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www.bsmi.uz
https://newdaymedicine.com E:
ndmuz@mail.ru
Тел: +99890 8061882

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ULTRASOUND DIAGNOSIS OF THYROID DISEASES

Ibodova Dilnoza Fazliddinovna E-mail: dilnoza_ibodova@bsmi.uz

Bukhara State Medical Institute named after Abu Ali ibn Sina, Uzbekistan, Bukhara, st. A. Navoi. 1
Tel: +998 (65) 223-00-50 e-mail: info@bsmi.uz

✓ ***Resume***

To interpret the results of changes in the thyroid gland with a possible specific lesion of the thyroid gland at this stage is not possible, hormonal comparison and their dynamics with the revealed ultrasound changes in the thyroid gland are necessary. The thyroid gland is one of the important endocrine glands that regulates metabolism and hormonal balance in the human body. Disorders of its functioning — hypothyroidism, hyperthyroidism, thyroiditis, nodular and tumor forms — manifest themselves in a variety of clinical symptoms. Therefore, accurate and early diagnosis is crucial for restoring the patient's health. The article discusses the diagnostic possibilities of ultrasound (sonography) in the diagnosis of thyroid gland pathologies. The study assessed the value of sonography in determining the size of the gland, morphological structure and nodular pathological formations.

Key words: thyroid gland, sonography, hypothyroidism, hyperthyroidism, ultrasound diagnostics.

УЛЬТРАЗВУКОВАЯ ДИАГНОСТИКА ЗАБОЛЕВАНИЙ ЩИТОВИДНОЙ ЖЕЛЕЗЫ

Ибодова Дильноза Фазлиддиновна E-mail: dilnoza_ibodova@bsmi.uz

Бухарский государственный медицинский институт имени Абу Али ибн Сины, Узбекистан,
г. Бухара, ул. А. Навои. 1 Тел: +998 (65) 223-00-50 e-mail: info@bsmi.uz

✓ ***Резюме***

Интерпретировать результаты изменений в щитовидной железе с возможным специфическим поражением щитовидной железы на данном этапе не представляется возможным, необходимо сравнение гормональных показателей и их динамики с выявленными ультразвуковыми изменениями в щитовидной железе. Щитовидная железа - одна из важных желез внутренней секреции, регулирующая обмен веществ и гормональный баланс в организме человека. Нарушения ее функционирования — гипотиреоз, гипертиреоз, тиреоидит, узловые и опухолевые формы — проявляются разнообразными клиническими симптомами. Поэтому точная и ранняя диагностика имеет решающее значение для восстановления здоровья пациента. В статье рассматриваются диагностические возможности ультразвукового исследования (сонографии) в диагностике патологий щитовидной железы. В ходе исследования оценивалось значение сонографии в определении размеров железы, морфологической структуры и узловых патологических образований.

Ключевые слова: щитовидная железа, сонография, гипотиреоз, гипертиреоз, ультразвуковая диагностика.

QALQONSIMON BEZI KASALLIKLARINI ULTRATOVUSH DIAGNOSTIKASI

Ibodova Dilnoza Fazliddinovna E-mail: dilnoza_ibodova@bsmi.uz

Abu Ali ibn Sino nomidagi Buxoro davlat tibbiyot instituti, O‘zbekiston, Buxoro sh. A. Navoiy
kochasi 1 Tel: +998 (65) 223-00-50 e-mail: info@bsmi.uz

✓ ***Rezyume***

Qalqonsimon bezdagi o'zgarishlar natijalarini ushbu bosqichda qalqonsimon bezga mumkin bo'lgan o'ziga xos zarar bilan izohlash mumkin emas; gormonal ko'rsatkichlar va ularning dinamikasini qalqonsimon bezda aniqlangan ultratovush o'zgarishlari bilan solishtirish kerak. Qalqonsimon bez inson organizmidagi metabolizm va gormonal muvozanatni tartibga soluvchi muhim endokrin bezlardan biridir. Uning disfunktsiyalari - hipotiroidizm, gipertiroidizm, tiroidit, nodulyar va o'sma shakllari - turli klinik belgilar bilan namoyon bo'ladi. Shuning uchun bemorning sog'lig'ini tiklash uchun to'g'ri va erta tashxis qo'yish juda muhimdir. Maqolada qalqonsimon bez patologiyalarini tashxislashda ultratovush tekshiruvining (sonografiya) diagnostika imkoniyatlari ko'rib chiqiladi. Tadqiqotda sonografiyaning bez hajmini, morfologik tuzilishini va tugunli patologik shakllanishlarni aniqlashdagi ahamiyati baholandi.

Kalit so'zlar: qalqonsimon bez, sonografiya, hipotiroidizm, gipertiroidizm, ultratovush diagnostikasi.

Relevance

There is a limited amount of data available in the literature on the ultrasound method for studying structural changes in the thyroid gland in young people. Morphological variants of ultrasound changes of the thyroid gland were studied in individuals with goiter (nodular or multi-nodular) by E.A.Troshina et al.The following surfaces are distinguished in the thyroid gland: external or anterior, posterior, lateral and medial. In cross-section, the thyroid gland resembles a butterfly, a horseshoe, a curved dumbbell, etc. In this case, the shape of the lateral lobes is irregular - in the form of an irregular triangle, pyramid or oval. In the longitudinal section, the shape of the lateral lobe resembles an elongated oval [1,3]. There are two poles in the lateral lobe: the upper and the lower. The central part of the lobe remains between them. When describing the identified pathology, you can use an indication of its location in the area of the border of the isthmus and one of the lateral lobes. Layered thyroid topography [2,4]. Anteriorly from the thyroid isthmus are muscles, a thin layer of subcutaneous fat and very thin skin. Two large vessels are attached to the lateral surface of each lobe: on a cross-section they look like a round common carotid artery and an oval internal jugular vein of a larger diameter located laterally. The esophagus is often located in cross-section between the left lobe of the thyroid gland and the trachea in the form of a rounded formation that can be mistaken for a node (rarely, the deviation of the esophagus is possible to the right, then its image is determined between the right lobe of the thyroid gland and the trachea). At the present stage of thyroidology development, a number of problems and contradictions have accumulated in ultrasound diagnostics of thyroid gland changes. The following issues remain unresolved: indications for the primary ultrasound examination of SCH/w, interpretation of the detected ultrasound changes in sch/w in the absence of complaints and anamnesis of sch/w [5]. In most countries, the method of screening for thyroid is to collect complaints, medical history, and palpation of thyroid, rather than ultrasound [6]. There is a limited amount of data available in the literature on the ultrasound method for studying structural changes in the thyroid gland in young people. Morphological variants of thyroid ultrasound changes were studied in individuals with goiter (nodular or multi-nodular) by E.A.Troshina and co-authors [7]. According to the results of H.I.Kudabayeva and co-authors [8], the revealed increases in thyroid volume (goiter) in children aged 7 to 11 years are associated with living in ecologically unfavorable areas of Kazakhstan. In children, it is not recommended to measure the width of two lobes in one section, since the thyroid gland may not be positioned and formed perfectly symmetrically, and these will not be the maximum dimensions [9, 10]. 10 Random selection of slices may lead to an underestimation of the actual size of the thyroid gland. Before puberty, the thickness of the isthmus is normally 0.3 mm. At puberty, it can reach 5 mm. Just as in adults, in older children, the length of the lobe may exceed the scanning area of the linear sensor, then a convex sensor can be used exclusively to measure the vertical size of the lobe. The thyroid gland in B-mode is clearly differentiated from the surrounding hypoechoic muscle structures. The contours of the thyroid gland are clear and even. The echogenicity of thyroid tissue should exceed the echogenicity of the neck muscles. In children, it is possible to compare the echogenicity of thyroid gland with the echogenicity of salivary gland tissue – they should be equivalent [11]. The echostructure of thyroid tissue is fine-grained due to the fact that it consists of multiple tiny follicles filled with colloid. In adults, the diameter of single follicles along the periphery of the lobes can reach 1-2 mm, which is normal and should not be regarded as focal pathology or nodulation. Usually in these cases, the description indicates a homogeneous structure of the thyroid tissue. Follicle enlargement to 3-6 mm or more occurs with a tendency to hypothyroidism. At the same time, they are overgrown with a thick colloid.

Purpose of the study: To study the features of ultrasound diagnostics of thyroid diseases.

Materials and methods

110 students aged 18 to 26 years were examined, the average age was 20.0 ± 1.6 years. Of these, 33 (30%) men and 77 (70%) women. Complaints indicating the possibility of damage to the cheek (soreness when swallowing, a feeling of compression of the neck by the collar of clothing; enlargement, soreness on palpation of the cheek), and risk factors (age, gender, smoking) affecting the frequency of ultrasound changes of the cheek were studied. The ultrasound examination was performed on an ultrasound diagnostic device SonoScape SSI1000 with a high-frequency linear sensor (7.5 MHz), the position of the subjects is standard. The ultrasound study included: determination of the volume of each lobe with the total volume, the intensity of blood flow (moderate, increased, hypervascularization), general echogenicity (normal, diffuse or local decrease, diffuse decrease with hyperechogenic areas), the uniformity of the echostructure of the sc/w (normal, fine-grained, medium-grained, coarse-grained), the presence of focal formations of (quantity, size, location), capsule changes w/w.

Result and discussions

The frequency of thyroid gland changes was 47 ± 3.9%. The detection rate was 40 ± 4.4% in men and 51 ± 3% in women. Thus, the gender dependence of the frequency of changes in blood pressure has been revealed: in women, this frequency is 1.3 times higher than in men (ṭ < 0.05). The revealed ultrasound changes of the s/w are shown in Figures 1-7. The frequency of complaints was 1.7 ± 0.69%, of which 1 ± 0.9% in men and 2 ± 0.8% in women. So, a comparative study of the frequency of detection of ultrasound changes in the a/w and the presence of complaints shows that ultrasound diagnosis is ten times more significant than subjective signs (complaints) and palpation of the a/w (p < 0.001). The following ultrasound changes were detected: changes in echogenicity — 14%, blood flow — 16%, the presence of cysts — 11%, nodules — 6%. It is not possible to compare these results with the literature data, since we have not found such information.

Conclusion

To interpret the results of changes in the thyroid gland with a possible specific lesion of the thyroid gland at this stage is not possible, hormonal comparison and their dynamics with the revealed ultrasound changes in the thyroid gland are necessary.

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