS scale](image2)

### Table 1. Results of the survey, in balls, on a scale HADS (M±m)

| Indexes      | Group I (n = 94) | Group II (n = 20) | Group III (n = 20) |
|--------------|-----------------|------------------|--------------------|
| Anxiety, points | 9.3±1.48*, **   | 7.1±0.91**, ***  | 3.6±2.28*, ***     |
| Depression, points | 7.57±1.04*, **  | 4.95±1.27*, ***  | 2.3±2.05*, ***     |

Note: \(p\) - the reliability of the differences:* - the difference is significant between I and III groups \((p = 0.001)\); ** - the difference is significant between I and II groups \((p = 0.001)\); *** - the difference is significant between II and III groups \((p = 0.001)\); * is the difference between doses of I and III \((p = 0.001)\); ** is the difference is significant between groups I and II \((p = 0.001)\); *** is the difference is significant between II and III groups \((p = 0.001)\).
Table 2. Results of the survey, in balls, in the questionnaire sf-36 (M ± m)

| Indexes                  | Group I (n = 94) | Group II (n = 20) | Group III (n = 20) |
|--------------------------|------------------|-------------------|-------------------|
| Physical functioning     | 88.5 ± 10.5      | 95.25 ± 4.72      | 98 ± 4.1          |
| Role (physical functioning) | 87.5 ± 19.18    | 96.25 ± 23.56     | 100 ± 0           |
| General health           | 51.68 ± 7.84     | 49.8 ± 5.34       | 61 ± 5.05         |
| Viability                | 23.67 ± 12.02    | 41.25 ± 11.19     | 63.75 ± 7.46      |
| Social functioning       | 47.34 ± 12.68    | 62.5 ± 14.9       | 78.97 ± 17.53     |
| Emotional functioning    | 24.1 ± 13.6      | 56.67 ± 15.18     | 83.84 ± 17.6      |
| Psychological health     | 35.15 ± 10.6     | 48.4 ± 14.57      | 76.88 ± 16.4      |

activity, social functioning with restriction of social contacts and role-playing, which is caused by an emotional state with a limitation of the daily work (Table 2).

Conclusions

The results obtained indicate that even a minimal thyroid dysfunction has a direct effect on the patient’s mental condition, accompanied by clinical manifestations of anxiety and depression.

All patients - are young, able-bodied age persons who, despite the absence of related pathology, have a significant reduction in the psychological component of health. This condition can lead to a decrease in efficiency, and in the future, in progress to disability. Therefore, there is a necessity for early SCH screening in asymptomatic individuals, especially young ones.

It is necessary to develop a plan for the screening of patients with HF in order to identify other risk factors. To develop a program of medical correction of thyroid dysfunction in accordance with the objective condition of each patient.

Conflicts of interests. Authors declare the absence of any conflicts of interests that might be construed to influence the results or interpretation of their manuscript.

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Received 12.09.2018
Оцінка психоемоційної сфери та якості життя у пацієнтів з субклінічним гіпотиреозом

Резюме. Актуальності. Сьогодні серед наукової спільності активно обговорюється питання впливу так званої мінімальної тиреоїдної дисфункції. Все більше публікується даних про вплив субклінічного гіпотиреозу (СГ) на різні органи та системи. Не зважаючи на те, що ряд публікацій є достатньо суперечливими, особливо у відносині до СГ, досить часто страждає і якість життя таких пацієнтів, особливо, якщо це молоді, працездатного віку люди. Мета дослідження: оцінити та проаналізувати психоемоційний стан та ЯЖ пацієнтів із СГ. Матеріали та методи. За результатами комплексного обстеження було виділено 2 групи пацієнтів залежно від тиреоїдної дисфункції та характерних для АІТ змін ТТГ і Т4віл: 1-а група – 94 пацієнта з СГ: 17 чоловіків (18,09%) та 77 жінок (81,91%); середній вік – 32,35±4,69 років. Групу порівняння склали 20 практично здорових осіб: 5 (25%) чоловіки та 15 (75%) жінок – середній вік 33,68±4,33 роки. Середній рівень ТТГ в І групі становить 7,62±0,91 μIU/MI, в ІІ групі - 2,32±1,22 μIU/MI та 1,87±1,14 μIU/MI відповідно в ІІІ групі. Всі пацієнти самостійно відповідали на запитання шкали HADS. Данна шкала складається із 14 тверджень, і включає в собу дві частини: І частина – тривога, ІІ частина – депресія. Оцінка ЯЖ проводилась за допомогою адаптованого опитувального схеми sf-36. Даний опитувальник дозволяє оцінити з якістю хірургічний так і психологічний компонент здоров’я. Статистична обробка результатів проводилася за допомогою пакета програм Statistic 6.0 for Windows. Результати. Пацієнти з СГ мають достовірно вищу психодушівний та тривога з депресією на відміну від пацієнтів в стадії еу- тиреозу та контролювальної групи. Показники ЯЖ у пацієнтів з СГ є значно нижчими у порівнянні з контрольною групою. Висновки. Постає актуальним питання раннього скринін- гу мінімальної тиреоїдної дисфункції у осіб молодого віку. Комплексне оцінювання загального стану з виявленням інших факторів ризику з метою своєчасного і коректного призначення медикаментозних препаратів.

Ключові слова: субклінічний гіпотиреоз; якість життя; оцінка якості життя; тривога; депресія

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