WEB OF SCIENTIST: INTERNATIONAL SCIENTIFIC RESEARCH JOURNAL
ISSN: 2776-0979, Volume 3, Issue 4, April., 2022

CLINICAL FEATURES OF NEUROLOGICAL SYNDROMES IN THE ELDERLY WITH THYROMONIC DEFICIENCY

Shomurodova Dilnoza Salimovna
Department of Neurology, Samarkand State Medical Institute

Dzhurabekova Aziza Tahirovna
Department of Neurology, Samarkand State Medical Institute

Dzhurabekova Surayyo Tahirovna
Department of Neurology, Samarkand State Medical Institute

Amonova Zahro Kahramonovna
Department of Neurology, Samarkand State Medical Institute

Annotation
Most often, in old age, signs of thyroid dysfunction are masked under the guise of concomitant somatic diseases or these signs are taken as physiological aging. Therefore, the study of the clinical features of neurological insufficiency in the elderly against the background of thyroid dysfunction seems to be an urgent problem. Based on the analysis of the examined patients over 60 years of age with thyroid dysfunction, a relationship was found between a decrease in the production of thyroid hormones and clinical and neurological disorders. It turned out that the lack of thyroid hormones in the elderly changes the clinical picture of the disease, accompanying more pronounced shifts in cognitive impairment, vestibulo-ataxic disorders, worse prognosis in terms of neuropathies, up to the syndrome of myopathy.

Keywords: thyroid gland, old age, thyroid hormones, cognitive impairment, clinical and neurological symptoms

Introduction

The issue of the epidemiological situation in relation to thyroid dysfunctions among the population has repeatedly become the subject of research. Thus, screening of people over 60 years old, as part of a preventive examination of almost 3 thousand people (Framigham Heart study), found a level of low thyroid hormones in 4% of cases, while high levels of thyroid -stimulating hormone (hyperthyroidism) were detected in 9% (1, 3). Other studies by foreign authors record the prevalence of subclinical thyroid disorders in the elderly at about 15-17% (US national study) (4, 6).

Most often, in old age, signs (hypo and hyperthyroidism) of thyroid dysfunction are masked under the guise of concomitant somatic diseases or these signs are taken as physiological aging (dry skin, constipation, asthenia, weight loss). Another point that complicates the diagnosis is the use of many medications (cardio blockers, hypotensive, antiarrhythmic), which in turn violate the symptoms classically characteristic of a thyroid disorder (2, 5). The gland itself should normally not change its structure with age, and if, nevertheless, in old age there is a place for thyroid dysfunction, then its main cause is considered an autoimmune disease (autoimmune thyroiditis) (3, 7, 8). Neurological syndromes in the elderly against a background of thyroid deficiency can manifest as neuropathies, again with the need to differentiate diabetic neuropathies; in the form of impaired coordination, cognitive decline, "age-related" depression. Damage to the nervous system (both central and peripheral) in thyroid deficiency is associated with the toxic effects of the thyroid gland, increased sensitivity to catecholamines, and since thyroid hormones affect the synthesis of proteins of the nervous system, synapses, which primarily inhibit cognitive process. Therefore, the study of the clinical features of neurological insufficiency in the elderly against the background of thyroid dysfunction seems to be an urgent problem.

Target

To study clinical and neurological syndromes in the elderly with thyroid dysfunction.

Materials and Research Methods

In the Decree of the President of the Republic, on the improvement of the population, special attention is paid to the issue of control, entering into the electronic database on thyroid disorders (considering the iodine deficient region) (2019 PC-4295), on the basis of this, a screening program was developed, in which the participation of neurologists. Patients go through several stages of examination. At the first stage (routine study), it was necessary to conduct a sample of the main group for the study, for this, all students, during the preventive examination, from people over 60 years of age, took blood for thyroid hormones; in parallel, the state of the thyroid gland was studied by ultrasound; the anamnesis of the surveyed carefully collected by questioning. At the second stage, according to TSH, T3, T 4, group I was formed - 56 patients with abnormal thyroid hormones, 41 women, 15 men; II group - 30 patients. The criterion for inclusion in this group is age over 60 years, the absence of oncological diseases and, most importantly, a normal level of thyroid hormones. The patients did not take drugs to maintain thyroid function. At this stage, all patients underwent a thorough clinical, neurological and somatic examination.

All without exception, ECG, ultrasound of internal organs, blood biochemistry, MRI (of the brain, spine in different departments, in accordance with complaints) performed in dynamics; the level of cognitive studied according to neuropsychological scales; to control the vegetative Kerdo index, in a strict order, blood pressure monitored (day and night). If necessary, patients in some cases underwent electroencephalography, electroneuromyography.

This study was conducted as the first stage in the polyclinics of Samarkand, at the second stage in the therapeutic, neurological departments of the base of the 1-clinic of SamMI, for the period 2020–2022. Statistical data processing was recorded on an individual computer using the Microsoft programExcel (version 14.0) by parameters of Student's statistical method.

Research Results

Assuming old age, everyone understands its inevitability, calmly reacts to a decrease in memory and activity. But there are signs of the disease that are disguised as old age, thyroid dysfunction. Thyroid hormones regulate metabolism, body weight, and are responsible for the emotional background of a person. As the work of almost all organs and systems fades with age, the activity of the thyroid gland decreases, especially in the female half. Confirmation of the diagnosis, considering the blurring of the clinical picture, is the clarification of the analysis of the level of hormones (TSH, T3, T4), ultrasound of the thyroid gland (Fig. 1).

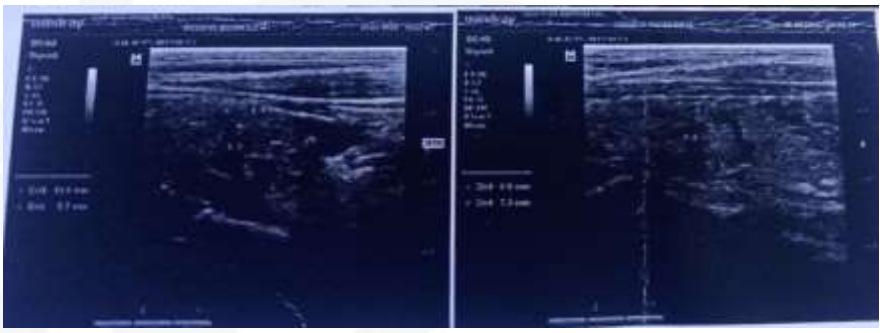

Image 1. Ultrasound of the thyroid gland, women 70 years old at a routine examination at the first stage

The study was conducted taking into account the preventive examination program for the improvement of the population of Uzbekistan (aimed at studying the function of the thyroid gland of the population in the iodine deficiency zone). A planned screening for the analysis of thyroid hormones of all ages was carried out. In our work, only the adult population, the elderly (according to WHO> 60 years) were studied.

According to a routine study, based on a blood test of thyroid hormones (TSH, T3, T 4), examination by an endocrinologist, ultrasound of the thyroid gland, patients with impaired thyroid function were selected, 47 people, which accounted for approximately 16.3% of the total number examined earlier. Numerous comorbidities in the elderly require sufficient intake of medications that affect the result of thyroid hormones. There are drugs, for example, as antiarrhythmic drugs containing iodine, which smoothes the picture, smears the picture with hyperthyroidism. The cause of reduced thyroid dysfunction in the elderly is anticonvulsant drugs, nonsteroidal drugs, glucocorticoid hormones. And since this requires a separate study, this work only recorded the drugs received, patients of group I, anticoagulants took all one hundred percent, aspirin (American production) 13 patients, 8 patients received heparin before the examination, in a therapeutic hospital; 5 patients were treated with L-dopa ; 30 patients were taking Phenibut (which contains Phenobarbital) ; 2 patients took Amiodarone (improves cardiac arrhythmia); 2 patients took Iodomarin (assigned by an endocrinologist); 1 patient Euthyrox. Therefore, when analyzing thyroid hormones in subclinical forms of the disease, it is necessary to take into account the use of additional drugs in the elderly.

The analysis showed that in elderly patients the incidence of hypothyroidism far exceeds the cases of hyperthyroidism. Only 3 had a decrease in the level of TSH and increased numbers of T 4. In all other cases, T 4 was reduced, and the hormones TSH and T3 were increased (which confirms the signs of hypothyroidism).

To complete the reliability of this study, the elderly, examined without signs (or rather, without a violation of thyroid hormones), were asked to continue the examination to identify clinical and neurological syndromes, 30 people agreed (in writing) to a further stage of the study. Thus, two groups of patients over 60 years of age were formed, group I - patients with thyroid dysfunction, group II - without thyroid dysfunction. There were 40 women in group I out of 47, in group II 25 out of 30.The main complaint of all examined was fatigue, poor sleep (or vice versa drowsiness), memory loss; difficulty walking (legs not "obedient"), in 6 patients of group I; unsteadiness of gait in group I in 17 patients, in group II in 5 patients; in group I 96% of cases revealed complaints of hand tremor, in group II in 10 cases. Swelling of the extremities and face in 60% of group I and 25% in group II.Complaints about loss of interest in life, emotional lability, tearfulness in 98% of group I, 5% in group II. Intestinal dysbacteriosis in group I 88.2%, 9% in group II, respectively.

Metabolic disorder (overweight) in group I 63% (obesity of 1-2 degrees), 12% in group II, and in parallel in the same patients when studying lipid metabolism, increased in 71% in group I, 19.9% in II group.

WEB OF SCIENTIST: INTERNATIONAL SCIENTIFIC RESEARCH JOURNAL
ISSN: 2776-0979, Volume 3, Issue 4, April., 2022

Thus, the multifaceted nature of the complaints presented indicates the fuzzy picture of thyroid dysfunction, which occurs under the guise of various symptoms characteristic of elderly patients. If the indicators of thyroid hormones in patients of group II were initially unchanged, then in group I the level of thyroxine is reduced in most cases and amounted to 94.200 ± 1.140 nmol / l, (total thyroxine), free thyroxine is 10.381 ± 0.505 nmol / l, which in p value <0.001. At the same time, the content of the hormone thyriotropic-basic group (TSH) had a limit of 2.790±0.360 mI /, where p<0.001.

When considering clinical and neurological signs, we were interested in patients whose complaints raised doubts about the uniqueness (weakness in the legs, difficulty walking), differentiation using instrumental, neuroimaging (MRI of the lumbosacral region, ENMG, vascular ultrasound) research methods, excluded oncological disease, myopathy, although in the clinic all the signs pointed to this process. Electroneuromyography, carried out in parallel with thyroid hormones, revealed a lengthening in time in tendon reflexes, especially the Achilles reflex, where in patients of group I there was 260.0 ± 5.2 ms , and in group II 350.0 ± 2.9 ms , p <0.001.

There is a large amount of literature confirming the relationship of thyroid dysfunction in the elderly with clinical symptoms, such as cognitive impairment, asthenia . When examining patients in the framework of this work, such signs were no exception. To do this, all examined were offered neuropsychological tests to identify the impact of thyroid hormone disorders on the process of dementia. The gold standard for neuropsychological testing is the MMSE, the “drawing clock” test, and, in our opinion, the cognitive assessment scale that is convenient to use. MoCA. The test results are presented in tab. one.

Table 1 The result of neuropsychological testing in the main and control group

Indicator	OG	R	KG
MMSE	15.5	p=0.012*	22
Orientation in place	3	p=0.011*	five
FAB	15	p=0.001 *	eighteen
MoCA	17.15	p=0.001 *	22
Phonetic fluency	one	p=0.0004*	3
Clock drawing	2	p=0.01*	8.5

So, according to the results of the correlation between violations of the content of thyroid hormones and testing. In group I, patients are associated with the desired results on all scales.

In particular, the process of praxis "memorization" among the category of these patients suffers, the average numbers for MoCA were 11 points, for MMSE within 15 points, "drawing the clock" corresponded to 1-2 points.

WEB OF SCIENTIST: INTERNATIONAL SCIENTIFIC RESEARCH JOURNAL
ISSN: 2776-0979, Volume 3, Issue 4, April., 2022

These data indicate a moderate degree of cognitive impairment. In group II, patients without thyroid hormone disorders, the MMSE study was within 20 points, "drawing the clock" within 4-5 points, MoCA was 19 points, which indicates mild cognition associated with age-related vascular disorders.Indicative in clinical signs in the examined patients of group I, were vegetative changes in the form of dry skin, reduced sweating, hair loss (on the scalp, eyebrows) and the severity of edema of the hands and feet. There was puffiness of the face. Characterized by bradycardia up to 60-65 beats per minute. In this situation, to clarify the indicators, they resorted to the definition of the Kerdo index. The results obtained confirm the violation in patients of group I, the loss of parasympathetic values. Sympathicotonia prevails (during the period of day and night). Parasympathicotonia is present in 32% of patients of group I and in 2% of group II during the day, and at night in 11%.

Table 2 The nature of the vegetative Kerdo index in the examined

VI Kerdo	Group I (n=56)		II group (n=30)	
	Day	Night	Day	Night
VIC=0	15.0*	10.0*	2.7*	9.5*
VIC>0	60.0	65.0*	95.9*	75.7*
VIC<0	25.0*	25.0*	1.7*	14.9*

In 6% of cases, patients of group I showed symptoms of vestibulo-atactic disorders. These patients noted instability when walking and standing, gait with legs wide apart, patients confuse their legs when walking, there is no aggregate, smoothness of movement, a finger-nose test conducted in patients revealed intention, overshooting with both hands, while at the same time in patients of the control group, in which a violation of coordination was found, the finger-nose test was unchanged.

That is, patients of group I have signs of cerebellar insufficiency, which combines impaired coordination, tremor and nystagmus (4%).

Table 3 Clinical and behavioral disorders of patients in the main group

Clinical signs	%
Decreased memory	100
Dizziness	56
Headache	54
Decreased attention	47
Unsteadiness when walking	56
Difficulties in finding words	25
Difficulty orienting in space	19
Reducing criticism	8
Difficulty in counting	10
Atactic syndrome	53
pyramid signs	28
dysarthria	7

WEB OF SCIENTIST: INTERNATIONAL SCIENTIFIC RESEARCH JOURNAL
ISSN: 2776-0979, Volume 3, Issue 4, April., 2022

The lack of thyroid hormones simultaneously disrupts the synthesis of collagen, which is the basic composition in the structure of the spinal disc. Therefore, patients with thyroid dysfunction often report pain symptoms during mobility in different parts of the spine. Moreover, sensory changes develop before motor ones. Damulin I.V. et al. (2011) explain this fact by the deposition of mucopolysaccharides around the peripheral nerves, leading to axonal regeneration against the background of a lack of thyroid hormones (Fig. 2, Diag. 1).

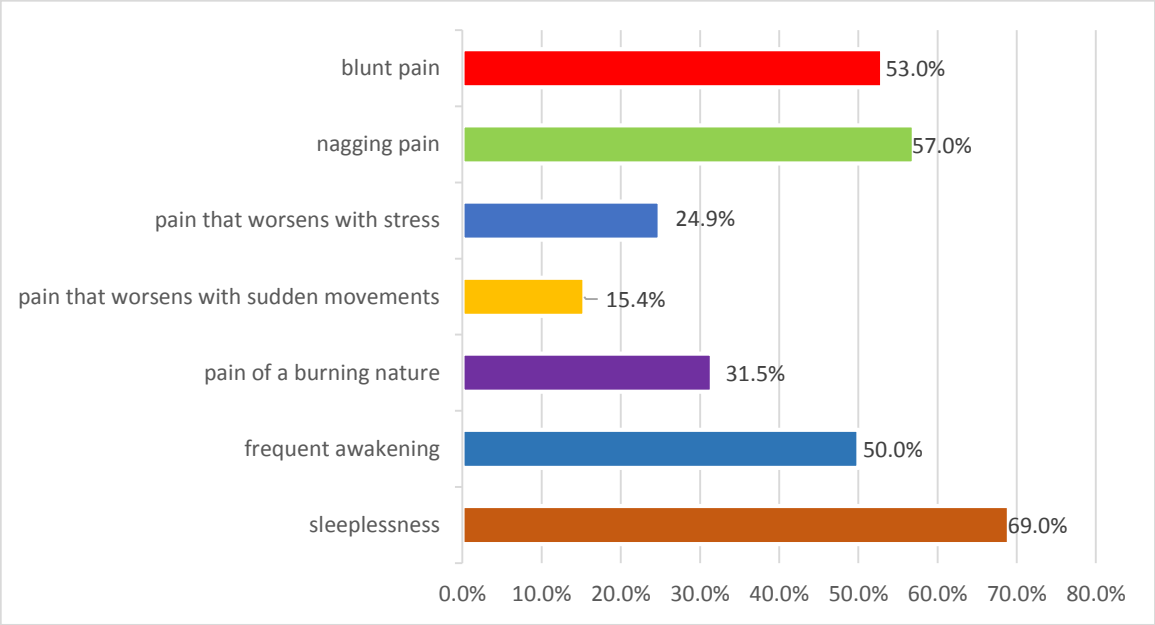

Image 2. Occurrence of main complaints in patients of group I

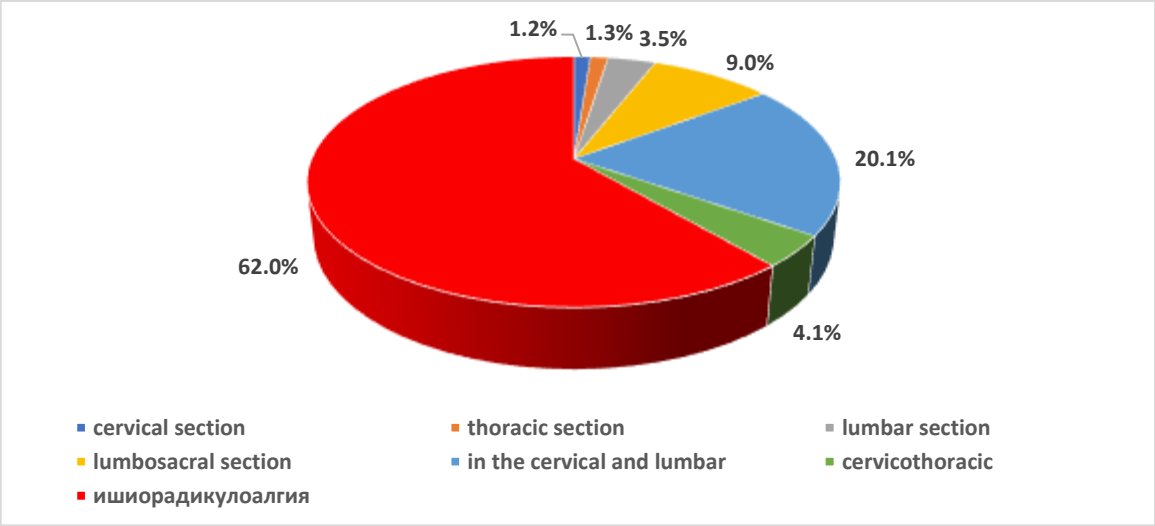

Diagram 1. Localization of pain in the examined group I

In patients of the main group, pain symptoms were noted more often in 40% of cases than in patients in the control group, in 52% there was a decrease in knee reflexes, moreover, during a dynamic examination; various levels of reflexes were found, then a complete absence, then an average vivacity, then they decrease again, in group II there were patients (3 out of the whole group) who had diabetes mellitus, motor symptoms at the level of diagnosing tendon reflexes revealed their complete stable absence, without any changes in character and symptom, in contrast to group I patients with thyroid dysfunction. The same goes for muscle cramps in the legs, paraesthesia; in group I, these signs are greater in the proximal parts, symmetrically in both limbs and more often during the day, and in patients with diabetes mellitus of group II , more often at night and in the distal parts, asymmetrically (only in one limb).

Table 4 Neurological symptoms in patients of group I (%)

Symptoms	total patients (N= 56)
pain level according to VAS	55.5
flattening of the lumbar lordosis	69
tension of the superficial muscles in the supine position	41.5
weakness in an arm or leg	41.5
decreased reflexes	24.4
tendon reflux prolapse	12.2
decreased sensitivity in the zone of innervation of the affected root	fifty
hyperesthesia in the zone of innervation of the affected root	19.5
ENMG	54.9
Radiography of the spine - signs of osteochondrosis, osteoporosis, degenerative-dystrophic changes in the yellow ligament and interspinous ligaments.	100
MRI and MSCT signs of protrusions and herniated intervertebral discs	28

Conclusion

Thus, based on the analysis of the examined patients over 60 years of age with thyroid dysfunction, a relationship was found between a decrease in the production of thyroid hormones and clinical and neurological disorders.The main feature of the symptoms associated with disruption of the thyroid gland is not specificity, masking, especially in the elderly, where the aging factor of the body is independently represented by a chronic cerebrovascular accident, a violation of the peripheral and autonomic nervous system, a rich comorbid background of the disease, such as arterial hypertension, cardiac, renal and hepatic insufficiency, diabetes mellitus, degenerative disorders of the spine.

Despite this long list of disorders, it is possible to detect, in the older generation, the influence of lack of thyroid hormones on the functional system of the nervous system, which increases the process of chronic diseases and accelerates the aging of the body, bringing mortality closer.Conducting a differential assessment between elderly groups with thyroid dysfunction and without thyroid hormone disorders becomes an important prognostic factor that must be taken into account in practical gerontology, and the need for further study in this direction.Since from the above it can be seen how much a lack of thyroid hormones in the elderly changes the clinical picture of the disease, accompanying more pronounced changes in cognitive impairment, vestibulo -ataxic disorder, a worse prognosis in terms of neuropathy, up to the syndrome of myopathy, the complexity of this disorder is associated with diagnosis and treatment, this question remains debatable judging by the sources of scientific literature.

Literature

1. Paramonova.O.V., Shilova.L.N. Hypothyroidism in the elderly - methods of diagnosis and treatment // Medicinal Bulletin No. 2 (70). 2018. Volume 12, p. 46–53
2. Zhitkova.Yu.V. Cognitive impairment in chronic cerebral ischemia (prospective study) // Dis . ...d.m.s., Kazan 2019, 324 p .
3. Andrea C. Gore, David Krews, Loretta L. Doen, Michelle La Merrill, Heather Patisol, Amy Zota, ScD, Endocrine Disrupting Chemicals (ECID): An Introduction. A guide for public interest organizations and political leaders. // KhVNRES: Introduction (December 2014), p. 80
4. Kotelnikova.G.P.,Zakharova.N.O. Clinical and fundamental aspects of gerontology/Samara: Samar . State. honey. un-t., 2015. 399 p.
5. Khodzhneva D.G., Akhmatova N.R. Thyroid and cerebrovascular diseases // www.tadqiqot.uz
6. Amonova ZK, Djurabekova AT Neuro-Endocrinological Aspects In Patients With Epilepsy // International Conference on Studies in Humanity, Education and Sciences Helsinki, Finland January 10th2022, p . 115–116
7. Jattinders S.Jane A.Franklin Thyroid disease in the elderly // https://www.lvrach.ru/1999/10/4528317
8. Makar.R.D.,Makar.O.R. Diseases of the thyroid gland in the elderly: features of the clinical course, diagnosis and treatment/Illness thyroid-like disease in pakhilomuvitsi: peculiarities of clinical breakdown, diagnostics and l ikuvannya/ International Journal of Endocrinology 6(12) 2007, http://www.mif-ua.com/archive/article/3779