

Analysis of Anthropometric Parameters of the Craniofacial Region in Children with Scoliosis

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Abstract: Scoliosis is a lateral curvature of the spine, which is dangerous for severe complications, especially for a growing child's body. In 80% of the number of people with this pathology, idiopathic scoliosis is diagnosed. Scoliosis is a disease that is not only accompanied by curvature of the spine, but also causes various deformities in other parts of the child's body.

Keywords: scoliosis, children, anthropometry, zygomatic diameter, head circumference, mandibular diameter.

Introduction

In modern conditions, the study of morphometric parameters of growth, development and condition of the head and facial skeleton of a child can be a methodological basis for the development and improvement of anthropometric methods of diagnosis and reconstruction in medicine [1, 2]. With increasing age of the child, various changes of the head and the dental system, as well as the bite, occur, which are associated with the climatic and geographical features of the region of residence, the nature of nutrition and the change of milk teeth to permanent ones [3, 4].

The aim of the study is to study the anthropometric parameters of the head and face of children with scoliosis and compare these data with the parameters of healthy children.

Materials and methods. 140 children were examined, including 100 children with scoliosis (40 boys and 60 girls) and 140 healthy (70 boys and 70 girls). During the study, the methodology of studies of anthropometric indicators of the head and face of all children was used according to the methodology (methodological recommendations, 1998) by N.H.Shomirzayeva, S.A.Ten and I.Tukhtanazarova). Measurements were carried out using a centimeter tape and a special compass.

Результаты. As a result of the studies, it was revealed that in 8-year-old male children, the longitudinal diameter of the head ranged from 15.9 cm to 16.9 cm, on average - 16.7 ± 0.24 cm, the transverse size of the head from 12.6 cm to 13.6 cm, on average - 13.6 ± 0.15 cm, head circumference from 50.8 cm to 53.2 cm, on average - 53.1 ± 0.25 cm, transverse forehead size from 10.8 cm to 11.7 cm, on average - 11.8 ± 0.25 cm, zygomatic diameter from 8.7 cm to 10.5 cm, on average - 9.86 ± 0.20 cm, mandibular diameter from 7.6 cm to 8.7 cm, on average - 8.0 cm, morphological height of the face from 11.2 cm to 12.3 cm, on average - 11.8 cm, the physiognomic height of the face from 16.8 cm to 17.8 cm, on average - 17.6 cm.

In 9-year-old male children, the longitudinal diameter of the head ranged from 16.2 to 17.2 cm, on average - 17.0 ± 0.24 cm, the transverse size of the head from 12.8 to 14.3 cm, on average - 14.0 ± 0.15 cm, head circumference from 50.8 cm to 54.2 cm, on average - 54.1 ± 0.25 cm,

transverse forehead size from 11.6 cm to 12.1 cm, on average - 11.9 ± 0.25 cm, zygomatic diameter from 8.8 cm to 10.5 cm, on average - 9.86 ± 0.20 cm, mandibular diameter from 7.7 cm to 8.7 cm, on average - 8.1 cm, morphological height of the face from 11.2 cm to 12.3 cm, in on average - 12.0 cm, the physiognomic height of the face is from 17.0 cm to 18.2 cm, on average - 17.9 cm.

Indicators 8-year-old male children with scoliosis had the same growth trend as 7-year-old children ($P < 0.05$). The longitudinal diameter is on average 15.61 ± 0.28 (from 15.2 to 15.9 cm), the transverse head size is 12.5 ± 0.28 cm (from 12.0 to 12.7 cm), the head circumference is 52.8 ± 0.41 (from 52.3 to 53.0 cm), the transverse forehead size is 11.40 ± 0.23 cm, the zygomatic diameter is 9.75 ± 0.17 cm, mandibular diameter - 7.80 ± 0.26 cm, morphological height of the face - 11.41 ± 0.32 cm, physiognomic height of the face - 16.80 ± 0.29 cm.

In 9-year-old male children with scoliosis, the longitudinal diameter of the head ranged from 15.6 to 16.9 cm, on average 16.20 ± 0.30 , the transverse size of the head was 13.0 ± 0.30 cm (from 12.2 to 13.5 cm), the head circumference was 53.30 ± 0.38 (from 52.8 to 53.7 cm), the transverse size of the forehead was 11.60 ± 0.25 cm, zygomatic diameter - 9.78 ± 0.26 cm, mandibular diameter - 7.90 ± 0.33 cm, morphological height of the face - 11.59 ± 0.46 cm, physiognomic height of the face - 16.50 ± 0.25 cm.

In female children at the age of 8, the longitudinal diameter of the head ranged from 15.1 to 16.5 cm, on average - 15.8 ± 0.24 cm, the transverse size of the head from 11.0 to 12.8 cm, on average - 12.4 ± 0.15 cm, head circumference from 49.8 to 52.2 cm, on average - 51.8 ± 0.25 cm, transverse forehead size from 10.6 to 11.5 cm, on average - 11.0 ± 0.25 cm, zygomatic diameter from 8.6 to 10.4 cm, on average - 9.76 ± 0.20 cm, mandibular diameter from 7.4 to 8.2 cm, on average - 7.68 cm, morphological height of the face from 10.6 to 12.2 cm, on average - 11.5 cm, the physiognomic height of the face is from 16.2 to 17.5 cm, on average - 16.9 cm.

In female children at the age of 9, the longitudinal diameter of the head ranged from 15.1 to 16.5 cm, on average - 15.8 ± 0.24 cm, the transverse size of the head from 11.0 to 12.8 cm, on average - 12.4 ± 0.15 cm, head circumference from 49.8 to 52.2 cm, on average - 51.8 ± 0.25 cm, transverse forehead size from 10.6 to 11.5 cm, on average - 11.0 ± 0.25 cm, zygomatic diameter from 8.6 to 10.4 cm, on average - 9.76 ± 0.20 cm, mandibular diameter from 7.4 to 8.2 cm, on average - 7.68 cm, morphological height of the face from 10.6 to 12.2 cm, on average - 11.5 cm, the physiognomic height of the face is from 16.2 to 17.5 cm, on average - 16.9 cm.

The results of the study showed that in male children, the growth rate of the longitudinal diameter, transverse size and head circumference increase by 1.48, 1.73 and 1.53 times, respectively, and the transverse size of the forehead by 1.72 times. It follows from the above that the greatest rate of increase in the transverse size of the skull at the age of 9 (4.91%). The studies revealed that in female children, the growth rate of the longitudinal diameter and head circumference increase by 1.55 and 1.59 times, respectively, and the transverse size of the head and the transverse size of the forehead by 1.79 and 1.77 times, respectively.

Discussions

Studying the morphometric characteristics of the head in children in a comparative aspect Mirbabayeva S.A., Jeenbaev Zh.Zh. [79,pp.272-274] found that with age, sexual differences appear more significantly, in boys the growth of the circumference of the head occurred evenly, and in girls abruptly, especially at 8 years old. According to our data, in healthy children, the parameters of the head and face in children at the age of 10 are higher than in children with scoliosis.

According to I.I. Sattibayev [91,pp.74-77], 7-year-old children of Uzbek nationality had a head circumference of 52.7 ± 0.1 cm. In girls of the same nationality from 7 to 12 years old, the head circumference increased by an average of 2.3 cm (from 49.3 ± 1.2 to 51.6 ± 0.9 cm). Our studies

have shown that the head circumference in healthy 10-year-old girls is on average 54.21 ± 0.17 cm, and in girls with scoliosis is 1 cm less.

Conclusions. Thus, in children with scoliosis at the age of 10, the parameters of the craniofacial system are less than in healthy children. This is due to the fact that the bone system of children at this age is in the development stage, and scoliosis has a detrimental effect on the growth and development of the child.

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