



RELATIONSHIP OF THYROID GLAND MORPHOGENESIS WITH CHILDREN'S PHYSICAL DEVELOPMENT INDICATORS

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<https://doi.org/10.5281/zenodo.11398741>

ARTICLE INFO

Qabul qilindi: 20-May 2024 yil

Ma'qullandi: 25-May 2024 yil

Nashr qilindi: 31-May 2024 yil

KEY WORDS

*thyroid gland, ultrasound
examination, anthropometric
indicators.*

ABSTRACT

The article presents the results of the study of ultrasound anatomy of the thyroid gland and indicators of physical development in the first period of childhood. The study was conducted among 3-5 year old boys. Organometric dimensions and size of the thyroid gland vary with age. The nature and strength of the direct relationship between the thyroid ultrasound indicators and the morphometric measurements of different parts of the body was determined by the correlation coefficient. Thus, the strong correct correlation coefficient between gland volume and anthropometric parameters is $r = 0.9$.

Relevance of the topic. It is known that the endocrine system occupies one of the main places for the development of mankind. The function of the thyroid gland is very important for the growing organism, which is especially evident in the first and second periods of childhood [1,6]. In recent years, the analysis of scientific sources has shown that great attention is paid to the problem of physical, sexual and intellectual development of modern children in regions with iodine deficiency [8]. Thyroid function is affected by many factors, including dietary iodine intake, environment, gender, and age. The change in the size of the thyroid gland, in turn, has a direct effect on anthropometric indicators, i.e., body mass, height, body mass index, visceral fat, and body surface area [3, 10]. One of the important indicators of children's health is physical development [12]. According to scientific sources, changes in the physical development of children can be manifested as a result of iodine deficiency in the body [2,7]. More than 1.9 billion people of the world's population, i.e. 31.0% of middle-aged people and 29.8% of school-age children, live in iron-deficient areas [9]. Iodine deficiency and various levels of goiter endemicity have been found in most regions of Uzbekistan, including the Bukhara region [4].

Although the increase in the level of mild and moderate iodine deficiency in children leads to a decrease in their intellectual potential, there are no obvious clinical symptoms [6,8,10].

The ultrasound method is useful, practical and safe in evaluating the size of the thyroid gland [5]. In the daily practice of a modern doctor, it is very important to study the information about the limits of anatomical variation of the gland in order to further improve the diagnostic process in order to diagnose thyroid gland diseases using ultrasonography, to

determine the parts and total volume of the thyroid gland under normal conditions. Local and foreign scientists recognize the existence of specific characteristics of the thyroid gland [11].

Taking into account the above, it should be noted that despite the existence of a number of studies on the ultrasound anatomy of the thyroid gland, the relationship of these indicators with the physical development of children has not been sufficiently studied. The results of the study allow ultrasound doctors to formulate recommendations on the correlation of anatomical indicators of the thyroid gland depending on age.

The purpose of the study: to study the characteristics of organometric measurements and anthropometric indicators of the thyroid gland in 3-5-year-old boys and their age-related correlation (in the case of Bukhara region).

Material and research methods. All the children involved in the research were pupils of 53 state and private pre-school educational institutions named "Bukhara Stars" in the city of Bukhara. These children participated in scientific research with parental consent and were stratified by age. Enough boys (from $n=20$ to $n=39$) were included in all age groups of children, which allowed for statistical processing of the obtained material and reliable results.

Ultrasound examination was carried out in the endocrinology dispensary of Bukhara region. The organometric dimensions of the thyroid gland were determined during the examination. The research was conducted using the MINDRAY DCN6 (3.5 MHz) linear and convex device.

Anthropometric examination of children was carried out in the medical rooms of preschool educational institutions, with the participation of a doctor and a nurse of this institution. Height, body weight and chest measurements were determined in an anthropometric study.

Pearson's method was used to find the correlation coefficient.

Results and analysis. The results of the research showed that in 3-year-old boys, the length of the right part of the thyroid gland is from 1.40 to 2.50 cm, the average is 1.94 ± 0.68 cm, the width of the organ is from 0.82 to 1.0 cm, the average - equal to 0.91 ± 0.12 cm, and the thickness is from 0.90 to 1.30 cm, on average - 1.10 ± 0.25 cm. At this age, the volume of the left hemisphere of the right lobe is from 0.49 to 1.56 cm³, the average is 0.90 ± 0.07 cm³. The length of the thyroid gland in these young boys is from 1.37 to 2.40 cm, the average is 1.89 ± 0.62 cm, the width of the left lobe is from 0.80 to 1.0 cm, the average is 0.89 ± 0.12 cm, and the thickness ranges from 0.86 to 1.28 cm, with an average of 1.05 ± 0.27 cm. The volume of the thyroid gland varies from 0.45 to 1.47 cm³, the average is 0.85 ± 0.06 cm³ and according to us, the height of si ranges from 0.14 to 0.22 cm, the average is 0.18 ± 0.05 cm.

In 4-year-old boys, the length of the right lobe of the thyroid gland is from 1.50 to 2.80 cm, the average is 2.26 ± 0.62 cm. The width of the right lobe is from 0.90 to 1.10 cm, the average is 0.99 ± 0.10 cm. It was found that the thickness of the gland is from 0.95 to 1.50 cm, the average is 1.24 ± 0.29 cm. The volume of the right part of the thyroid gland ranges from 0.61 to 2.21 cm³, the average is equal to 1.38 ± 0.08 . The results of the ultrasound measurements of the prostate gland showed that the length was from 1.47 to 2.70 cm, the average was 2.18 ± 0.58 cm, the width was from 0.88 to 1.08 cm, the average was 0. It is 94 ± 0.10 cm. The thickness of each piece is from 0.90 to 1.40 cm, average - 1.15 ± 0.24 cm. The volume of the thyroid gland at this age ranges from 0.58 to 1.96 cm³, the average is 1.13 ± 0.07 cm³ and The height of the gland varies from 0.15 to 0.26 cm, and the average is 0.19

±0.05 cm .

During research, In 5-year-old boys, compared to 3- and 4-year-old boys ($P < 0.05$), significant increases in the size of the right lobe of the thyroid gland were noted . In 5-year-old boys, the length of the right lobe of the thyroid gland is from 1.65 to 3.0 cm, the average is 2.52 ± 0.59 cm, the width is from 0.95 to 1.25 cm, the average is 1.08 ± 0.12 cm was found to have changed. The length of the right lobe is from 1.10 to 1.60 cm, the average is 1.35 ± 0.23 cm. The volume of the right lobe of the thyroid gland is from 0.83 to 2.87 cm³ , the average is 1.76 ± 0.08 cm³ . In 5-year-old boys , the length of the left lobe of the thyroid gland is from 1.60 to 2.90 cm, the average is 2.44 ± 0.51 cm, the width is from 0.94 to 1.20 cm, the average is 1.07 ± 0.10 cm and thickness from 1.0 to 1.50 cm, average - 1.25 ± 0.23 cm . The volume of the left lobe of the thyroid gland in 5-year-old boys is from 0.72 to 2.50 cm³ , the average is 1.56 ± 0.07 cm³ , and the height of the thyroid gland is from 0.16 to 0.30 cm, the average is 0.23 It is equal to ±0.05 cm ..

At the age of 3, the results of the physical development of the boys were satisfactory: the height ranged from 86.7 to 94.7 cm, the average was 90.5 ± 0.37 cm, the body weight was from 13.2 to 16.3 kg, the average was 14.8 ± 0.19 kg. It was found that with the growing age of the child, his physical development indicators, especially the morphometric indicators of the chest, also increase. In 3-year-old boys, the size of the chest during a non-breathing pause is from 50.6 to 55.8, on average - 53.4 ± 0.32 cm, the circumference of the chest at the peak of breathing is from 53.3 to 58.9 cm, on average - 55.5 ± 0.35 cm, and during full exhalation, the chest size ranges from 47.7 to 54.2 cm, reaching an average of 52.7 ± 0.42 cm.

of 4-year-old boys were not significantly different from those of 3-year-old boys ($P > 0.05$). Height is from 91.5 to 101.7 cm, the average is 95.6 ± 0.35 cm, body weight is from 14.4 to 20.7 kg, the average is 17.7 ± 0.30 kg. For boys of this age, when not breathing, that is, during a pause, the circumference of the chest is from 51.4 to 56.1 cm, on average - 54.2 ± 0.23 cm, the size of the chest at the peak of breathing is from 54.2 to 59.5 cm, average - 56.6 ± 0.25 cm, and during full exhalation, the chest size ranges from 48.2 to 55.4 cm, with an average of 53.8 ± 0.35 cm.

The height of 5-year-old boys ranged from 99.7 to 112.4 cm, and the average was 106.6 ± 0.50 cm. The body weight of children of this age ranges from 17.3 to 23.2 kg, the average is 20.6 ± 0.23 kg. In the morphometric dimensions of the chest of 5-year-old boys, significant reliable data were found ($P \leq 0.05$). The circumference of the chest of 5-year-old boys at rest is from 53.1 to 58.7 cm, the average is 55.1 ± 0.22 cm, the circumference of the chest at the peak of respiration is from 55.3 to 60.3 cm, the average is 57, It is 3 ± 0.20 cm, and the circumference of the chest at full exhalation was 51.2 to 56.2 cm, the average was 54.4 ± 0.19 cm.

Summary

Thus, based on the obtained results, it can be said that as the age of children increases, the organometric dimensions of the thyroid gland and indicators of physical development also increase. A strong correlation coefficient between gland volume and anthropometric parameters was found to be $r = 0.9$.

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