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STUDY OF TEETH HARD TISSUES STATE IN CHILDREN WITH DELAYED TEETH ERUPTION

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The results of the study are evident of high prevalence of the carious process in children with delayed tooth eruption: in children of 7 years old – 93.55 %, in children of 8 years old – 100 %. The intensity of decay of the deciduous teeth according to the decayed and filled teeth index in children of the main group of 7 years old was 4.68±0.35, in children of 8 years old – 4.94±0.23. The intensity of the carious process in the permanent teeth in children of the main group of 8 years according to the decayed, filled, and missing teeth index was 0.74±0.08. The data obtained are evidence of a higher prevalence and intensity of dental caries in children with delayed tooth eruption compared with indices of children whose tooth eruption occurred at term.

Key words: delayed teeth eruption, children, hard tissues of teeth, prevalence of dental caries, intensity of dental caries.

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ДОСЛІДЖЕННЯ СТАНУ ТВЕРДИХ ТКАНИН ЗУБІВ У ДІТЕЙ З ЗАТРИМКОЮ ПРОРІЗУВАННЯ ПОСТІЙНИХ ЗУБІВ

Результати дослідження свідчать про високу поширеність каріозного процесу у дітей з затримкою прорізування: у дітей 7 років – 93,55 %, у дітей 8 років – 100 %. Інтенсивність карієсу молочних зубів за індексом карієс–пломба зубів у дітей основної групи 7 років становила 4,68±0,35, у дітей 8 років – 4,94±0,23. Інтенсивність каріозного процесу постійних зубів у дітей основної групи 8 років за індексом карієс–пломба–видалені зуби була 0,74±0,08. Отримані дані свідчать про більш високу поширеність і інтенсивність карієсу зубів у дітей з затримкою прорізування в порівнянні з показниками дітей у яких прорізування зубів відбувалося в термін.

Ключові слова: затримка прорізування зубів, діти, тверді тканини зубів, поширеність карієсу зубів, інтенсивність карієсу зубів.

The work is a fragment of the research project "Correction of pathogenetic mechanisms of disorders of carbohydrate and lipid metabolism in the body and tissues of the oral cavity in patients depending on environmental and nutritional factors affecting carbohydrate and lipid metabolism", state registration No. 0118U006966.

Teeth eruption is characterized by the form of teeth crowns above the surface of the alveolar bone of the jaw and gums, and is a series of very complex and not fully understood physiological processes that take a long period of time during which the formation of the child's body and dentition takes place [1]. The eruption of permanent teeth occurs in the period from 5 to 14 years, when the deciduous teeth are replaced with permanent ones. Most studies show that the process of teeth eruption involves alveolar bone, dental follicles, osteoclasts, osteoblasts and multiple cytokines. Dental follicles regulate both resorption and alveolar bone formation, which is essential for teeth eruption [15].

Delayed teeth eruption is a complex, not fully studied physiological process controlled by the endocrine, nervous systems and often genetically determined [3, 7, 14, 15]. The effect of heredity, general somatic diseases, the presence of supernumerary teeth, early extraction, ankylosis of deciduous teeth, environmental factors and diet on delayed teeth eruption has been proven [4, 12, 13]. The important local determinants of delayed teeth eruption are the degree of formation of the root and periodontium, and the process itself is closely related to the growth of the skull and the body of the child overall [1]. Thus, delayed teeth eruption can affect the growth of the jaws and the bite formation of a child [6, 10]. Not infrequently, a failure to erupt at term is a manifestation of a disorder of the mineralization processes of the bone tissue and may indicate the presence of somatic pathology in a child [2, 8, 9, 11]. In the case of damage to deciduous teeth by caries, especially in complicated forms, if the pathological process involves the tissues surrounding the tooth root, the timing of the change of teeth vary negatively [1, 11]. Actual studies of the state of teeth hard tissues in children of early school age in Odessa with a delay in teeth eruption have not been carried out in recent years. Thus, the study of the state of the hard tissues of teeth in children with delayed teeth eruption is an urgent task of dentistry.

The purpose of the study was to research the peculiarities of teeth hard tissues state in children of 7 and 8 years old with delayed teeth eruption.

Materials and methods. 124 children of 7 and 8 years of both sexes were followed up. The main group included 31 children of 7 years with delayed teeth eruption in whom there were no permanent teeth and

31 children of 8 years with delayed teeth eruption in whom not more than 4 permanent teeth were erupted. The comparison group included 31 children of 7 years old and 31 children of 8 years old without somatic diseases in whom teeth eruption occurred at term.

The study was conducted on the basis of the Department of Pediatric Dentistry of Odessa National Medical University and the Department of Epidemiology and Prevention of Major Dental Diseases, Pediatric Dentistry and Orthodontics, State Establishment "The Institute of stomatology and maxillo–facial surgery National academy of medical sciences of Ukraine" (SE "ISMFS NAMS") under the conditions of dentist's room using a dental mirror and probe. The examination data were recorded in the cards of the dental examination of the child's oral cavity, developed at the department of pediatric dentistry of SE "ISMFS NAMS".

The prevalence of dental caries in children of each group was determined by the index of prevalence of dental caries. The intensity of the carious process in milk teeth was determined by the decayed–filled teeth (dft) and decayed–filled surfaces (dfs) indices, in the permanent teeth by the decayed–filled–missing teeth (DMFT) and decayed–filled–missing surfaces (DMFS) indices. The localization of carious cavities of deciduous teeth was assessed according to Black's classification [5].

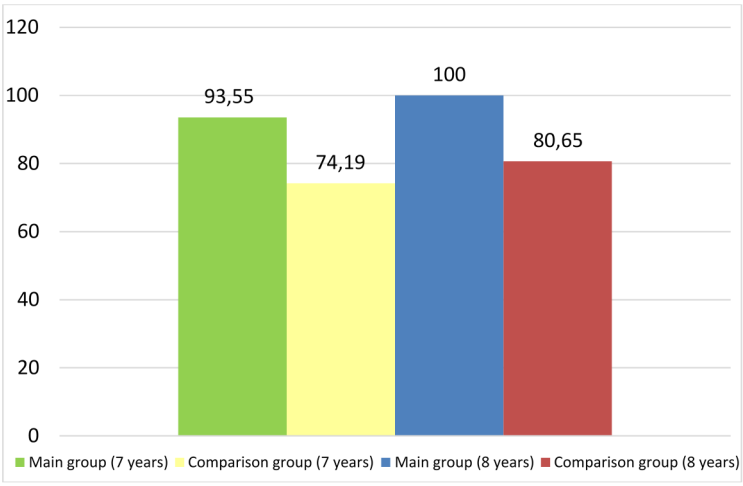

Fig. 1. The prevalence of dental caries in children of 7–8 years old, %.

Results of the study and their discussion. As a result of the studies there was established a higher prevalence of dental caries in children with delayed teeth eruption. Therefore, in children of 7 years of the main group, the index of prevalence of dental caries was 19.36 % higher than in children of the comparison group (fig. 1).

The intensity of decay of the deciduous teeth is presented in table 1 and table 2. In children of 7 years of the main group, dft was 4.68±0.35, which was by 91.02 % higher than the corresponding index in the comparison group, and the dfs index was 5.25±0.33, which was by 71.57 % higher than the value of the index in children of the comparison group.

Table 1

Intensity and structure of deciduous teeth decay in children of 7 years with delayed teeth eruption (M±m)

Groups	dft, points	dfs, points	d (carious cavities)	f (filled cavities)	Caries complications in the structure "d"
Comparison group 7–year–old (n=31)	2.45±0.23	3.06±0.28	1.52±0.14	1.58±0.15	0.22±0.02
Main group 7–year–old (n=31)	4.68±0.35	5.25±0.33	3.23±0.27	2.03±0.21	0.39±0.04
Average in Ukraine 7–8–year–old (n=1200)	3.56±0.43	–	–	–	–
	p<0.001 p_1<0.01 p_2<0.01	p<0.001	p<0.001	p>0.1	p<0.001

Note. p is an index of the reliability of differences between the main group and the comparison group; p_1 is an index of the reliability of differences between the comparison group and the Ukraine average; p_2 is an index of the reliability of differences between the main group and the Ukraine average.

While analysing the structure of decay of the deciduous teeth in children, we turned attention to the prevalence of the component "d" over the component "f". So, in children with delayed teeth eruption, the number of untreated carious cavities at 7 years old is 1.59 times more frequent, and at 8 years old children it is 1.40 times more often than the number of the filled cavities. In children of the comparison group of 8 years, the number of the filled cavities was 15.17 % more frequent than the number of untreated carious cavities.

Comparing the intensity of the carious process of deciduous teeth according to the dft index of 7–year–old children of the comparison group, the main group and the average values in Ukraine, we made the following observations: the values of the group of children without delayed teeth eruption were authentically lower than the average values of Ukraine (p_1<0.01) by 1.45 times, while the values of the main group were authentically higher by 1.31 times (p_2<0.01) from the average values of Ukraine.

Table 2

Intensity and structure of deciduous teeth decay in children of 8 years with delayed teeth eruption (M±m)

Groups	dft, points	dfs, points	d (carious cavities)	f (filled cavities)	Caries complications in the structure "d"
Comparison group 8–year–old (n=31)	2.68±0.26	3.19±0.31	1.45±0.15	1.67±0.14	0.28±0.03
Main group 8–year–old (n=31)	4.94±0.23	5.80±0.21	3.39±0.21	2.42±0.25	0.39±0.04
Average in Ukraine 7–8–year–old (n=1200)	3.56±0.43	–	–	–	–
	p<0.001 p_1<0.01 p_2<0.01	p<0.001	p<0.001	p<0.01	p<0.03

Note. p is an index of the reliability of differences between the main group and the comparison group; p_1 is an index of the reliability of differences between the comparison group and the Ukraine average; p_2 is an index of the reliability of differences between the main group and the Ukraine average.

In addition, it is necessary to note a large number of complications of decay of the deciduous teeth in the structure "d" in children with delayed teeth eruption compared to this index in children of the comparison group (in the main group of 7 years – 0.39±0.04 and in the comparison group of 7 years – 0.22±0.02).

When comparing the intensity of the carious process of deciduous teeth in 8–year–old children of the comparison group, the main group and average values in Ukraine, a similar condition was noted that we recorded in 7–year–old children. The intensity of the carious process in children of the comparison group was authentically lower (p_1<0.01) by 1.33 times. In children of the main group, the values were authentically higher (p_2<0.01) than the average values in Ukraine by 1.39 times.

The intensity of decay of the permanent teeth in children of 8 years is presented in table 3. It is necessary to emphasize the high value of the DMFT index in children with delayed teeth eruption despite the smaller number of the permanent teeth erupted in them. The DMFS index in children of the main group was 1.89 times higher than that in children of the comparison group. The DMFS index in children with delayed teeth eruption was 2 times higher than that in children of the comparison group. The number of carious cavities in children of the main group was 3.69 times more, and the number of filled cavities was by 17.14 % less than in children of the companion group.

Table 3

Intensity and structure of permanent teeth decay in children of 8 years with delayed teeth eruption (M±m)

Groups	DMFT index, points	DMFS index, points	D (carious cavities)	F (filled cavities)	M (extracted teeth)
Comparison group 8–year–old (n=31)	0.39±0.04	0.42±0.05	0.13±0.01	0.29±0.03	0
Main group 8–year–old (n=31)	0.74±0.08	0.84±0.07	0.48±0.05	0.35±0.03	0
Average in Ukraine 8–year–old (n=1800)	0.50±0.05	–	–	–	–
	p<0.001 p_1<0.1 p_2<0.001	p<0.001	p<0.001	p>0.1	

Note. p is an index of the reliability of differences between the main group and the comparison group; p_1 is an index of the reliability of differences between the comparison group and the Ukraine average; p_2 is an index of the reliability of differences between the main group and the Ukraine average.

Significant differences in the intensity of the carious process of hard tissues of permanent teeth according to the DMFT index of 8–year–old children of the comparison group and the main group compared with the average values in Ukraine were noted in children of the main group – more by 48 % (p_2<0.001) and the comparison group – less by 22 % (p_1 <0.1).

The results of the distribution of carious cavities of deciduous teeth by localization, according to Black's classification are presented in table 4.

Table 4

Distribution of deciduous teeth carious cavities according to Black's classification

Groups / Class by Black	7–year–old children		8–year–old children	
	Comparison group	Main group	Comparison group	Main group
Ⅰ class	42.11 %	40.69 %	40.96 %	41.83 %
Ⅱ class	22.37 %	16.55 %	28.92 %	21.57 %
Ⅲ class	11.84 %	15.17 %	10.84 %	13.07 %
Ⅳ class	7.89 %	20.00 %	6.02 %	17.65 %
Ⅴ class	15.79 %	7.59 %	13.26 %	5.88 %

All the examined children had carious cavities on the molars of primary teeth (Ⅰ and Ⅱ Black class). In children of the comparison groups, the number of cavities of deciduous teeth of Ⅲ class and IV class was less than in children of the main groups. This is due to the physiological replaceable incisors in children of comparison groups 7 and 8 years old. In addition, in children of the main groups, carious cavities of the IV class were detected more often than cavities of the Ⅲ class. In children of the comparison groups, the cavities

of the class were observed more often than the cavities of the IV class. This tendency in children with a delayed teeth eruption is explained by the involvement in the carious process not only of the proximal surfaces of the frontal group of teeth, but also of the incisal edge, due to a decrease in the mineralization of hard tissues of teeth.

Analysis of the localization of carious cavities of permanent teeth indicates that in 8–year–old children with delayed teeth eruption, carious cavities of I class were observed more often. So, among the revealed carious cavities of permanent teeth in 8–year–old children of the main group, carious cavities of I class amounted to 86.96 %. Class II caries amounted to 13.04 %, among the revealed carious cavities of permanent teeth.

Class I carious cavities were also more often diagnosed in 8–year–old children of the comparison group. Among the revealed carious cavities of permanent teeth in 8–year–old children of the comparison group, carious cavities of I class amounted to 66.67 %. Class II caries was 8.33 %, among the revealed carious cavities of permanent teeth. Class V caries was 16.67 %, among the revealed carious cavities of permanent teeth. Class IV caries in 8–year–old children of the comparison group was not detected.

Studies of the state of the hard tissues of teeth in children with delayed teeth eruption reject the existing hypothesis about an increase in the level of mineralization of the hard tissues of teeth due to the increase in the time of their being in the bone tissue (delayed teeth eruption) [1, 5, 7, 10, 11]. Comparison of the prevalence and intensity of decay of the deciduous and permanent teeth in children of 7 and 8 years of age indicates disturbances in the processes of teeth mineralization in children with delayed eruption.

Higher rates of intensity of caries of the permanent teeth in children of 8 years with delayed teeth eruption (DMFT and DMFS) emphasize the need to start the prevention of major dental diseases at an earlier age in children of this group. Based on the above, the most essential period for starting a prevention program for such children is during the period when the eruption delay of the first permanent molars is detected (7 years).

A large number of untreated carious cavities and a high rate of complications of decay of the deciduous teeth in children with delayed teeth eruption of 7 and 8 years, established as a result of the studies, indicate an insufficient amount of dental care provided to children and absence of the effective dental caries prevention schemes for this contingent.

Thus, the assessment of the state of the hard tissues of teeth indicates the inadequacy of the use of standard prevention schemes for basic dental diseases [5], and the necessity to develop modern treatment and preventive complexes for children with delayed teeth eruption.

Conclusions

1. In children with delayed teeth eruption there is an increase in the prevalence of dental caries (by 19.36 % compared with indices in children whose teeth eruption occurred at term).

2. The intensity of dental caries in children of 8 years with delayed teeth eruption according to the DMFT index is 1.89 times higher than in children whose teeth eruption occurred at term.

3. Obtained data indicate the necessity for the development and implementation of an integrated system for the prevention of dental caries in children with delayed teeth eruption.

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DETERMINATION OF FACTORS EFFECTING ACHIEVEMENT OF THE TARGET BLOOD PRESSURE LEVEL IN PATIENTS WITH ARTERIAL HYPERTENSION AFTER THE ELECTRIC CARDIAC PACEMAKER IMPLANTATION

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The total of 119 patients (62 men and 57 women) aged 69.5±11.6 were observed at the one-year stage of maintenance drug therapy after implantation of electric cardiac pacemaker in DDD / DDDR, VVI / VVIR modes. Patients were divided into 3 groups with 1, 2 and 3 grades arterial hypertension. To determine the factors affecting the achievement of target blood pressure in patients with arterial hypertension after implantation of a pacemaker, potential factors that could be associated with achieving blood pressure control were compared. They were identified using univariate log-regression analysis and multivariate log-regression analysis. The results showed that the frequency of reaching the office arterial pressure, BP<140/90 mm hg, correlated with DDD, DDDR, VVI, VVIR pacemaker modes. In patients with implanted pacemaker, the most effective modes of antihypertensive therapy were the appointment of dual antihypertensive therapy: combination with an angiotension-converting enzyme inhibitor or angiotensin II receptor blocker with calcium channel-blocking agent and an angiotension-converting enzyme inhibitor or angiotensin II receptor blocker with diuretic.

Key words: arterial hypertension, cardiac pacing, correlation.

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ВИЗНАЧЕННЯ ФАКТОРІВ ВПЛИВУ НА ДОСЯГНЕННЯ ЦІЛЬОВОГО РІВНЯ АРТЕРІАЛЬНОГО ТИСКУ У ПАЦІЄНТІВ З АРТЕРІАЛЬНОЮ ГІПЕРТЕНЗІЄЮ ПІСЛЯ ІМПЛАНТАЦІЇ ЕЛЕКТРОКАРДІОСТИМУЛЯТОРА

Спостерігали 119 пацієнтів (62 чоловіка і 57 жінок) у віці 69,5±11,6 на річному етапі підтримуючої медикаментозної терапії після імплантації електрокардіостимулятора в режимах DDD/DDDR, VVI/VVIR. Пацієнти були розділені на 3 групи – 1, 2 і 3 ступінь артеріальної гіпертензії. Для визначення факторів, що впливають на досягнення цільового артеріального тиску у пацієнтів з артеріальною гіпертензією після імплантації електрокардіостимулятора, були зіставлені потенціальні фактори, які можуть асоціюватися з досягненням контролю за артеріального тиску. Ідентифікували за допомогою уніваріантного log-регресійного аналізу та мультиваріантного log-регресійного аналізу. Результати показали, що частота досягнення офісного артеріального тиску <140/90 мм рт ст корелювала DDD режимом кардіостимуляції, DDDR режимом кардіостимуляції, VVI режимом кардіостимуляції, VVIR режимом кардіостимуляції. У хворих із імплантованим електрокардіостимулятором найбільш ефективними режимами антигіпертизної терапії виявилися призначення подвійної антигіпертензивної терапії у комбінації інгібітора ангіотензин-перетфорюючого ферменту або антагоністів рецепторів ангіотензину із блокаторами повільних кальцієвих каналів та інгібітора ангіотензин-перетфорюючого ферменту або антагоністів рецепторів ангіотензину II з діуретиком.

Ключові слова: артеріальна гіпертензія, електрокардіостимуляція, кореляція.

The work is a fragment of the research project "Therapeutic support of patients with implanted pacemakers and cardioresynchronizing devices", state registration No. 0119U102299.

Today, arterial hypertension (AH) maintains one of the leading positions among the most common diseases of the cardiovascular system [1]. In particular, according to official statistics of the Ministry of Health of Ukraine, 32% of the adult population in Ukraine suffers from hypertension [1, 2]. Hypertension is a threatening risk factor for the development of various complications, and such as stroke, myocardial infarction, heart failure are recognized as the major causes of death and disability [10]. The risk of hypertension and the features of evolution, as well as mortality in this disease directly depend on the blood pressure (BP) levels and on the target organs' involvement in the pathology process. At the same time,