

Ultrasonic Anatomy of the Thyroid Gland in Children in the First Period of Childhood

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ABSTRACT

A comparative analysis of the ultrasound anatomy of the thyroid gland in girls and boys aged 4-5 years has been carried out.

Relevance

In recent decades, the number of endocrine diseases, including diseases of the thyroid gland (thyroid gland), has increased significantly due to the global disruption of the ecological balance in the world. [10].

The thyroid gland is an organ, without the normal functioning of which the full development of a child of any age is impossible. Dementia, developmental delay, poor academic performance, problems with the heart, bones and future childbirth, nervousness, overweight - this is caused by diseases of the thyroid gland. It is caused by many reasons, but the main one is iodine deficiency. [1].

Thyroid pathology occurs in 10% of the world's child population, in certain areas this figure exceeds 20%.

Currently, there is a significant increase in thyroid diseases both among the adult population and among children and adolescents [6].

If a child of any age has an enlarged thyroid gland, then this leads to serious changes in health [9]. Poor ecology, hereditary factors, alimentary iodine deficiency, stress, intoxication, trauma, frequent infections, concomitant diseases contribute to the development of pathological changes in the thyroid tissue. The harm caused to society by thyroid pathology is enormous [7]. Iodine is a vital trace element that a person receives only from the outside: with food, drugs, X-ray contrast agents [5,11,12]. The only organ that synthesizes compounds containing iodine is the thyroid gland (TG) [2,8]. So, in iodine-deficient regions, the deterioration of the main indicators of physical development is shown: in particular, an increase in the number of children with disharmonious development. Schoolchildren with endemic goiter are short [3].

An enlarged thyroid gland (thyroid gland) is a change in its size, mass, volume. Among endocrine diseases of children, it is the dysfunction of the thyroid gland that takes the first place. The main reason is insufficient intake of iodine in the child's body during pregnancy and after birth.

At the same time, 740 million people have endemic goiter, which is 13% of the total population, and 43 million suffer from mental retardation, which is a consequence of iodine deficiency [2,4,8]. Thyroid ultrasound is the most common, extremely useful, safe and cost effective way to visualize the thyroid gland and its pathology [4]. Ultrasound allows you to fully judge the location of the thyroid gland, characterize its shape, size, volume, boundaries, contours, internal structure, identify focal pathology, anatomical features of its structure and location, assess the blood supply of both the entire gland and its individual sections.

The aim was to study and carry out a comparative assessment of morphological changes in the thyroid gland in children 4-5 years of age living in the Bukhara region.

Material and research methods.

Ultrasound examination was carried out on the basis of the Bukhara Regional Endocrinological Dispensary (№. 420 01/29/2020) and was devoted to the study of the ultrasound anatomy of the thyroid gland. The study was carried out on a SONOACE R3-RUS apparatus with linear (7.5 MHz) and convex (3.5 MHz) transducers.

Ultrasound biometry of the thyroid gland was performed according to the unified technique of J. Brunn (1981) in modification (A.F. Tsyb et al., 1990). The volume of the thyroid gland was calculated using the formula J. Brunn (1981):

$$TO = (D \cdot T \cdot W \text{ of the right lobe} + D \cdot T \cdot W \text{ of the left lobe}) \cdot 0.479.$$

where TO is the thyroid volume;

D - length,

T - thickness;

W - lobe width

0,479 — correction factor.

Mathematical processing was carried out directly from the general data matrix Excel 7.0 using the capabilities of the STTGRAPH 5.1 program, the indices of the standard deviation and the error of representativeness were determined.

Results and discussion.

Determination of the size of the thyroid gland according to the data of ultrasound examination showed that the length of the thyroid gland in girls of 4 years old varied from 40,0 mm to 53,1 mm, on average $44,2 \pm 1,00$ mm, and in boys of the same age from 33,0 to 64,0 mm, on average $48,6 \pm 2,38$ mm, and the width of the thyroid gland in girls is from 9,0 mm to 11,0 mm, on average $9,6 \pm 0,15$ mm, in boys the same age from 8,5 mm to 11,5 mm, on average $9,8 \pm 0,23$ mm, the thickness of the thyroid gland in 4-year-old girls varied from 9,0 mm to 10,5 mm, on average $9,7 \pm 0,12$ mm, and in boys from 8,5 mm to 13,0 mm, on average $10,5 \pm 0,35$ mm. The average volume of the thyroid gland in girls as a whole was $1,9 \pm 0,07$ cm³, and in boys – $2,4 \pm 0,19$ cm³.

Ultrasound examinations of 5-year-old children showed that the length of the thyroid gland in 5-year-old girls varied from 40,2 mm to 56,0 mm, on average $48,9 \pm 1,23$ mm, and in boys of the same age from 40, 0 to 58,1 mm, on average $48,9 \pm 1,39$ mm, and the width of the thyroid gland in girls is from 8,5 mm to 11,0 mm, on average $9,3 \pm 0,19$ mm, in boys of the same age from 8,0

mm to 11,0 mm, on average $9,5 \pm 0,23$ mm, the thickness of the thyroid gland in 5-year-old girls varied from 8,5 mm to 11,5 mm, on average $9,9 \pm 0,23$ mm, and in boys from 9,5 mm to 13,0 mm, on average $11,1 \pm 0,27$ mm. The average volume of the thyroid gland in girls as a whole was $2,2 \pm 0,14$ cm³, and in boys – $2,5 \pm 0,19$ cm³.

Findings. Judging by the data obtained, when examining the thyroid gland by ultrasound, boys of 4-5 years old have relatively high rates in all parameters provided for in the study of the thyroid gland compared to girls of the same age.

LITERATURE

1. Antonova A.A. Comparative characteristics of physical development of children / A.A. Antonova, S.N. Chentsova, V.G. Serdyukov // Astrakhan. honey. Journal. - 2012. - No. 4. - P. 26 - 29.
2. Balabolkin, M.I. Fundamental and clinical thyroidology: hands. / M.I. Balabolkin, E.M. Klebanova, V.M. Kreminskaya. - M.: Publishing house "Medicine", 2007. - S. 66-674.
3. Blum Manfred / Ultrasonography of the Thyroid//4-11, 2020.
4. Dedov I.I. Iodine deficiency is a threat to the health and development of children in Russia. Ways to solve the problem // 2006. - P 4-123.
5. Griffin, J. Physiology of the endocrine system / J. Griffin, C. Ojeda. - M.: "Binom. Knowledge laboratory", 2008. - 357 p.
6. Sencha A.N. Ultrasound examination of the thyroid gland. Step by step. From simple to complex. Monograph // Moscow: MEDpress-inform, 2019. - 208].
7. Segni Maria/ Disorders of the Thyroid Gland in Infancy, Childhood and Adolescence// 3-18, 2017.
8. Shaveva V.A., YuZakhov R.M., Uzdenova Z.Kh. et al, Correlation of somatic diseases in adolescents with goiter transformation // Reproductive health of children and adolescents - 2014-N 1.- C- / 50-58.
9. Temirova N.R., Teshayev Sh.J. Characterization of morphometric and ultrasound features of the thyroid gland in children with endemic goiter // New day in medicine - scientific journal. 2/1 (29/1) 2020.S. 126-128.
10. Temirova N. R. , Teshayev SH. J. NOVATEUR PUBLICATIONS JournalNX- A Multidisciplinary Peer Reviewed Journal ISSN No: 2581 - 4230 VOLUME 6, ISSUE 10, Oct. -2020
11. Zimmermann, M.B. Iodine Deficiency / M.B. Zimmermann // Endocrine Rewievs. – 2009. – Vol. 30. – P. 376-408.
12. Zimmermann, M.B. Symposium on «Geographical and geological influences on nutrition». Iodine deficiency in industrialised countries / M.B. Zimmermann // Proceedings of the Nutrition Society. – 2010. – Vol. 69. – P. 133-143.
13. Rustamovna, T. N. (2020, December). Comparative features of morphometric changes in the ultrasonic anatomy of the thyroid and physical development of children 9 years of age. In Archive of Conferences (Vol. 12, No. 1, pp. 5-6).

14. Temirova, N. R. (2021, January). COMPARATIVE FEATURES OF ULTRASOUND ANATOMY OF THE THYROID GLAND AND ANTHROPOMETRIC PARAMETERS IN CHILDREN 7 YEARS OF AGE. In Archive of Conferences (pp. 32-33).
15. Rustamovna, T. N. (2021). Ultrasound anatomy of the thyroid gland children 4–5 years old living in the bukhara region. *ACADEMICIA: AN INTERNATIONAL MULTIDISCIPLINARY RESEARCH JOURNAL*, 11(2), 348-351.
16. Rustamovna, T. N. (2022). THE RELATIONSHIP OF THE THYROID GLAND IN CHILDREN WITH ORGANOMETRIC DIMENSIONS AND INDICATORS OF THEIR PHYSICAL DEVELOPMENT.
17. Temirova, N. R. (2022). MORPHOMETRIC INDICATORS OF GROWTH AND DEVELOPMENT OF CHILDREN IN ENDEMIC AREAS. *British Medical Journal*, 2(1).
18. Темирова, Н. Р. (2021). Органометрических Изменений Щитовидной Железы У Детей В Возрастном Аспекте. *BARQARORLIK VA YETAKCHI TADQIQOTLAR ONLAYN ILMIY JURNALI*, 1(6), 840-852.
19. Temirova, N. R. (2022). MORPHOMETRIC INDICATORS OF GROWTH AND DEVELOPMENT OF CHILDREN IN ENDEMIC AREAS. *British Medical Journal*, 2(1).
20. ТЕМИРОВА, Н. Р. (2022). ҚАЛҚОНСИМОН БЕЗИ МОРФОГЕНЕЗИНИ БОЛАЛАРНИНГ ЖИСМОНИЙ РИВОЖЛАНИШ КЎРСАТКИЧЛАРИ БИЛАН ЎЗАРО БОҒЛИҚЛИГИ. *ЖУРНАЛ БИОМЕДИЦИНЫ И ПРАКТИКИ*, 7(2).
21. ТЕМИРОВА, N., & ТЕСНАЕВ, S. (2020). Comparative Characteristics of the Sizes of the Thyroid Gland and the Parameters of the Physical Development of Children 11 and 12 Years of Age. *Journal Impact Factor: 7.223*, 43.