IJIMM, Volume 2, Issue 5, 2024
ISSN: 2995-5319
http://medicaljournals.eu/index.php/IJIMM

INTERNATIONAL JOURNAL OF
INTEGRATIVE AND
MODERN MEDICINE

Morphometric basis of deep bite in children with chronic respiratory diseases

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Abstract: Everyone knows that the present appearance of a person plays an important role in the formation of personality. The desire to have a beautiful smile, the correct bite is an incentive to contact an orthodontist, in order to correct various types of dentoalveolar anomalies (DAA). The identification of the morphofunctional community of changes in the dentofacial system (DFS) and the upper respiratory tract (URT) is an important problem in theoretical and practical dentistry, to which many scientists have attracted.

Keywords: diagnostics, formation of organs of the bones of the dentition, frequency of occurrence.

Introduction

In recent years, a significant amount of work has appeared on the study of the relationship between the size of the head and somatotypes and proportions of the human body. [1, 3, 5, 8, 11, 17]. However, as the author [9, 15, 16] points out, anthropometric studies of recent years have shown that the physical status of modern man has undergone certain changes compared to that presented in the works of the mid-20th century and one of the main reasons is that the works devoted to physical development, more attention is paid to the somatotype and much less to the head.

Everyone knows that the present appearance of a person plays an important role in the formation of personality. The desire to have a beautiful smile, the correct bite is an incentive to contact an orthodontist, in order to correct various types of dentoalveolar anomalies (DAA).

The growth and development of the human body from the stage of the embryo to its adult state is a very complex phenomenon that undergoes many changes under the neuro-humoral mechanisms controlling the differentiation, development and maturation of organs and systems. The growth parameters of various parts of the human body can be influenced by various causes, both physical [4, 5, 12, 17], mental [6, 16], information loads [11, 14], and pathological [2, 6, 4, 7]. According to the author [10, 12, 13], in children and adolescents, female gains in the general growth of the body appear at 7, 12-13 years old, growth gains in the upper part of the face - 11 and 14 years old, lower third - in 11 and 15; the sagittal diameter of the head also increases evenly.

The purpose of this study is to determine the morphometric features in children with chronic pathologies of the upper and middle respiratory system.

Material and research methods: To study and evaluate the morphometric parameters of the head, face, DFS, bone and tooth age in children with ChRSP, we took 480 children of both sexes aged 6 to 18 years (I group) living in the city of Bukhara; of which 250 boys (52.1%) and 230 girls (47.9%); to compare the obtained morphometric parameters, a group of practically healthy (group II) was taken, the number

of 300 children of both sexes aged 6 to 18 years; 185 boys (61.6%) and 115 girls (38.33%); the examined children were distributed by the age category of the examined (table №1).

Table number 1

According to the age group of the children surveyed, n = 780

Age	Boys		Girls		Total
	Healthy children	Children with ChRSP	Healthy children	Children with ChRSP	
6-9	50	75	35	71	231
10-13	65	80	35	79	259
14-18	70	95	45	80	290
Total	185	250	115	230	780

The study of morphometric data on the physical development of all examined children who applied to a specialist and were partially registered in the dispensary of the regional children's and adult multidisciplinary hospitals, and the departments of Orthopedic Dentistry and Orthodontics, Otorhinolaryngology and Pediatrics of the Bukhara State Medical Institute

The results obtained and their discussion. The primary parameters of physical development include standing standing, body weight and chest circumference in a pause: As can be seen, the results of the study in healthy children showed that the growth in 6-10 year old male children ranged from 114.7 sm up to 134.1 sm, averaging 124.4 ± 0.48 sm. When measured, body weight ranged from 15.8 kg to 31.6 kg, on average it was equal to 24.6 ± 0.33 kg. The chest circumference ranged from 55.4 to 72.9 sm, on average - 62.7 ± 0.38 sm. In 6-10 year old children, the female span ranged from 120.0 sm to 135.4 sm, averaging 128, 8 ± 0.92 sm; body weight from 18.1 kg to 35.2 kg, averaging 25.8 ± 0.22 kg; chest circumference ranged from 57.4 to 73.9 sm, on average - 61.0 ± 0.56 sm.

As a result of studies, it was found that the growth in 10-13 year old male children ranged from 134.7 sm to 155.2 sm, averaging 143.9 ± 0.26 sm. Body weight ranged from 17.8 kg to 50, 4 kg, on average it was equal to 37.0 ± 0.98 kg. The chest circumference is in the range from 60.4 to 77.1 sm, on average - 68.2 ± 0.31 sm. For girls 10-13 years old, the growth ranged from 134.4 sm to 159.6 sm, averaging 145.4 ± 0.53 sm; body weight ranged from 25.2 kg to 52.4 kg, on average it was 34.2 ± 0.97 kg; the chest circumference is in the range from 60.6 to 78.5 sm, on average - 69.5 ± 0.36 sm.

Studies have shown that growth in 14-18 year old male children ranged from 148.5 sm to 178.8 sm, averaging 165.1 ± 0.33 sm. Body weight ranged from 49.3 kg to 69.4 kg, on average, was equal to 61.2 ± 0.77 kg. When measuring the chest circumference is in the range from 66.8 to 95.5 sm, on average - 81.0 ± 0.46 sm. The growth in girls aged 14-18 years old ranged from 150.4 sm to 182.4 sm, averaging 166.1 ± 0.23 sm; body weight ranged from 50.3 kg to 71.4 kg, averaging 62.8 ± 0.37 kg; the chest circumference is in the range from 68.8 to 105.5 sm, on average - 93.0 ± 0.26 sm.

The results of the study in patients with ChRSP showed that growth in 6-10 year old male children ranged from 108.5 sm to 133.2 sm, averaging 122.2 ± 0.28 sm. When measured, body weight ranged from 14, 0 kg to 30.6 kg, on average it was equal to 22.6 ± 0.13 kg. The chest circumference was from 50.4 to 70.9 sm, an average of 60.2 ± 0.34 sm. Height in 6-10 year old female children ranged from 111.0 sm to 136.1 sm, an average of 125, 7 ± 0.72 sm; body weight ranges from 18.1 kg to 38.1 kg, averaging 24.2 ± 0.42 kg; the chest circumference ranged from 53.3 to 69.9 sm, an average of 57.3 ± 0.47 sm.

As a result, it shows that the growth in 10-13 year old male children ranged from 130.4 sm to 153.2 sm, averaging 141.8 ± 0.16 sm. Body weight ranged from 17.1 kg to 48.4 kg, on average, was 36.0 ± 0.48 kg. The chest circumference ranges from 55.4 to 74.1 sm, an average of 64.5 ± 0.21 sm. At the same age, girls' growth ranged from 131.2 sm to 157.4 sm, averaging 143 5 ± 0.63 sm; body weight ranged from 23.2 kg to 52.8 kg, an average of 33.2 ± 0.47 kg; the chest circumference is in the range from 58.4 to 75.3 sm, on average - 66.9 ± 0.86 sm.

Table №2.

Morphometric parameters of a person who is healthier than children and children with ChRSP according to their "principle of the golden ratio"

Age and sex / Param.person (sm)		6-9 age		10-13 age		14-18 age	
		Boys	Girls	Boys	Girls	Boys	Girls
Physio. face height	Healthy	17,1±0,10	17,3±0,12*	17,2±0,10	17,5±0,12*	18,8±0,40	19,2±0,02*
	ChRSP	16,6±0,07	17±0,05*	16,5±0,08	17,0±0,05*	17,2±0,02	17,4±0,05*
MHF	Healthy	11,5±0,10	11,2±0,12	11,7±0,13	11,3±0,12	11,9±0,22	11,8±0,01
	ChRSP	11,1±0,06	11,2±0,04*	11,0±0,07	11,5±0,04*	11,6±0,22	11,6±0,20*
Height in / part of the face	Healthy	5,8±0,05	5,8±0,05	5,8±0,05	5,8±0,05	5,9±0,08	5,9±0,08
	ChRSP	5,6±0,03	5,7±0,02	5,7±0,03	5,7±0,02	5,9±0,07	5,9±0,08
Height of media / parts of the face	Healthy	5,7±0,05	5,9±0,05*	5,8±0,05	5,9±0,05*	5,9±0,08	6,0±0,08*
	ChRSP	5,5±0,03	5,8±0,02*	5,6±0,03	5,8±0,02*	5,8±0,08	5,9±0,01*
Height n / a part of the face	Healthy	5,7±0,05	5,9±0,05*	5,8±0,05	5,9±0,05*	6,0±0,05	6,0±0,05*
	ChRSP	5,7±0,03	5,6±0,02	5,7±0,03	5,6±0,02	5,8±0,08	5,8±0,07
Fibonacci number	Healthy	1:1,611	1:1,60	1:1,619	1:1,60	1:1,680	1:1,70
	ChRSP	1:1,585	1:1,630	1:1,601	1:1,630	1:1,620	1:1,640

Note: * - confidence indicator (P <0.05) compared with the previous age.

Thus, the study showed that MHF and PhHF in children with ChRSP are smaller in size than in healthy children. The growth rate of the morphometric parameters of the face in healthy children is almost the same at regular intervals of time, and in children with ChRSP they change spasmodically. In healthy male children, the growth rate is lower than with male children suffering from ChRSP. It has been established that the ratio of the upper, middle and lower parts of the face in girls of all groups is closer to the "principle of the golden ratio" compared to boys. In children with ChRSP, especially in boys, the ratio of the parts of the face does not correspond to the Fibonacci number.

Morphometric parameters of the head and DFS of children of both sexes of 6-9, 10-13 and 14-18 age groups, healthy children and children ChRSP: he results obtained on the head and DFS of healthy children show that in a 6–9-year-old group of male children, the HG ranged from 48.5 to 60.1 sm, on average - 51.8 ± 0.24 sm, LHD from 13.5 to 16,9 sm, on average - 15.0 ± 0.42 sm, THS varied from 11.5 to 14.0 sm, on average - 12.8 ± 0.56 sm, TFS was from 9.6 to 13.8 sm , on average - 11.4 ± 0.18 sm, VDH ranged from 10.8 to 14.1 cm, on average - 11.8 ± 0.1 cm.

Head and DFS indices in a 6–9 year old group of male children, patients with ChRSP the HG fluctuated from 45.5 to 52.6 sm, on average –48.8 ± 0.22 sm, LDH from 12.5 to 16.9 sm , on average - 14.8 ± 0.14 sm, THS ranged from 11.5 to 14.0 sm, on average - 12.0 ± 0.16 sm, TFS was from 9.4 to 12.8 sm, on average - 11.2 ± 0.06 sm, VHS ranged from 10.2 to 13.1 sm, on average - 12.0 ± 0.04 sm.

The trend of a gradual increase in the size of the head and face continued in the health of male children 10-13 years old, the data showed that the exhaust gas ranged from 50.0 to 58.4 sm, which averaged 54.9 ± 0.14 sm; LDH ranged from 16.8 to 19.6 sm, an average of 17.8 ± 0.03 sm; THS ranged from 12.1 to 18.8 sm, on average it was 15.5 ± 0.19 sm; TFS was in the range of 10.6-16.6 sm, an average of 13.6 ± 0.10 sm and VHS ranged from 12.6 to 16.5 sm, which averaged 15.1 ± 0.10 sm.

Conclusions.

1. Body weight in healthy children aged 6-9 years increases faster than body length; in males from 6-9 years, growth increases by 1.57 times, in females 1.64 times; and body weight is 2.71 times in boys, and in women is 2.79 times. The dimensions of the circumference of the chest in a pause of 10-13 years in healthy males increases by 1.44 times, and in females -1.45 times.
2. It was revealed that MHF and PhHF in children with ChRSP are less than in healthy children. The growth rate of the anthropometric parameters of the face in healthy children is almost the same at regular intervals of time, and in children with ChRSP they change spasmodically.
3. It was revealed that the ratio of the upper, middle and lower parts of the face in girls of all groups is closer to the "principle of the golden ratio", compared with boys. In children with ChRSP, especially in boys, the ratio of the parts of the face does not correspond to the Fibanacci number: An analysis of bone age in children with ChRSP showed that their bone age is later than in healthy children; from 6 months (6-9 years) to 2.5-3 years (at 10-13 years).

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