

other. As a result of chronic hyperglycemia in diabetes, excessive glycosylation of proteins develops. The SARS-CoV-2 virus, which uses the ACE type 2 protein to enter the cell, is under favorable conditions for increased viral proliferation when glycemia levels are elevated. This is one of the reasons for a more severe course of NCI in DM.

Viral load in type 2 diabetes increases the activity of pro-inflammatory cytokines, which suppresses insulin receptor signaling and exacerbates insulin resistance, which is the pathophysiological basis for the formation and adverse course of diabetes. In NCI there are changes in innate and acquired immunity, including neutrophil dysfunction and abnormal cytokine response. They provoke a state of chronic hyperglycemia. Thus, the "vicious circle" of COVID-19 pathogenesis on the background of concomitant diabetes mellitus is closed.

Conclusions. The presence of comorbid pathology is one of the most significant risk factors for the severe course of NCI. Among patients with diabetes mellitus tainted with coronavirus infection every third is obese, which aggravates the course of the acute disease. In addition, the vast majority of patients in this group suffer from episodes of high blood pressure, chest pain, and heart rhythm disturbances. General weakness, hyperthermia and dyspnea were the most frequent complaints of patients with NCI and DM.

More severe course of COVID-19 against the background of concomitant diabetes mellitus was noted. This is confirmed by CT scan data and the number of bed-days spent in the hospital. This cohort of patients showed higher levels of blood leukocytes and sedimentation rate.

The average SpO<sub>2</sub> level, which is one of the indicators of NCI course severity, correlates with the laboratory data. High INR and relative lymphocyte counts, as well as decreased plasma basophil levels were prognostically unfavorable.

Thus, type 2 DM influences viral proliferation in COVID-19 and is one of the risk factors for an unfavorable course of this disease. Understanding the interactions between the two pathologies is crucial in choosing appropriate therapeutic approaches.

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## **ASSESSMENT OF THE COGNITIVE STATUS AND PSYCHO-EMOTIONAL SPHERE OF WOMEN WITH A DIFFUSE THYROID GLAND ENLARGEMENT**

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*Relevance. In the structure of endocrine diseases, one of the main places is occupied by the pathology of the thyroid gland. The development of the intellectual and personal sphere is represented by the priority of the social level of the organization of the individual, which can change in case of violations of the somatic sphere. The role of thyroid pathologies remains one of the leading disorders of the psycho-emotional and cognitive spheres in the clinical picture, which leads to a decrease in the quality of life of these patients.*

*The research objective. The purpose of the study is to identify a violation of the psycho-emotional sphere and the cognitive status of women with ultrasound signs of an increase in the volume of the thyroid gland compared to women who have its normal volume.*

*Materials and methods 122 women were examined at an outpatient appointment with a district general practitioner with further determination of the thyroid gland volume using ultrasound examination on the Vivid brand. The cognitive status of patients was assessed using the Schulte test. The severity of depression was*

diagnosed according to the Hamilton Depression Scale (HDRS). Quality of life was assessed according to the subjective asthenia rating scale (MFI-20).

*Results:* According to the results of the diagnosis, 54% of the surveyed women showed an increase in the volume of the thyroid gland ( $19.01 \pm 0.64 \text{ cm}^3$ ). When analyzing the data obtained, there was a deterioration in the results of questionnaires to assess cognitive status, quality of life, as well as depression scale indicators in women with an identified increase in thyroid volume.

*Conclusion:* Detection of ultrasound disorders - indicators of the thyroid gland correlates with a decrease in indicators of psycho-emotional, cognitive spheres, as well as an increase in asthenic manifestations according to questionnaires. Among the surveyed patients, 54% showed an increase in the volume of the thyroid gland. In these patients, non-specific complaints about the deterioration of the general condition and the psycho-emotional sphere were confirmed by the data of the questionnaires used. All women who took part in the study were further examined, referred to the appropriate specialists and received the necessary treatment.

*Keywords:* psycho-emotional sphere; thyroid gland; endocrine diseases; cognitive status.

**Relevance:** The prevalence of chronic noncommunicable diseases is steadily increasing every year. In the structure of endocrine diseases, one of the main places is occupied by the pathology of the thyroid gland. In goiter-endemic areas, in which about a third of the total population of the Earth lives, the prevalence of thyroid pathology reaches 50%. The development of the intellectual-personal sphere is represented by the priority of the social level of the organization of the individual, which can change with violations of the somatic sphere [1,2]. The role of thyroid pathologies, often not confirmed by laboratory research methods, remains one of the leading in the clinical picture of disorders of the psycho-emotional and cognitive spheres, which leads to a decrease in the quality of life of these patients [3,4].

**The research objective:** to identify violations of the psycho-emotional sphere and the cognitive status of women with ultrasound signs of an increase in the volume of the thyroid gland in comparison with women with a normal volume of the thyroid gland according to ultrasound diagnostics.

**Materials and methods:** 122 women were examined, the average age of patients was  $52.5 \pm 1.65$  at an outpatient appointment with a general practitioner with further determination of the thyroid gland volume using ultrasound examination on the vivid brand device. The cognitive status of the patients was assessed using the Schulte test. The severity of depression was diagnosed according to the Hamilton Depression Scale (HDRS). The quality of life assessment was carried out according to the subjective asthenia assessment scale (MFI-20). Statistical processing of the obtained data was carried out on a personal computer using the STATISTICA 12.0 software package. A comparison of quantitative indicators was carried out using the Kolmogorov – Smirnov criterion. Differences at  $p < 0.01$  were considered reliable. The nonparametric Spearman method was used to analyze correlations.

**Results:** The women surveyed complained of weakness (100%), sweating (44%), weight loss over the past 6 months (23%), stool disorders (51%), mood swings (94%), memory impairment (60%), trembling sensation (45%), palpitations (87%), difficulty swallowing (35%), menstrual irregularities among women of reproductive age (40%). Diseases of the thyroid gland in the anamnesis were observed in 34% of cases. All patients were referred to the ultrasound diagnostic room to determine the standard parameters of the thyroid gland. According to the results of the diagnosis, 54% of the examined women showed an increase in the volume of the thyroid gland. The average volume was  $19.01 \pm 0.64 \text{ cm}^3$ , the normal values for women are no more than  $18 \text{ cm}^3$ . When analyzing the data obtained from the questionnaire of patients, there was a deterioration in the results of questionnaires for assessing cognitive status, quality of life, as well as indicators of the depression scale in women with an identified increase in the volume of the thyroid gland. The average value of the Schulte test was  $69.15 \pm 2.21$  seconds, the normal cognitive status indicators according to this test ranged from 30-50 seconds. In women with normal thyroid volume, the test values were  $49.2 \pm 1.52$  seconds, in patients with increased thyroid volume -  $86.1 \pm 2.34$  seconds ( $p < 0.001$ ). Patients surveyed with ultrasound signs of increased thyroid volume also had higher scores on the Hamilton Depression Scale compared to women with thyroid volume within normal limits, and were  $25.54 \pm 1.07$  and  $17.02 \pm 1.33$  points ( $p < 0.001$ ). The average values of this questionnaire in the questionnaires are  $21.6 \pm 0.92$ , which indicates moderate depression. When analyzing the subjective scale for assessing asthenia (MFI-20), reflecting the quality of life and general well-being of patients, a tendency to deterioration of values in women with an enlarged thyroid gland was revealed according to the ultrasound study. The average values were  $36.05 \pm 1.02$  points in patients with an increased thyroid volume,  $14.8 \pm 0.66$  - with normal values of thyroid volume ( $p < 0.001$ ). Thus, the average indicator is  $26.3 \pm 1.15$  points, which is regarded as a normal value ( $N = 20-30$  points). When analyzing correlations, the following data were revealed: a strong positive correlation was noted between the values of the thyroid gland volume and the Schulte test ( $r = 0.71$ ;  $p < 0.001$ ), as well as the volume of the thyroid gland and the indicators of the subjective scale for assessing asthenia ( $r = 0.77$ ;  $p < 0.001$ ), which characterizes a decrease in the values of the cognitive sphere and a deterioration in general well-being with an increase in the volume of the thyroid gland. A moderate positive correlation was found between the Schulte test and the asthenia scale ( $r = 0.63$ ;  $p < 0.01$ ), as well as between the values of thyroid volume and the Hamilton depression scale ( $r = 0.53$ ;  $p < 0.01$ ).

A similar relationship was observed in the analysis of the Hamilton scale and the Schulte test ( $r = 0.5$ ;  $p < 0.01$ ).

**Discussion:** the number of patients turning to primary care with non-specific complaints is steadily increasing, women are increasingly turning to such complaints. A thorough questioning and examination of the patient, as well as conducting the necessary diagnostic studies should lead to a clear diagnosis and immediate start of the necessary therapy.

**Conclusion:** The detectability of ultrasound disorders - indicators of the thyroid gland correlates with a decrease in indicators of the psycho-emotional, cognitive spheres, as well as an increase in asthenic manifestations according to questionnaires. Among the surveyed patients, 54% showed an increase in the volume of the thyroid gland. In these patients, non-specific complaints about the deterioration of the general condition and the psycho-emotional sphere were confirmed by the data of the questionnaires used. All women who took part in the study were further examined, referred to the appropriate specialists and received the necessary treatment.

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## **NT-PROBNP LEVELS IN PATIENTS WITH COVID-19 AND HF**

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**Relevance.** Since the beginning of the pandemic, the number of coronavirus infections has reached 662,221,274. These figures are largely due to the decompensation of heart failure as a result of the addition of SARS-CoV 2 infection.

**The research objective.** To study the level of NT-proBNP in patients with chronic heart failure who have had COVID-19.

**Materials and methods.** The study included patients aged 40 to 70 years diagnosed with CHF hospitalized with SARS-CoV-2 ( $n=60$ ). The control group consisted of patients hospitalized with SARS-CoV-2, without signs of HF ( $n=20$ ). All patients underwent laboratory methods with determination of NT-proBNP levels.

**Results.** The average NT-proBNP level in patients with CHF and Covid-19 was significantly higher than its value in patients without a history of CVD. The ratio of the odds of a favorable course of CHF and Covid-19 or the transfer to the ICU of patients with CHF and Covid-19 depending on the level of Nt-proBNP was studied. The probability of not getting into the ICU in patients with an NT-proBNP level below the threshold is 12.27 times lower than in patients with an Nt-proBNP level of  $>300$  pg/ml. Also, the ratio of the chances of a favorable course of CHF and Covid-19 or death depending on the level of Nt-proBNP was studied. The probability of non-occurrence of such a checkpoint as death in patients with an NT-proBNP level below the threshold is 2.43 times lower than in patients with an Nt-proBNP level of  $>300$  pg/ml.

**Conclusion.** Threshold values NT-proBNP for stratification, isolation of risk groups among patients with Covid-19, CHF and Covid-19 have been determined. In patients with Covid-19 and CHF, a strong association has been found between high levels of Nt-proBNP and a negative short-term prognosis (ICU transfer/death).

**Keywords:** chronic heart failure; covid-19; cardiac biomarkers; NT-proBNP

**Relevance:** It is known that many viruses affect the heart, both as a result of direct viral processes and through indirect mechanisms associated with the body's immune response [1]. Analysis of the results of numerous studies leads to the conclusion that the absolute increase in the activity of viral diseases by 5 - 7% is directly related to an increase in the frequency of hospitalizations for heart failure by 24% or more. Since the beginning of the pandemic, the number of coronavirus infections has reached 662,221,274, and the number of deaths has reached 6,701,780[2]. These figures are largely associated with the decompensation of heart failure as a result of the accession of respiratory infections and other intercurrent diseases. Increased levels of cardiac