



Anthropometric and clinical-dental condition of the maxillary system and oral organs in patients with cerebral palsy

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Resume.

Relevance. There is an increase in cerebral palsy (CP), based on this, the structure and frequency of dental pathologies in patients with CP are estimated, while morphometric parameters of the face (MP/F) and social factors of families are taken into account, the importance of the age group being a high-risk contingent for the development of pathology of the organs of the dental system (DS).

The aim of the study was to determine the morphological, clinical and dental condition of the maxillofacial organs in children and adolescents with CP.

Keywords: oral fluid, saliva, anthropometric biochemical composition of saliva, cerebral palsy, dental diseases.

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The analysis of the results obtained for the morphometric parameters of the face (FM/P) and facial vertical height (FV/H) in three age groups of boys with cerebral palsy (CP) shows an average of 15.0 ± 0.07 cm (growth rate 0.6%), while for girls, the average is 15.0 cm (growth rate 0.4%). In girls main group -3 (MG-3) with CP, the FMP parameter after 10-13 years decreased by 0.2 units, and the FV/H parameter also decreased in the boys' group of the same age. However, the FM/P in boys with CP aged 14-18 years remained unchanged, i.e., 15.2 ± 0.08 cm. At the same time, according to the control group (CG), FV/L in CG-1 and CG-3 boys fluctuated around 17.7 ± 0.10 cm (growth rate 2.4%), and in girls, the average was 17.8 ± 0.12 cm (growth rate 4.2%). According to the analysis of the results in Table No. 1, the measurements showed that FV/H and FM/P in children with CP are smaller than those in healthy children. The growth rates of the morphometric parameters in healthy children are almost identical over equal periods, whereas in children with CP, they change abruptly or remain unchanged. In healthy boys, the growth rates are lower than in boys with CP. It was established that the ratio of the upper, middle,



and lower parts of the face in girls of all groups is closer to the "golden proportion" compared to boys. In children with CP, especially in boys, the ratios of facial parts do not correspond to the Fibonacci sequence.

Table No.1. Morphometric parameters of the face of children and adolescents in accordance with their "golden proportion principle".

Age and gender Face parameters (cm)		6-9 years		10-13 years		14-18 years		
		мальчики boys	девочки girls	мальчики boys	девочки girls	мальчики boys	девочки girls	
PhH/F	КГ (CG)	ОГ (MG)	17,5±0,14*	17,8±0,20	17,8±0,02*	18,0±0,20	18,2±0,04*	
		ОГ (MG)	14,8±0,14	14,8±0,04*	15,2±0,03	15,2±0,08*	15,2±0,08	15,0±0,08*
MH/F	КГ (CG)		11,8±0,10	11,8±0,08	11,9±0,02	12,3±0,08	12,4±0,02	12,3±0,01
		ОГ (MG)	10,6±0,08	10,8±0,04*	11,2±0,08	11,0±0,02*	11,0±0,02	11,0±0,8*
HUP/F	КГ (CG)		6,0±0,04	6,2±0,06	6,4±0,08	6,6±0,08	6,6±0,06	6,9±0,04
		ОГ (MG)	5,0±0,01	5,2±0,02	5,1±0,03	5,3±0,01	5,2±0,06	5,2±0,04
HMP/F	КГ (CG)		5,8±0,05	5,9±0,02*	5,8±0,01	5,9±0,01*	6,2±0,04	6,4±0,04*
		ОГ (MG)	4,8,0±0,02	5,0±0,01*	4,9±0,08	5,2±0,04*	5,0±0,08	5,1±0,08*
HLP/F	КГ (CG)		5,8±0,04	6,0±0,02*	5,9±0,01	6,0±0,01*	6,2±0,02	6,0±0,01*
		ОГ (MG)	5,0±0,12	5,2±0,08	5,1±0,04	5,2±0,04	5,1±0,8	5,2±0,06
Fibonacci Numbers	КГ (CG)		1:1,60	1:1,54	1:1,61	1:1,44	1:1,68	1:1,80
		ОГ (MG)	1:1,405	1:1,608	1:1,400	1:1,606	1:1,355	1:1,280

Note: CG — control group; MG-main group; MP/F-morphometric parameters of the face; cerebral palsy-cerebral palsy; head circumference (C/H); longitudinal diameter of the head (LD/H); transverse size of the head (TS/H); vertical or height diameter of the head (VD/H); transverse size of the forehead (TS/H); zygomatic and mandibular diameter (ZM/D) ;morphological height of the face (MH/F) ;the physiognomic height of the face PhH/F; height of the upper part of the face (HUP/F); height of the middle part of the face (HMP/F); height of the lower part of the face HLP/F; * - confidence index (P <0.05) compared to the previous age.

Conclusion. Especially in MG-2, the proportions of the parts of the face do not correspond to the number of Fibonacci, MP/ F, with CP they are a contingent of high risk for deformation of the organs of the OC and bones of the DS. Based on the results of determining the bone age of the child, the obtained X-ray images were



compared with the standards of bone maturation according to special X-ray tables. It was established that in healthy male children aged 6-10 years, ossification centers appeared in the epiphysis of the ulna, at 10 years in the styloid process of the epiphysis of the ulna, and at 14 years the ossification center was found in the pisiform bone. It was also found that in boys with cerebral palsy (CP) at 6-9 years of age, ossification centers were visible only in the capitate and hamate bones of the wrist. At 10 years, ossification centers appeared in the epiphysis of the ulna, and at 14 years in the styloid process of the epiphysis of the ulna. In contrast, in a girl with CP, ossification centers were only visible in the capitate and hamate bones of the wrist, while ossification centers in the triquetral bones of the left hand wrist were observed at the beginning of the 6th year of life. Among the boys, in CG-1, ossification centers were found in the triquetral bones of the left hand wrist, in CG-2 in the styloid process of the epiphysis of the ulna, and in CG-3, the ossification center was found in the pisiform bone.

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