of reducing the level of SC in the blood serum in this disease. The literature provides data on the serious advantages of febuxostat over other hypouricemic agents.

The purpose of this work was to study the possibility of obtaining a clinical and laboratory effect in a short time after the start of febuxostat therapy (up to 3 months) in patients with gouty nephropathy who have concomitant pathology.

A study of the efficacy and safety of febuxostat (tablets of 80 or 120 mg) was conducted in gout patients with concomitant diseases. The observation period was 3 months, during which time the possibility of patients achieving the target level of SC (≤360 μmol/l) was evaluated. 6 patients reached the target SC level within 1.5 months of treatment. In 19 (30%) patients, the SC level decreased to ≤360 μmol/L after 3 months of therapy. Exacerbations of gout were noted in the first 2 months of therapy in individual patients and were characterized by less activity of joint syndrome. It is known that hyperuricemia is one of the main risk factors for endothelial dysfunction, which, in turn, contributes to the development of arterial hypertension and damage to target organs. Regardless of hypertension, an increase in the level of SC in the blood serum affects the cells of the endothelium and vascular smooth muscle, leading to the formation of microvascular damage to the kidneys. According to our data, the presence of CKD, DM and/or hypertension significantly reduces the speed of reaching the target levels of SC and increases the frequency of new cases of gout attacks, each of which increases the severity of inflammation, as well as the risk of cardiovascular disasters and death.

Achieving the target level of SC in 6 patients 1.5 months after starting febuxostat and in a quarter of patients after 3 months. therapy demonstrates its powerful hypouricemic effect, which provides an early response to treatment.

Key words: febuxostat, gouty nephropathy, comorbidity.

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A – концепція роботи та дизайн, **B** – збір та аналіз даних, **C** – відповідальність за статичний аналіз, **D** – написання статті, **E** – критичний огляд, **F** – остаточне затвердження статті.

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ASSESSMENT OF ULTRASONOGRAPHIC SIGNS OF AUTOIMMUNE THYROIDITIS VALIDITY BASED ON THE HISTOPATHOLOGIC EXAMINATION RESULTS

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Early AIT diagnosis is challenging because there are no clinical symptoms and hypothyroidism found during laboratory testing. Aim of the study was to assess the accuracy of this examination technique in the diagnosis of autoimmune thyroiditis by analyzing the findings of thyroid ultrasonography examination in patients with thyroid pathology. The "VISUS" clinic's records of 120 patients who had surgery treatment for nodal thyroid pathology between 2018 and 2020 were retrospectively examined. 66 patients made up the main group, and 54 patients made up the comparative group. 39 patients (59.1%) in the main group of patients had ultrasound evidence of AIT. In 54 cases (81.8%) and 29 patients (52.7%), respectively, of the main group, the thyroid parenchyma was found to be heterogeneous by US examination. Malignant neoplasm was suspected (TI-RADS 4) in 31 patients (46.9% of the main group) and 19 patients (35.2%) of the comparator group during an evaluation of nodal growth. Our conclusions: 1. The analysis showed that ultrasonographic alterations are insufficient for autoimmune thyroiditis diagnosis. 2. The stepwise progression of autoimmune thyroiditis causes individuals to remain in the euthyroid for an extended period

of time. 3. In autoimmune thyroiditis, changes to the thyroid gland's parenchyma impact how nodal structures are assessed by ultrasound. 4. There are more seronegative forms of autoimmune thyroiditis than ever before, making it necessary to develop new diagnostic techniques.

Key words: *autoimmune thyroiditis, Hashimoto's thyroiditis, ultrasound examination, thyroid, ultrasonographic changes.*

Connection of publication with planned research work. The work was performed within the framework of the planned scientific topic of the Zaporizhia State Medical University «Improving the diagnosis and treatment of highly differentiated thyroid cancer against the background of autoimmune thyroiditis» state registration number 0117U006955.

Introduction. Autoimmune thyroiditis (AIT) is an actual problem of modern medicine. It is the most widespread organ-specific autoimmune disease [1]. Hashimoto's thyroiditis occurs in about 20-30 % of world population and causes hypothyroidism in 70-80 % of European population [2, 3].

Diagnosis of AIT is based on the detection of elevated antibodies levels of thyroperoxidase (Ab-TPO) and the presence of distinctive ultrasonographic signs, however early diagnosis is problematic due to the absence of clinical manifestations and hypothyroidism at laboratory examination (elevated thyroxine levels and normal AP-TPO values) [3, 4, 5]. This is because of the staging nature of the disease and increased frequency of latent AIT [5].

The main ultrasonographic features of Hashimoto's thyroiditis are heterogeneity due to the alternation of hypoechogenic lobules with fibrous masses [4]. Diagnostic dilemmas arise in patients with minimal ultrasonographic changes that lead to a wrong estimation and fails diagnostic in 20%-30% cases of the examination [6].

Aim. To analyze the results of ultrasound examination of the thyroid gland in patients with thyroid pathology to evaluate the efficacy of this examination method in the diagnosis of autoimmune thyroiditis.

Object and research methods. A retrospective analysis of 120 patients' histories the "VISUS" clinic, who underwent operative treatment of node thyroid pathology in the period from 2018 to 2020, was performed.

All patients underwent ultrasound examination (US) with "ALPINION" ECUBE9 9 transducer L3-12H 5-12 mHz, during which the size of thyroid, echostructure and echogenicity of parenchyma were assessed, and the examination was performed in the mode of coloured Doppler mapping (CDM). ACR TI-RADS 2017 criteria were used to assess malignancy of the thyroid nodule at US [7]. Patients were tested for thyroid hormone, Ab-TPO, thyroglobulin, triiodothyronine, thyroxine and calcitonin levels.

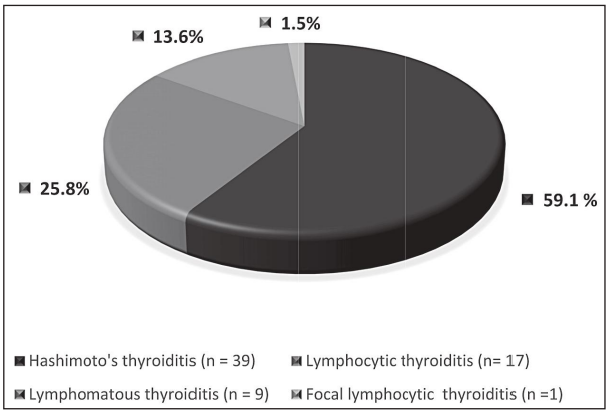

Figure 1 – Structure of autoimmune thyroiditis forms in patients of the main group.

The main group included 66 (55.0%) patients with histologically confirmed diagnosis of AIT. Comparison group included 54 (45.0%) patients with US showing signs of AIT, but the diagnosis was not confirmed by pathomorphological examination.

Researches are approved by the commission of biomedical ethics issues of ZSMU and conducted according to the written consent of participants and in accordance with principles of bioethics, that are stated in Helsinki declaration "Ethic principles of medical researches with people participation" and to "General declaration about bioethics and human rights (UNESCO)".

The results of the study were evaluated by variance statistics using non-parametric criteria with the software application packages STATISTICA 13.0, TIBCO Software inc. (License JPZ804I382130ARCN10-J) and MICROSOFT EXEL 2013 (License 00331-10000-00001-AA404). The results were considered statistically significant in our study if the p-value was <0.05.

Research results. The main group consisted of 63 females (95.5%) and 3 males (4.5%). The comparison group consisted of 51 females (94.4%) and 3 males (5.6%). The average age of the patients in the main group was 51.8±12.9 years, in the comparison group 56.7±11.4 years.

Euthyroid state was found in 59 patients (89.4%) of the main group and 51 (94.4%) of the comparison group, U=1692.00; p=0.6368. Hypothyroidism was diagnosed in 7 patients (10.6%) of the main group and 2 (3.7%) of the comparison group, U=1509.00; p=0.1506. There were no patients with hyperthyroidism in the main group. In the comparison group, 1 patient (1.8%) was diagnosed with toxic nodal goiter had hyperthyroidism, U=1353.00; p=0.0238.

An elevated Ab-TPO level was found in 29 patients (43.9%) in the main group and in 7 patients (13.0%) in the comparison group, U=1230.00; p=0.0036.

Ultrasound signs of AIT were found in 39 patients (59.1%) of the main group. Pathological examination revealed Hashimoto's thyroiditis most frequently – 39 cases (59.1%) **(fig. 1)**.

All the patients of the main group were revealed the association of AIT with nodular thyroid pathology during pathomorphlogical examination **(table 1)**. Cystic nodal

Table 1 – Structure of nodal pathology of the thyroid gland of the patients surveyed groups

Thyroid nodular pathology	Main group (n=66)		Comparison group (n=54)	
	n	%	n	%
Papillar carcinoma	44	66.7	29	53.7
Nodular goiter	16	24.2	15	27.8
Follicular adenoma	5	7.6	5	9.3
Oncocytal adenoma	1	1.5	1	1.8
Toxic adenoma	-	-	1	1.8

transformation was equally frequent in both groups, the primary group having 24 patients (36.4%), and 18 in the comparison group (33.3%), U=1728.00; p=0.7778.

An increase volume of thyroid gland was found in 29 patients (43.9%) of the main group and in 21 patients (38.9%) of the comparison group, U=1692.00; p=0.6368.

US examination of the main group revealed heterogeneity of the thyroid parenchyma in 54 cases (81.8%) and in 29 patients (52.7%) of the comparison group, U=1281.00; p=0.0083. Hypo echogenicity was identified less frequently in the main group than in the comparison group – 10 (15.2%) and 23 (42.6%) respectively, U=1293.00; p=0.0100. Hyper echogenicity was equally frequent in groups, 4 patients (6.1%) in the main group and 2 patients (3.7%) in the comparative group, U=1740.00; p=0.8267 **(fig. 2)**.

Fibrotic involvement by ultrasound investigation was found in 40 cases (60.6%) in the main group as well as in 44 patients (81.5%) in the comparison group, U=1410.00; p=0.0500.

Irregular hypervascularization was seen in 18 patients (27.3%) of the main group and in 3 patients (5.6%) of the comparison group when the Doppler study was performed by CDM, U=1395.00; p=0.0415.

In an assessment of nodal growth, malignant neoplasm was suspected (TI-RADS 4) in 31 patients (46.9%) of the main group, and in 19 patients (35.2%) of the comparison group, U=1572.00; p=0.2691 **(table 2)**.

The patients in the main group were untruly estimated as benign in 16 cases (24.2%), and their morphopathological examination resulted the diagnosis of papillary carcinoma of the thyroid gland. There were 2 such patients in the comparison group (3.7%), U=1389.00; p=0.0384.

Table 2 – Assessment of nodes according to the TI-RADS stratification scale

TI-RADS	Main group (n=66)		Comparison group (n=54)	
	n	%	n	%
1	-	-	1	1.8
2	11	16.7	13	24.1
3	19	28.8	13	24.1
4	31	46.9	19	35.2
5	5	7.6	8	14.8

Discussion of research results. The analysis of the obtained data revealed that most of the patients with AIT had an euthyroid state (89.4%), as well as there was no significant difference between the patients in the studied groups with hypothyroidism, which confirms the staged development of this disease. At the first stage, patients are diagnosed with hyperthyroidism due to destruction of thyrocytes and release of colloid into the bloodstream, the next stage in the development of AIT is a long-term period of eothyridids when structural changes occur in the thyroid parenchyma and the volume of functioning tissues gradually decreases, and as a result the final stage is hypothyroidism [6, 8].

An elevated level of Ab-TPO was detected in 43.9% of patients with AIT that indicate the presence of seronegative forms. This result is superior to the literature one, which indicates that only 12.8% of patients with AIT have the diagnosis confirmed by laboratory and ultrasound markers [9].

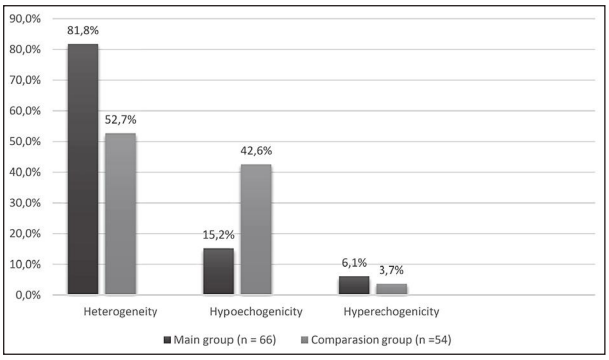

Figure 2 – Ultrasound changes in the parenchyma of the thyroid gland of the patients studied.

According to the changes of thyroid tissue that are observed during pathological examination the following forms of AIT are distinguished: Hashimoto's thyroiditis, lymphocytic, lymphomatous and focal lymphocytic [10]. As the disease progresses the autoimmune process increases, which is manifested by increasing in the size and number of lymphoid follicles, the degree of lymphoid infiltration and the development of fibrotic changes [11]. Hashimoto's thyroiditis was found in 59.1% of patients in the main group.

The study revealed that heterogeneity of thyroid parenchyma in US for the diagnostics of AIT is 81.8% sensitive and has a diagnostic accuracy 0.66, nonuniform hypervascularization of thyroid parenchyma in the diagnosis of this disease has specificity of 94.4%. Elastography is an alternative method of differential diagnosis of benign and malignant nodules in AIT, but its efficiency is variable in presence of cystic transformation [12]. 36.4% patients with autoimmune thyroiditis have cystic nodules in the thyroid gland.

These results confirm the literature ones that ultrasound examination can only assume the presence of Hashimoto's thyroiditis and requires further investigation, as the diagnosis is currently established just by pathomorphological examination [6, 11].

Conclusions.

1. The analysis revealed that ultrasonographic changes such as heterogeneity, presence of fibrous inclusions are not sufficiently effective in the diagnosis of autoimmune thyroiditis and allow only assuming the presence of this disease with sensitivity 81.8% and 60.6%.

2. The staged development of autoimmune thyroiditis leads to a long-term presence of patients in the euthyroid state and makes it impossible to make a diagnosis based on changes in the blood flow of the thyroid gland, specificity is 94.4%.

3. Changes in the parenchyma of the thyroid gland in autoimmune thyroiditis affect the evaluation of nodal structures in ultrasonography, in 24.2% of patients with papillary carcinoma with background of autoimmune thyroiditis with node formation having the characteristics of benign tumor.

4. The lack of clear diagnostic criteria and the increased number of seronegative forms of autoimmune thyroiditis require to find new methods of diagnosing the disease.

Prospects for further research. The results of ultrasound examination are not sufficiently informative for establishштп the diagnosis of autoimmune thyroiditis, which requires the search for new diagnostic methods.

References

1. Kutlu KC, Gümrükçü S, Saraç AS, Kök FN. A multifunctional long-term release system for treatment of hypothyroidism. Journal of biomedical materials research. 2019;108(3):759-760. DOI: https://doi/10.1002/jbm.a. 36855.
2. Long Z, Xiaojie D, Huijia S, Pengwei W, Wei Qu, Xianghong Z, Bioinformatics analysis of key genes and pathways in Hashimoto thyroiditis tissues. Biosci Rep. 2020;40(7):BSR20200759. DOI: https://doi.org/10. 1042/BSR20200759.
3. Mincer DL, Jialal I. Hashimoto Thyroiditis [Internet]. StatPearls. Treasure Island (FL): StatPearls Publishing; 2022 [Updated 2021 Sep 28]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK459262/.
4. Pishdad P, Pishdad GR, Tavanaa S, Pishdad R, Jalli R. Thyroid Ultrasonography in Differentiation between Graves' Disease and Hashimoto's Thyroiditis. J Biomed Phys Eng. 2017 Mar 1;7(1):21-26.
5. Saraf SR, Gadgil NM, Yadav S, Kalgutkar AD. Importance of combined approach of investigations for detection of asymptomatic Hashimoto Thyroiditis in early stage. J Lab Physicians. 2018 Jul-Sep;10(3):294-298. DOI: 10.4103/JLP.JLP_72_17.
6. Buzdugă CM, Costea CF, Dumitrescu GF, Turliuc MD, Bogdănici CM, Cucu A, et al. Cytological, histopathological and immunological aspects of autoimmune thyroiditis: a review. Romanian journal of morphology and and embryology. 2017;58(3):731-738. Available from: https://pubmed.ncbi.nlm. nih.gov/29250648/.
7. Tessler FN, Middleton WD, Grant EG, Hoang JK, Berland LL, Teefey SA, et al. ACR Thyroid Imaging, Reporting and Data System (TI-RADS): White Paper of the ACR TI-RADS Committee. Journal of The American College of Radiology. 2017;14(5):587-595. DOI: https://doi:10.1016/j.jacr.2017.01. 046.
8. Guan H, de Morais NS, Stuart J, Ahmadi S, Marqusee E, Kim MI, et al. Discordance of serological and sonographic markers for Hashimoto's thyroiditis with gold standard histopathology. European journal of endocrinology. 2019;181(5):539-544. DOI: https://doi.org/10.1530/EJE-19-0424.
9. Faiyaz A, Ashutosh K, Jyotsana K, Ankita M, Seema A, Shyamoli D. Cytological Diagnosis of Hashimoto's Thyroiditis Revealing the Increased Frequency than Expected: A Retrospective Study of 750 Thyroid Aspirates, Int J Med Res Prof. 2016;2(3):143-46. Available from: http://ijmrp.com/ Admin_Portal/Upload/Vol2Issue3/IJMRP%202(3)%20143-46.pdf.
10. Weetman AP. An update on the pathogenesis of Hashimoto's thyroiditis. Journal of endocrinological investigation. 2021;44(5):883-890. DOI: https://doi.org/10.1007/s40618-020-01477-1.
11. Tam AA, Kaya C, Üçler R, Dirikoç A, Ersoy R, Çakır B. Correlation of normal thyroid ultrasonography with thyroid tests. Quant Imaging Med Surg. 2015;5(4):569-574. DOI: https://doi.org/10.3978/j.issn.2223-4292. 2015.08.06.
12. Cepeha CM, Paul C, Borlea A, Fofiu R, Borcan F, Dehelean CA, et al. Shear-Wave Elastography-Diagnostic Value in Children with Chronic Autoimmune Thyroiditis. Diagnostics (Basel). 2021;11(2):248. DOI: https://doi.org/10.3390/diagnostics11020248.

ОЦІНКА ДОСТОВІРНОСТІ УЛЬТРАСОНОГРАФІЧНИХ ОЗНАК АВТОІМУННОГО ТИРЕОЇДИТУ НА ОСНОВІ РЕЗУЛЬТАТІВ ПАТОГІСТОЛОГІЧНОГО ДОСЛІДЖЕННЯ

Зимня К. О.

Резюме. *Вступ.* Рання діагностика АІТ є проблематичною через відсутність клінічних проявів та гіпотиреозу при лабораторному дослідженні. Діагностика АІТ базується на виявленні підвищення рівня антитіл до тиреопероксидази (АТ-ТПО) та наявності характерних ультрасонографічних ознак, однак проблемним є встановлення діагнозу на ранніх стадіях, оскільки пацієнти не мають жодних клінічних проявів, а при лабораторному обстеженні виявляють підвищення рівня тироксину та нормальні значення АТ-ТПО. Діагностичні дилеми виникають у пацієнтів з мінімальними ультрасонографічними змінами і призводять до хибного тлумачення 20-30 % даних обстеження.

Мета. Проаналізувати результати ультразвукового дослідження щитоподібної залози у хворих на тиреоїдну патологію для оцінки ефективності цього методу дослідження в діагностиці автоімунного тиреоїдиту.

Об'єкт і методи дослідження. Проведено ретроспективний аналіз 120 історій хвороб пацієнтів клініки «ВІСУС», які перенесли оперативне лікування вузлової патології щитоподібної залози в період з 2018 по 2020 рік.

Результати. Основну групу склали 66 хворих, групу порівняння – 54 пацієнти. Ультразвукові ознаки АІТ виявлені у 39 пацієнтів (59,1%) основної групи. Серед основної групи при УЗД виявлено гетерогенність паренхіми ЩЗ у 54 пацієнтів (81,8%) та у 29 пацієнтів (52,7%) групи порівняння. При оцінці вузлів підозру на злоякісне новоутворення (TI-RADS 4) виявлено у 31 пацієнта (46,9%) основної групи та у 19 пацієнтів (35,2%) групи порівняння.

Висновки. 1. При аналізі виявлено, що ультразвукові зміни не є достатньо ефективними в діагностиці автоімунного тиреоїдиту. 2. Етапність розвитку автоімунного тиреоїдиту призводить до тривалого перебування хворих в еутиреоїдному стані. 3. Зміни паренхіми щитовидної залози при аутоімунному тиреоїдиті впливають на оцінку вузлових структур при УЗД. 4. Відсутність чітких діагностичних критеріїв та збільшення кількості серонегативних форм автоімунного тиреоїдиту вимагають пошуку нових методів діагностики захворювання.

Ключові слова: автоімунний тиреоїдит, тиреоїдит Хашимото, ультразвукове дослідження, щитоподібна залоза, ультразвукові зміни.

ASSESSMENT OF ULTRASONOGRAPHIC SIGNS OF AUTOIMMUNE THYROIDITIS VALIDITY BASED ON THE HISTOPATHOLOGIC EXAMINATION RESULTS

Zymnia K. O.

Abstract. *Introduction.* Early diagnostic of AIT is problematic due to absence of clinical manifestations and hypothyroidism at laboratory examination. Diagnosis of AIT is based on the detection of elevated antibodies levels of thyroperoxidase (Ab-TPO) and the presence of distinctive ultrasonographic signs, however early diagnosis is problematic due to the absence of clinical manifestations and hypothyroidism at laboratory examination (elevated thyroxine levels and normal AP-TPO values). Diagnostic dilemmas arise in patients with minimal ultrasonographic changes that lead to a wrong estimation and fails diagnostic in 20%-30% cases of the examination.

Aim. To analyze the results of ultrasound examination of the thyroid gland in patients with thyroid pathology to evaluate the efficacy of this examination method in the diagnosis of autoimmune thyroiditis.

Object and research methods. A retrospective analysis of 120 patients' histories of the "VISUS" clinic, who underwent operative treatment of node thyroid pathology in the period from 2018 to 2020 was performed.

Results. The main group consisted of 66 patients and the comparison group consisted of 54 patients. Ultrasound signs of AIT were found in 39 patients (59.1%) of the main group. US examination of the main group revealed heterogeneity of the thyroid parenchyma in 54 cases (81.8%) and in 29 patients (52.7%) of the comparison group. In an assessment of nodal growth, malignant neoplasm was suspected (TI-RADS 4) in 31 patients (46.9%) of the main group, and in 19 patients (35.2%) of the comparator group.

Conclusions. 1. The analysis revealed that ultrasonographic changes are not sufficiently effective in the diagnosis of autoimmune thyroiditis. 2. The staged development of autoimmune thyroiditis leads to a long-term presence of patients in the euthyroid. 3. Changes in the parenchyma of the thyroid gland in autoimmune thyroiditis affect the evaluation of nodal structures in ultrasonography. 4. The lack of clear diagnostic criteria and the increased number of seronegative forms of autoimmune thyroiditis require to find new methods of diagnosing the disease.

Key words: autoimmune thyroiditis, Hashimoto's thyroiditis, ultrasound examination, thyroid, ultrasonographic changes.

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FEATURES OF THE APPLICATION OF COMBINED EXPULSIVE THERAPY IN THE COMPLEX TREATMENT OF PATIENTS WITH URETERAL STONES

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Urolithiasis is a widespread disease, in which the main reason for patients seeking medical help is pain syndrome caused by the migration of a stone into the ureter with the development of obstruction of the upper urinary tract. In the first line of therapy, when a stone is localized in the ureter, in most cases, preference is given to extracorporeal shock wave lithotripsy, the effectiveness of which increases in the case of the use of expulsive therapy in the postoperative period, which helps to reduce the time of removal of stone fragments and reduce the need for analgesics in the postoperative period. The work aimed to study the effectiveness of the combined use of translumbar electrical impulse stimulation (TEIS) in combination with tamsulosin as expulsive therapy after extracorporeal shock wave lithotripsy in patients with stones of the proximal ureter's part. 134 patients were included in the study, who were divided into 2 groups: in the control group, tamsulosin was used as expulsive therapy at a dose of 0.4 mg per day; in the patients of the study group, tamsulosin therapy was combined with TEIS of the pacemaker zone of the renal pelvis and pyeloureteral segment to achieve the goal. The use of TEIS made it possible to reduce the treatment duration by 36.4%. The intensity of pain sensations during the expulsive therapy and the "stone free" indicator on the 28th day of treatment in the studied groups did not reliably differ. Thus, using TEIS in combination with tamsulosin is an effective component of the complex therapy of ureterolithiasis, which allows for the duration reduction of the period of stone fragments removal after extracorporeal shock wave lithotripsy.

Key words: *ureterolithiasis, expulsive therapy, electroimpulse stimulation.*

Connection of the publication with planned research works. This work is an initiative study on the topic: "Justification of the principles of individualization of the treatment strategy in patients with urolithiasis."

Introduction. Urolithiasis is a widespread disease, in which the main reason for patients seeking medical help is pain syndrome caused by the migration of a stone into the ureter with the development of obstruction of the upper urinary tract [1]. As the first line of therapy, when