



## THE STUDY OF THE RELATIONSHIP BETWEEN THE INDICATORS OF DAILY MONITORING AND THYROID STATUS IN PATIENTS WITH ARTERIAL HYPERTENSION

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### Relevance of the topic:

One of the most important and common risk factors for cardiovascular complications is arterial hypertension. According to the studies conducted on the treatment and diagnosis of hypertension ESH/ESC-2020, 35% of the adult population in the world suffer from hypertension. In Uzbekistan, according to the ESSE-RUZ study, hypertension was detected in 26% of people aged 25-65 years. In the structure of mortality from diseases of the circulatory system, complications of hypertension account for 65.2%. Currently, the value of thyroid status is of particular interest in the study of hypertension. With various types of thyroid dysfunction, according to the conducted research, violations in the work of the CCC were revealed. Some authors have found in individuals with euthyroidism, the relationship between the level of thyroid-stimulating hormone (TSH) and blood pressure (BP) [1]. According to the results of the study A. Iqbal et al. (2006) made it clear that in patients with hypertension, the TSH level is quite higher than in people with normal blood pressure [2]. Also, the relationship between thyroid function and blood pressure level is evidenced by the results of the study of the peculiarities of the course of hypertension in persons with subclinical hyperthyroidism [3]. In addition, according to the studies conducted by several authors,

higher indicators of systolic (SAD) and diastolic blood pressure (DAD) were revealed in examined patients with subclinical hypothyroidism [4]. The reasons for the relevance of the study of the role of TSH and thyroid hormones in the pathogenesis of hypertension are explained by insufficient data on the role of the above hormones.

**The purpose of the study:** to study the effect of thyroid status indicators in people with arterial hypertension.

### Material and methods:

The study involved 150 patients of the cardiology department "Tashkent State Clinic No. 2" suffering from essential hypertension of the 1st-3rd degrees, including 102 women and 48 men. The average age of the surveyed was 58 years. In accordance with the recommendations for the treatment and diagnosis of arterial hypertension ESH/ESC, 2020, antihypertensive therapy was prescribed. The study did not involve patients over 64 years of age suffering from angina pectoris, stroke, myocardial infarction, chronic cardiac insufficiency of the 3rd-4th functional class, atrial fibrillation, chronic kidney disease of the 5th stage, diabetes mellitus and other endocrine diseases taking thyrostatic drugs.

Thyroid status was studied in all patients (the level of TSH, free triiodothyronine [sv. T3] and free thyroxine [sv. T4]). To study



the thyroid status, an automatic immunochemiluminescent analyzer IMMULITE 2000 XPI po (Siemens, USA) and a set of reagents "Thyroid-ELISA" (Alkor-Bio, Russia) were used. To assess the circadian rhythm of blood pressure, daily blood pressure monitoring (SMAD) was performed using the Cardiotechnika-04-AD-1 monitor (Russia), according to the procedure recommended by the European Society of Hypertension. According to the results of the SMAD, the levels of average daily SAD and DAD, pulse blood pressure, average blood pressure and the degree of nocturnal decrease in blood pressure (SNSAD) were also determined.

Statistical analysis of the data obtained was carried out using the program STATISTICS 6.1 (StatSoft). The degree of closeness of the relationship between quantitative features was assessed using the parametric Pearson correlation analysis method and the nonparametric Spearman correlation analysis method.

### Results and discussion:

The results of the study of the thyroid status of the study participants showed that the TSH level was  $2.94 \pm 1.45$  mED/l, sv. T4 -  $14.21 \pm 1.45$  pg/l, sv. T3 -  $5.41 \pm 0.86$  pg/l.

According to the results of the SMAD conducted against the background of antihypertensive therapy, 49 (27.2%) patients were diagnosed with high-normal blood pressure, 115 (63.9%) with hypertension of the 1st art., 10 (5.6%) with hypertension of the 2nd and 6 (3.3%) with hypertension of the 3rd art. When assessing the SNSAD, it was revealed that out of the entire group of examined 67 people are "bucket", 93 are "non-bucket" and 20 are "night picker".

During the correlation analysis, a moderate direct correlation was established between TSH and the average daily SAD ( $P=0.50$ ,

$p<0.001$ ), the average daily DAD ( $P=0.45$ ,  $p<0.001$ ) and the average average daily BP ( $P=0.46$ ,  $p<0.001$ ), as well as a weak direct correlation between TSH and SNSAD ( $P=0.25$ ,  $p=0.017$ ). The level of sv. T3 has a moderate inverse correlation with the average daily SAD and average daily DB ( $g=-0.61$ ,  $p<0.001$  and  $g=-0.63$ ,  $p<0.001$ , respectively), with SNSAD – a weak direct ( $P=0.25$ ,  $p=0.017$ ), with average BP - a close inverse ( $g=-0.72$ ,  $p<0.001$ ). Between the level of St. T4 and SNSAD revealed a weak direct correlation ( $g=0.27$ ,  $p=0.010$ ), with the average daily SAD, DAD and average blood pressure. T4 does not correlate.

Similar results were obtained by M. M. Ferreira et al. (2010): when studying the parameters of SMAD in individuals with normal blood pressure, a moderate correlation of TSH and DAD was found [5]. The result of a meta-analysis of five studies devoted to the study of the relationship between thyroid function and blood pressure, conducted by T. Yttermann et al. (2013) also showed that there is a positive correlation between the level of TSH and blood pressure [6].

### Conclusion:

Free T3 has a moderate inverse correlation with the average daily SAD and DAD, a weak direct correlation with SNSAD, a close inverse correlation with average blood pressure. Free T4 has a weak direct correlation with SNSAD. TSH has a moderate direct correlation with the average daily SAD, DAD, average daily mean blood pressure, a weak direct correlation with SNSAD. The results obtained in the course of the study of the correlation of thyroidohostatus, mainly TSH, with the indicators of SMAD suggest their participation in the regulation of vascular tone by influencing pressor and depressor mechanisms.





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