

# БИОМЕДИЦИНА ВА АМАЛИЁТ ЖУРНАЛИ ЖУРНАЛ БИОМЕДИЦИНЫ И ПРАКТИКИ JOURNAL OF BIOMEDICINE AND PRACTICE

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## MODERN STATE OF THE PROBLEM OF DIAGNOSIS OF THYROID NODULES (LITERATURE REVIEW)

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### ABSTRACT

the question of modern possibilities of complex diagnostics of thyroid nodules is considered. Despite the large number of studies conducted, it is not always possible to correctly establish an accurate morphological diagnosis of thyroid nodules, which indicates the need to improve existing and search for new, more informative diagnostic methods. In this regard, reports on the use of measurements of tissue pressure in the thyroid gland for the differential diagnosis of various pathologies of this organ are very promising.

**Key words:** thyroid gland, morphological form, nodular formation, thyroid cancer.

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## СОВРЕМЕННОЕ СОСТОЯНИЕ ПРОБЛЕМЫ ДИАГНОСТИКИ УЗЛОВ ЩИТОВИДНОЙ ЖЕЛЕЗЫ (ОБЗОР ЛИТЕРАТУРЫ)

### РЕЗЮМЕ

рассматривается вопрос о современных возможностях комплексной диагностики узловых образований щитовидной железы. Несмотря на большое количество проведенных исследований, не всегда удается правильно установить точный морфологический диагноз узлов щитовидной железы, что свидетельствует о необходимости совершенствования существующих и поиска новых, более информативных методов диагностики. В этом отношении весьма перспективными представляются сообщения об использовании измерений

тканевого давления в щитовидной железе для дифференциальной диагностики различных патологий этого органа.

**Ключевые слова:** щитовидная железа, морфологическая форма, узловое образование, рак щитовидной железы.

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## **ҚАЛҚОНСИМОН БЕЗ ТУГУНЧАЛАРИДА ДИАГНОСТИК МУАММОСИНИНГ ҲОЗИРГИ ҲОЛАТИ (АДАБИЁТЛАР ШАРҲИ)**

### **РЕЗЮМЕ**

қалқонсимон без тугунчаларининг мураккаб диагностикасининг замонавий имкониятлари масаласи кўриб чиқилади. Ўтказилган кўплаб тадқиқотларга қарамадан, қалқонсимон без тугунчаларининг аниқ морфологик таъхисини тўғри белгилаш ҳар доим ҳам мумкин эмас, бу мавжуд бўлган ва янги, кўпроқ информацион диагностика усуллари кидириш зарурлигини кўрсатади. Шу муносабат билан, ушбу органнинг турли патологияларини дифференциаль таъхислаш учун қалқонсимон бездаги тўқима босимини ўлчашлардан фойдаланиш бўйича ҳисоботлар жуда истикболли.

**Калит сўзлар:** қалқонсимон без, морфологик шакл, тугун ҳосил бўлиши, қалқонсимон без саратони.

At present, there is a trend towards an increase in the number of thyroid nodular formations (TNF) [10]. The frequency of detectable nodes in the thyroid gland (thyroid gland) depends on the method of investigation. At palpation of the thyroid gland, nodal formations are found in 4-6% of the population in areas with a sufficient content of iodine in water and food, in the zones of goiter endemia their prevalence is somewhat higher. With ultrasound thyroid, the frequency of detection of previously unidentified knots in adults is 13-40%. At autopsy of persons, who died from non-thyroid diseases, nodes in the thyroid gland find more than half of people [3]. The prevalence of thyroid cancer among the nodular formations, thyroid gland, according to different authors, is from 2.4 to 31.4%. According to V.V. Dvoyrina (2001), the growth rate of thyroid cancer over the past decade was 131-133%, which is significantly higher than other cancer. According to the American Cancer Society, about 17,000 new cases and about 1,300 deaths associated with thyroid cancer are reported annually in the United States. In this regard, the problem of differential diagnosis of thyroid cancer becomes especially urgent [5].

The problem of early diagnosis and timely adequate treatment of pathological formations of the thyroid gland, which today are found in 4-10% of the population, is still relevant. The incidence of nodal euthyroid diseases ranges from 10 to 62%. Under the term "nodular diseases", the nodal colloid goiter (NTG), adenomas, "pseudo nodes" for chronic autoimmune thyroiditis (CAIT), various morphological variants of the thyroid gland, as well as their combinations. The fact that the prevalence of focal lesions of the thyroid gland is extremely high in many countries of the world, according to numerous studies. So in France, for 1,000 people, an average of 35% of thyroid nodules, in the USA for 100 people, 21% (4-7% of the total population), in Japan for 450 people - 19%. In Uzbekistan there are an average of 10% of focal pathology per 2 thousand population [3]. A number of authors noted that the number of focal thyroid lesions increases with age [11]. The main cause of nodal colloid goiter is iodine deficiency of various origins. When insufficient intake of iodine to maintain a euthyroid state is amplified products iodinated less, but biologically more active T3, whereas the content of T4 decreases. By the feedback mechanism, secretion of TG increases, which leads to an increase in the number of thyocytes. In addition to TG, there are polypeptides that increase the functional activity and the ability to multiply thyroid cells - "epidermal growth factor", "growth

stimulating immunoglobulin", growth hormone. Elevated levels of fluoride and calcium in drinking water lead to the development of nodes in the thyroid. Antithyroid drugs and sulfonamides can also give a creeping effect [4].

The appearance of adenomas and thyroid cancer (thyroid cancer) is a consequence of a disorder in the cell proliferation of thyroid cells. Not the last place in this is allocated to the hereditary predisposition, the effects of ionizing radiation [8]. Identify the thyroid cancer based on only the history and physical examination is difficult. This is due to the fact that most of the thyroid tumors are highly differentiated and do not differ from benign thyroid nodules. Such generally accepted criteria of malignancy, such as rapid node growth and dense consistency, are of little help in the differential diagnosis of benign diseases and thyroid cancer. So, on the one hand, the rapid growth of the node is often observed with hemorrhage to the adenoma, and in persons with thyroiditis Hashimoto in thyroid gland find dense knots, on the other hand the malignant node can be soft upon palpation and last for a long time to exist in the thyroid gland without signs of growth. Such criteria of knot malignancy, as lack of displacement during swallowing, hoarseness of voice, increase of regional lymph nodes, are more specific, but are extremely rare. Meanwhile, clinical data should be taken into account when evaluating the thyroid gland. First of all, those of them that indicate a high risk of malignancy of this node, namely, the age of the patient over 60 years and under the age of 25, male gender, irradiation of the head and neck area in history, knot size exceeding 3-4 cm [9].

The informative value of palpation survey ranges from 35 to 62.5%, and in 25 to 36% of cases, palpable solitary nodes are multiple when using additional techniques [10]. The analysis shows that in 26 - 40% of cases there is a discrepancy between the data of the palpation survey in relation to the number of nodes with operative findings [11]. Reliability of palpation research depends on the size and location of the node, the size and shape of the neck, the experience of the doctor. Along with the generally accepted laboratory tests (general blood test, general urine analysis, biochemical blood test, coagulogram), patients with thyroid cancer need to study the hormonal status. When the patient is diagnosed with UA thyroid, an evaluation of the TG level by a highly sensitive method is shown [7]. If a reduced level of TG is detected, an additional determination is made of the level of free T<sub>4</sub> and free T<sub>3</sub>, if an increased TG level of free T<sub>4</sub> is detected. Determining the level of thyroglobulin, as well as antibodies to thyroid cancer in diagnostic search for nodular goiter is not advisable.

Laboratory methods of diagnosis can clarify the diagnosis of the disease, but do not exclude errors in their interpretation. So, with climax in the blood, there may be an increase in the TG content in the intact thyroid gland. Elevated titer of antibodies to thyroglobulin and peroxidase of thyrocytes can be obtained in patients with nonendocrinediseases when taking drugs that affect the nature of the immune response. The wide introduction of modern instrumental research methods into clinical practice allowed to significantly increase the differential capabilities in diagnosis of thyroid cancer [6]. However, in numerous works contradictory data are presented on the diagnostic value of each of the existing methods, as well as on the possibilities of their combination or sequential application. Until now, the "gold" standard for diagnosis of thyroid gland remains a planned histological study. Timely and accurate diagnosis of thyroid cancer is important in the choice of method of treatment, the scope and nature of surgical intervention. Survey radiography is not significant in the diagnosis of ultrasound and allows you to judge the nature of the lesion only by indirect signs of displacement, retrotracheal space.

Widely used method of pneumothyroidography, which consists in contrasting the thyroid gland by introducing oxygen into the interfascial space of the neck [9]. Direct (changes in the visible contours of the thyroid gland) and indirect signs (displacement and compression of the trachea, esophagus, muscles, large blood vessels) of the thyroid gland were isolated. This method was used for the diagnosis of a retrosternal goiter, nodular forms of goiter [4].

About three decades ago, the first works on the use of thermography in the diagnosis of thyroid diseases appeared. Most of the work was devoted to differential diagnosis of malignant and benign thyroid diseases [5]. However, a number of authors note the fact that there is no correlation between the thermography, the histological structure and the size of the thyroid tumor [2].

Until now, for indirect diagnosis of thyroid gland diseases, indirect percutaneous thyroidulymphography is used. This method allows obtaining additional information on the structure, topography, shape, contours and dimensions of the thyroid gland, to a certain extent assess the intraorganic prevalence of the pathological process, while being fairly simple and accessible [5]. Thyroidulymphography can be used for in vivo study of lymph circulation in the thyroid gland. According to some authors, thyroidulymphography allows judging on the functional state of the thyroid gland on the basis of data on the speed of spreading and excretion of contrast medium [1]. This method makes it possible to visualize small nodal formations more reliably than scanning differential diagnosis between nodular and multinodular goiter helps in the diagnosis of thyroid cancer.

However, according to M.P. Cherenko (1989) thyroidulymphography is not critical in the diagnosis of thyroid cancer. I.A. The accountant and co-workers. (1987) believe that with the development of cancer in a benign tumor (nodular goiter, adenoma), there are no lymphographic signs of malignancy until the moment the process leaves the capsule. S.A. Sergeev (1985) emphasizes that the thyroidographic criteria for malignancy were reliable only with common malignant lesions and had no practical significance for differential diagnosis. A.Bollo at al. (1959) proposed a method of arteriography for the diagnosis of thyroid diseases. A number of researchers used it in the diagnosis of benign and malignant tumors of the thyroid gland. Arteriography in the diagnosis of thyroid diseases has an auxiliary significance and should be carried out according to strict indications only in cases when other methods do not provide the necessary diagnostic information [6].

One of the methods used to examine patients with thyroid cancer is the PHC. The nature of the accumulation of the radiopharmaceutical in the thyroid is determined by its functional activity. The scanogram makes it possible to determine the topography, the shape, the size of the fraction, and also the functional activity of the nodal formations and the parenchyma of the thyroid [3].

It is difficult not to agree with the opinion of a number of researchers that at the present stage of development of thyroidology, the detection of thyroid cancer in radionuclide scanning (RNS) is inadvisable, since the information obtained by the method is not of great diagnostic value. Pre-existing opinion that suspicious for cancer are "cold" nodes that are currently being questioned, as there is evidence that cancers are also able to store pharmaceuticals, cases of detection of cancer are described in functioning, "warm" and hyperfunctioning "hot" nodes. The frequency of malignancy in the "hot knots", according to various authors, is 16-20%. On the other hand, the cancer of thyroid cancer looks like a dysfunctional or "cold" node, most of the "cold" nodes are colloidal in histological research, among them, 15-20% of the observations are detected [9].

There appeared publications of a number of authors about the successful detection of malignant adenoma of the thyroid gland with simultaneous use of two isotopes - Th201 and I138. At the same time, these authors, as well as most other researchers, do not consider the routine use of RNS for differential diagnosis of thyroid tumors to be expedient. The disadvantages of the method include the need for the introduction of radioactive material into the patient's body, the difficulty in identifying the formation of less than 15 mm, the inability to differentially diagnose malignant and benign nodules, in multinodular euthyroid crawl (METC), the interpretation of scans difficult and is accompanied by the greatest number of errors [16,18]. However, the use of TN in the long-term period is informative for clarifying the localization of residual and ectopic thyroid tissue, the definition of metastases in regional lymph nodes. Thus, at the present time, scanning is not significant in the differential diagnosis of thyroid cancer [10].

Computed tomography and magnetic resonance imaging methods are expensive, are not available for most patients and not having significant advantages over traditional diagnostic tests - may be used to identify retrosternal goiter, tumor metastasis, for the detection of invasion of adjacent structures at locally advanced cancers [8]. In typical clinical cases, CT and MRT do not have any statistically significant advantages over ultrasound in combination with NAB under ultrasound control [6]. Most researchers, considering the above, do not consider them a method of choice for most thyroid diseases [9,10,11,12].

A preoperative examination of the patient attaches great importance to fine needle aspiration biopsy (NAB). According to the summary data, the overall sensitivity of NAB in diseases of the thyroid gland is 60-94%, specificity reaches 94-100%. The percentage of false negative results varies from 4 to 11 (an average of 5%), false positive - from 0 to 10 (an average of 3%) [13,14]. Obtaining adequate cytological material with the help of NAB, according to the literature, is possible in 80-98% of observations, which largely depends on the experience of a specialist who conducts the specified diagnostic procedure. Some researchers prefer a thick-needle biopsy of the thyroid gland, pointing out its advantages [15,16,17]. With the help of this procedure it is possible to obtain a column of tissue for histological examination. Many researchers believe that the effectiveness of NAB and thick-needle biopsy in the diagnosis of thyroid disease is approximately the same, but with thicker biopsy, there are more complications.

According to N.I. Nikitina (1972), the coincidence of cytological and histological data in colloid goitre is observed in 75%, in adenomas - in 93%, in cancer of thyroid cancer - in 100% of cases. The same data are given in other modern studies. The sensitivity of NAB in the detection of thyroid cancer, according to the majority of authors, is from 10 to 62%. Puncture biopsy allows to establish the diagnosis only in 3/4 of all cases of thyroid cancer [18,19]. The diagnostic value for follicular cancer is lower (no more than 40%). It is especially difficult to distinguish follicular adenoma, which is a benign tumor, from follicular cancer in case of puncture biopsy. Therefore, the follicular adenoma, regardless of size and degree of activity, is an indication for surgical intervention. The sensitivity of NAB in METC is reduced compared to the sensitivity of solitary thyroid. The sensitivity of the method, according to different researchers, is 60-94%, specificity reaches 64-86%.

Morphological material obtained with NAB is usually divided into 4 categories: 1) benign changes; 2) malignant changes; 3) suspicious for malignant; 4) insufficient material for research. The disadvantage of NAB is that the manipulation is carried out practically "blindly", relying on the data of palpation. The greatest prospect of the development of visual control during the puncture biopsy of modern researchers see the use of ultrasound [19,20,21].

NAB with ultrasound guidance allows to increase sensitivity up to 93%, and specificity up to 89%. The preparation of a cytological material in non-palpable thyroid lesions is possible only under the supervision of ultrasound. According to E.I. Trofimova (1997), in a comparative evaluation of the results of cytological examination obtained with puncture non-palpable nodal formations under the control of ultrasound and a planned morphological study, diagnoses coincided in 77.1% of observations.

Thus, as the literature data show, pre-operative methods of investigation do not allow establishing a reliable diagnosis in 100% of cases. In this regard, a great deal of attention is paid to methods of intraoperative diagnostics of thyroid gland.

## References / Список литературы

1. Бакиров А., Норбутаев И., Абдурахманов Д. ЛИХТЕНШТЕЙН ПЛАСТИК ДЛЯ ВНУТРЕННЕЙ ГЕРНИИ // Збірник наукових праць ЛОГОС. - 2021 г. С/ 178-179.
2. Шукуруллаевич, Абдурахманов Диер и др. «НАПРЯЖЕННАЯ ГЕРНИОПЛАСТИКА И АБДОМИНОПЛАСТИКА У БОЛЬНЫХ С МОРБИДНЫМ ОЖИРЕНИЕМ». Вестник науки и образования 3-2 (106) (2021): 88-98.
3. Shukurullaevich A. D. et al. MODERN VIEWS ON THE PATHOGENETIC RELATIONSHIP BETWEEN SYSTEMIC INFLAMMATION AND THE IMMUNE SYSTEM WITH A BILE PERITONITIS, COMPLICATED ABDOMINAL SEPSIS // Вестник науки и образования. - 2021. - №. 5-1 (108). - С. 81-86.
4. Davlatov S. et al. Current State of The Problem Treatment of Mirizzi Syndrome (Literature Review) // International Journal of Pharmaceutical Research. - 2020. - Т. 12. - С. 1931-1939.
5. Султанбаевич Б.А. и соавт. Анализ результатов хирургического лечения больных с узлами щитовидной железы // Вопросы науки и образования. - 2019. - №. 4 (49).

6. Бабаджанов Ахмаджон Султанбаевич и Диер Шукуруллаевич Абдурахманов. «АНАЛИЗ РЕЗУЛЬТАТОВ ХИРУРГИЧЕСКОГО ЛЕЧЕНИЯ БОЛЬНЫХ С УЗЛАМИ ЩИТОВИДНОЙ ЖЕЛЕЗЫ». Вопросы науки и образования 4 (2019): 186-192.
7. Rakhmanov K. E., Davlatov S. S., Abdurakhmanov D. S. Correction of albendazole disease after echinococsectomy of the liver //International Journal of Pharmaceutical Research. – 2021. – Т. 13. – С. 4044-4049.
8. Абдурахманов Д.С., Шамсиев Ю.З. Современное состояние проблемы диагностики узлов щитовидной железы (обзор литературы) // Европейские исследования: инновации в науке, образовании и технологиях. - 2018. - С. 45-49.
9. Shukurullaevich A. D. et al. MODERN VIEWS ON THE PATHOGENETIC RELATIONSHIP BETWEEN SYSTEMIC INFLAMMATION AND THE IMMUNE SYSTEM WITH A BILE PERITONITIS, COMPLICATED ABDOMINAL SEPSIS //Вестник науки и образования. – 2021. – №. 5-1 (108). – С. 81-86.
10. Shamsutdinov S., Abdurakhmanov D., Rakhmanov K. REPEATED RECONSTRUCTIONS OF THE DIGESTIVE TRACT IN THE SURGERY OF THE OPERATED STOMACH //Збірник наукових праць ЛОГОС. – 2021. С. 49-50.
11. Shukurullaevich A. D. et al. MODERN VIEWS ON THE PATHOGENETIC RELATIONSHIP BETWEEN SYSTEMIC INFLAMMATION AND THE IMMUNE SYSTEM WITH A BILE PERITONITIS, COMPLICATED ABDOMINAL SEPSIS //Вестник науки и образования. – 2021. – №. 5-1 (108). – С. 81-86.
12. Shukurullaevich A. D. et al. ANALYSIS OF SURGICAL TREATMENT OPTIONS FOR DIFFERENT TYPES OF MIRIZZI SYNDROME //Вестник науки и образования. – 2021. – №. 5-1 (108). – С. 71-76.
13. Shukurullaevich A. D. et al. CLINICAL QUESTIONS EXTREME CURRENTS SYNDROME MIRIZZI //Вестник науки и образования. – 2021. – №. 5-1 (108). – С. 65-70.
14. Шамсутдинов С., Абдурахманов Д., Рахманов К. ПОВТОРНЫЕ РЕКОНСТРУКЦИИ ПИЩЕВАРИТЕЛЬНОГО ТРАКТА ПРИ ХИРУРГИИ ОПЕРАЦИОННОГО ЖЕЛУДКА // Збірник наукових праць ЛОГОС. - 2021 г. С. 49-50.
15. Shukurullaevich A. D. et al. BILIARY PERITONITIS AS A COMPLICATION OF CHRONIC CALCULAR CHOLECYSTITIS //Вестник науки и образования. – 2021. – №. 5-1 (108). – С. 77-80.
16. Abdurakhmanov D., Sayfullaeva F. SURGICAL TREATMENT OF POSTOPERATIVE VENTRAL HERNIA //Збірник наукових праць ЛОГОС. – 2021. С. 55-57.
17. Зайниев А. Ф. и др. ОПРЕДЕЛЕНИЕ ХИРУРГИЧЕСКОЙ ТАКТИКИ ПРИ ТОКСИЧЕСКОМ ЗОБЕ //Медико-биологические, клинические и социальные вопросы здоровья и патологии человека. – 2019. – С. 136-137.
18. Shukurullaevich A. D. et al. ANALYSIS OF SURGICAL TREATMENT OPTIONS FOR DIFFERENT TYPES OF MIRIZZI SYNDROME //Вестник науки и образования. – 2021. – №. 5-1 (108). – С. 71-76.
19. Нарзуллаев Ш.Ш, Бабажанов А.С, Абдурахманов Д.Ш., Тоиров А.С, Ахмедов А.И. Функциональное состояние остаточной тиреоидной ткани после операции диффузно-токсического зоба у пожилых лиц старческого возраста// Журнал «Наука, образование и культура» №2(57), 2021 С.20-24.
20. Юсупов Ш. А., Курбаниязов З. Б., Давлатов С. С., Рахманов К.Э., Даминов Ф.А. Отдаленные результаты оперативного лечения узловых образований щитовидной железы// Здобутки клінічної і експериментальної медицини. - 2017. - №1. - С. 80-84.
21. Mirzagaleb, T., Mashrabjon, B., Nodir, R., & Iroda, I. (2021). Comparative Characteristics of the Direct Results of Extraperitoneal and Transperitoneal Access in the Surgical Treatment of Bladder Cancer. Annals of the Romanian Society for Cell Biology, 4794-4802.