соматотипа построены достоверные регрессионные модели сонографических параметров правой и левой почек в зависимости от антропометрических и соматотипологических показателей с коэффициентом детерминации (R^2) большим 0,6. Из 16 возможных сонографических параметров почек построены лишь 7 достоверных регрессионных моделей (а именно, длины и ширины левой почки на продольном срезе, передне-заднего размера левой почки на поперечном срезе, площади продольного среза и объема левой почки, площади поперечного среза синуса и объема правой почки) с R^2 от 0,607 до 0,641. В построенные модели сонографических параметров обеих почек наиболее часто входят – обхватные размеры тела (29,8 %) и кефалометрические показатели (19,1 %); а среди отдельных антропо-соматотипологических показателей – наибольшая длина головы и масса тела (в 4 модели), а также обхват стопы, толщина кожно-жировой складки на передней поверхности плеча и мышечная масса тела рассчитанная с помощью формулы Американского института питания (в 3 модели).

Ключевые слова: почки, сонография, антропометрия, соматотип, практически здоровые женщины, регрессионный анализ.

built significant regression models sonographic parameters of right and left kidneys depending on anthropometric and somatic parameters with coefficient of determination (R^2) greater than 0.6. Of the 16 possible sonographic parameters of kidneys built only 7 significant regression models (namely, the length and width of the left kidney in the longitudinal section, the anterior-posterior size of the left kidney on the transverse section, the area of the longitudinal section and the volume of the left kidney and the area of the cross-section of the sinus and volume of the right kidney) with R^2 from 0.607 to 0.641. Sonographic parameters built models both kidneys often include - girth body size (29.8%) and cellophane indicators (19.1%); and among individual anthropo-somatotypological indicators - the largest head length and body weight (up to 4 models) and the circumference of the foot, the thickness of the skin-fat fold on the anterior surface of the shoulder and the muscle mass of the body, determined by the formula of the American Institute of Nutrition (up to 3 models)

Key words: kidneys, sonography, anthropometry, somatotype, virtually healthy women, regression analysis.

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O. Sheshukova, A. Padalka, V. Trufanova, T. Polishchuk,V. Dobroskok
Ukrainian Medical Stomatological Academy, Poltava

APPROACHES TO PREVENTION OF DENTAL CARIES IN CHILDREN WITH FLUOROSIS

Prevention of dental caries in children is one of the priorities of the modern dentistry worldwide. It is important to shift the focus of dental practitioners from the restorative approach to dental caries prevention management. This paper describes the caries prevention complex including tooth cleaning with Splat Green Tea toothpaste, BioGaia Prodentis lozenges and Tooth Mousse dental cream application that has been proved to have high caries prevention effectiveness upon the permanent teeth in children living in areas with high fluoride content in drinking water.

Key words: prevention, caries, permanent teeth, fluoride, calcium.

Prevention of dental caries in permanent teeth is known as one of the top priority tasks the dentistry is facing nowadays throughout the world. This has been determined by the high prevalence and intensity of the disease. The most effective means to prevent the development of caries, according to WHO experts, is fluoridation and fluoride, especially when applied topically. For these reasons, this compound is extensively used in toothpastes, elixirs, mouth rinses, dental lacquers, gels, sealants. But fluoride is known as a double edged sword that when taken in excess produces not only a positive impact. Its adverse effect may be manifested by fluorosis and destruction of hard dental tissues [4].

Dental fluorosis is considered as a serious concern because of its high prevalence in Ukraine and some other countries due to both endemic and man-made factors. Fluorosis occurs in regions where the fluoride content in drinking water exceeds the permissible values, and in areas where its content is lower or significantly exceeds the optimal content, caries and fluorosis are common. 69% of children, who have fluorosis of permanent teeth, have been relieved to have caries lesions of hard dental tissues. The study of clinical features of caries progression against enamel fluorosis has demonstrated the depth of a lesion in experimental caries against fluorosis significantly exceeds that in caries-affected teeth without fluorosis. In the children with fluorosis, the initial level of mineralization of dental enamel in erupting teeth and its functional resistance is lower compared with the children without fluorosis [1].

We have found out that the children aged 7-16 years, living in the areas of endemic fluorosis (the fluorine content in drinking water is 1.7-2.5 mg / l), show a high prevalence and intensity of fluorosis and dental caries. At the age of 15, the prevalence of permanent teeth caries reaches 95.5%, with the decay intensity equaling 6.84. According to WHO recommendations, such a lesion is characterized as high. The degree of fluorosis severity increases significantly starting with 16.7% and up to by 54.2% during the first 4 years from the time of permanent teeth eruption; the proportion of children with a V degree of fluorosis severity is growing as well [4].

Enamel fluorosis is known to appear by sites of subsurface hypomineralization, which alternate with hypermineralized layers. In severe fluorosis, congenital defects are characterized as enamel hypoplasia, and defects formed after the teeth eruption indicate the presence of surface pores over the enamel and hypo mineralization of its outer layer. Thus, measures aimed at promoting the maturation of enamel and strengthening its density, will contribute to the caries resistance of fluoride-affected teeth [5].

The purpose of research to develop a complex of caries prevention measures for children living in areas with high fluorine level in drinking water, in clinical conditions; to diagnose the accumulation of excess fluoride ions in the enamel of permanent teeth for the patient-centered prescription of the preventive complex.

Materials and methods. Thirty teenagers aged 15-16 years living in a region with an increased fluoride level in drinking water were examined. To determine whether the accumulation of fluorine in the enamel is excess or not in order to provoke changes in the permeability of the etched dental enamel by methylene blue dye, sodium fluoride solution was applied to the enamel, followed by comparison of the intensity of the enamel color before and after fluoride loading and analysis of the obtained results (Patent of Ukraine No. 73965) [3]. The effectiveness of the preventive complex developed was assessed by determining the dynamic changes of caries intensity, oral hygiene indices, structural and functional resistance of the enamel and the mineralizing potential of the oral fluid.

Results and their discussion. The technique of rapid clinical diagnosis of excess fluoride in the dental enamel proposed is as follows [2]. 1. The dental plaque is removed from the two upper medial incisors, following which they are isolated from the lip mucosa by one of the standard methods of isolation and drying. 2. Upon both upper medial incisors, onto the vestibular surface, along the equator line of the tooth, a drop of 1 N hydrochloric acid is applied with a micropipette and smeared to a spot of about 2.0 mm in diameter (for etching enamel). 3. In 10 seconds, the acid is washed off with water from both teeth, the teeth are isolated from the lip mucosa and dried. 4. A drop of distilled water (control) is applied onto the etched area of the enamel (where hydrochloric acid was dropped) of one of the incisors for 10 minutes; with the purpose of additional topical fluorine loading, a drop of 2% fluoride solution sodium (test) is applied onto the etched portion of the enamel of the second incisor for 10 minutes respectively to determine changes in the permeability of etched enamel by methylene blue dye before and after fluoride loading. 5. After 10 minutes, the control and test teeth are washed with water, insulated from the lip mucosa, dried, following which onto the control and test sections of the enamel, simultaneously, an aqueous solution of 1% methylene blue dye is applied to determine changes in the intensity of the color and permeability of the etched enamel. 6. After 10 seconds, the solution of methylene blue dye is wiped off from both teeth with a dry cotton swab and the intensity of the coloring of the control and test areas of the tooth enamel is immediately compared. Herewith, this can be done without a 10-score printing scale of blue color, or with use it.

All the patients under the observation showed an increase in the intensity of the color of the test section of the enamel in blue, in comparison with the control one. This indicates the presence of excess fluoride ions in the dental enamel of the teeth that is determined by the additional fluoride loading and the lack of remineralizing fluoride effectiveness that is considered as a contraindication to the use of fluorine-containing products for caries prevention.

Based on the results of the study, the complex of caries preventive measures developed was prescribed for the children in order to reduce the toxic effects of fluoride and its binding and removing from the body, to increase the resistance of oral tissues to unfavorable factors, and to enhance the processes of mineralization of hard dental tissues by calcium-containing medicines.

The complex is implemented as follows. To develop oral hygiene skills, all children were trained to brush their teeth by using standard techniques, and a controlled brushing of teeth was carried out with a demonstration of the results. Due to low oral hygiene and reduced mineralization potential of oral fluid (OFMP), the patients were recommended to brush their teeth twice a day with "Green tea" SPLAT toothpaste. Active ingredients of the paste are polyphenols of green tea, papain, chamomile extract, pearl extract, sage extract, lavender bioconcentrate, tetrapotassium pyrophosphate, Sp.White System®. Green tea polyphenols, namely epigallocatechin gallate, are able to inhibit the activity of matrix metalloproteinases (MMPs), which play an active role in the progression of dental caries. Epigallocatechin directly suppresses MMP-2, MMP-9, MMP-20 and, in our opinion, is an important component for introducing into caries-prevention complexes for children with dental fluorosis [4]. For preventive purposes following the professional oral hygiene and oral sanitation procedures, children were given Biogia Prodentis (Sweden), a probiotic to restore the oral microflora that lowers the formation of plaque and the number of pathogens residing in the oral cavity. "Biogenes Prodentis" is a patented

combination of probiotics obtained from 2 strains of L. produced to build up the health of the oropharynx. 1 lozenge to dissolve in the mouth was prescribed to be taken once a day in the morning after breakfast and after cleaning the teeth. After taking "BioGaia Prodentis" it was recommended to avoid meals for two hours.

The functional resistance of enamel was enhanced by applying the cream "Tooth Mousse" (GC Tooth Mousse), which includes CCP-ACP (casein phosphorus peptide amorphous calcium phosphate), produced from lactic casein. This preparation contains calcium phosphate nanoparticles essential for the formation of enamel apatites. The cream was to be applied once a day, in the evening, after hygienic teeth cleaning. The application technique is as follows: to squeeze out a pea-sized dab of the cream on a finger and evenly distribute it over all the teeth. It is recommended not to rinse the mouth and not to have meal for two hours.

This caries prevention complex elaborated has been observed to have positive effect upon the oral health as evidenced by the findings of the study. In a month after the application of the complex, we observed the normalization of the indices of oral homeostasis. As a result of regular tooth cleaning, the oral hygienic status has significantly improved. The application of toothpaste "Splat Green Tea", probiotic "BioGaia Prodentis" and dental cream "Tooth Mousse" for tooth cleaning contributed to cleaning off dental plaque and enhancing remineralizing properties of saliva that was confirmed by an increase in the OFMP index and an improvement in the index of structural and functional resistance of dental enamel (Table 1). The intensity of caries of permanent teeth in children, who took the course of the preventive treatment, did not increase ($p > 0.05$). In children of the control group, after a year of observation, the intensity of caries of permanent teeth almost doubled (in 2.5 times) from 1.3 ± 0.3 to 3.5 ± 0.2 tooth per child ($p < 0.05$). The increase in caries intensity in the test group for the year of observation was 0.23 ± 0.1 tooth per child examined that is significantly less than in the control group (2.29 ± 0.3 tooth, $p < 0.05$) (Table 2).

Table 1

Parameters of oral hygienic status, structural and functional resistance of dental enamel and oral fluid mineralizing potential after caries prevention treatment

Parameters	Before the treatment	After the treatment	P
Oral hygienic index, scores	3,1±0,19	2,7±0,02	<0,05
Enamel resistance test, scores	2,8±0,11	2,3±0,11	<0,05
Oral fluid mineralizing potential, scores	2,0±0,12	3,1±0,07	<0,05

Table 2

Dynamics of caries intensity after preventive treatment in children living in the region with high fluorine level in drinking water

Statistical indicator	Caries intensity, dfs+DMFT			Caries intensity, DMF			Increase in caries intensity, DMF	
	Test group	Control group	p	Test group	Control group	P	Test group	Control group
M±m P	3,0±0,6	3,9±0,6	>0,05	0,8±0,2	1,3±0,3	>0,05	0,23±0,1	2,29±0,3
M±m P	3,7±0,6	5,6±0,5	<0,05	1,0±0,2	3,5±0,2	<0,05		
pI-II	>0,05	<0,05		>0,05	<0,05		p <0,05	

Reduction of caries of permanent teeth in the children after passing through the preventive treatment made up 89.9%. in comparison with the control group.

Conclusion

Thus, the caries prevention complex we proposed (tooth cleaning with Splat Green Tea toothpaste, BioGaia Prodentis lozenges and the Tooth Mousse dental cream application) has had a high caries prevention effect upon the permanent teeth in children living in areas with high fluoride content in drinking water.

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Реферати

СПОСОБ ПРОФИЛАКТИКИ КАРИЕСА У ДЕТЕЙ С ФЛЮОРОЗОМ ЗУБОВ

Шешукова О., Падалка А., Труфанова В., Полищук Т., Доброскок В.

Профилактика кариеса постоянных зубов у детей является одной из актуальных проблем современной стоматологии. Разработанный профилактический комплекс (чистка зубов зубной пастой «Splat Зеленый чай», прием пастилок для рассасывания «БиоГая Продентис» и аппликации стоматологического крема «Тус Мусс») показал высокую кариеспрофилактическую эффективность при применении у детей, проживающих в регионе с повышенным содержанием фтора в питьевой воде.

Ключевые слова: профилактика, кариес, зубы, фтор, кальций.

СПОСІБ ПРОФІЛАКТИКИ КАРІЄСУ У ДІТЕЙ ІЗ ФЛЮОРОЗОМ ЗУБІВ

Шешукова О., Падалка А., Труфанова В., Поліщук Т., Доброскок В.

Профілактика карієсу постійних зубів у дітей є однією з актуальних проблем сучасної стоматології. Розроблений профілактичний комплекс (чистка зубів зубною пастою «Splat Зелений чай», прийом пастилок для розсмоктування «БіоГая Продентіс» і аплікації стоматологічного крему «Тус Мус») показав високу каріеспрофілактічну ефективність при застосуванні у дітей, які проживають в регіоні з підвищеним вмістом фтору в питній воді .

Ключові слова: профілактика, карієс, зуби, фтор, кальцій.

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