## **DENTAL CARIES IN MODERN DENTISTRY**

# Iryna Fedorovych\*

#### Master Class Dental Clinic, Ternopil, Ukraine

\* Corresponding author e-mail: iryna.fedorovych@o2.pl

Summary. The paper analyses children's dental caries (*Caries dentis*) detected firstly after the eruption of teeth followed by formation of a defect, i.e. a tooth cavity, which is considered as a poly-etiological disease. K e y w o r d s: dentistry, caries, teeth, children.

## INTRODUCTION

In early childhood caries, primary teeth are affected almost immediately after their eruption. Microorganisms of dental plaque are a key etiological factor in the development of carious process. The earlier risk factors are identified, eliminated or weakened, the less caries development is observed in a child after his/her birth. First carious lesions usually appear on the vestibular surface of the maxillary incisors in the cervical region as chalky coloured spots (local demineralization). These areas soon turn (within 2-3 months) light yellow and carious defects develop there. Caries process is characterized by fast development, widespread (planar cavities) multiple cavities in teeth occurring in the order of their eruption (except incisors of the lower jaw).

The nature of children's feeding plays an important role too. It is widely accepted that natural breast feeding during 1 year promotes baby's harmonious growth. At the same time, some experts believe that breast- and bottle-feeding after 1 year, especially at night or during falling asleep is a prerequisite to caries development in early childhood.

Forced baby transfer from breastfeeding to artificial feeding influences conditions of child's dentition, which entails strain of adaptation mechanisms and immunity, and is a major problem for his/her immature physiological system. Change in feeding patterns leads to redistribution of calcium in the body which is unfavourable for teeth [5]. The period of physiological maturation (mineralization) of the enamel can last from 2 to 5 years and throughout the mineral maturation period (especially during the first year after the eruption) child's teeth must be cared for especially carefully and effectively, but the acceleration of children physical development leads to early eruption of primary as well as permanent teeth, and to aggressive influence of cariogenic factors. A systematic oral care and the introduction of supplementary food is required after the appearance of the first tooth. It is particularly important to clean child's mouth when he/she starts to obtain supplementary food. Breast milk contains natural antimicrobial substances that protect against tooth decay, but milk formulas do not contain such components. Tiny remnants of milk and formula or solid food provide substrates for growth of microorganisms that cause tooth decay.

### ANALYSIS OF THE PROBLEM

A child should see a dentist for the first time in 6-12 months of age to identify risk factors of caries. A dentist should be visited after the first tooth eruption and then every six months. The most effective methods of preventing tooth decay begin with oral hygiene and compliance with dentist's recommendations from the moment of the first tooth eruption [3, 4]. Before the first tooth has erupted, the main method of oral care for a baby is boiled water, which should be given to drink after each feeding, and sterile soft sanitary napkins used for gentle wiping of child's mouth in the mornings and evenings, when it is possible.

A more effective means of oral hygiene is to use dental napkins Spiffies as they are comfortable, easy to use and safe. Napkins are recommended from 4 month of age for mechanical removal of plaque to create healthy oral environment that prevents tooth decay. Baby's mouth clearing should be performed by an adult who has a chance to teach oral hygiene to an early age child up to 4-15 months until a child gets used to a toothbrush. Besides, regular massage of the gums in children under three years forms later stable habit to carry out such procedures and creates desire to follow them throughout his/her life.

We recommend using Spiffies napkins for cleaning baby's teeth, gums and tongue after each feeding, beginning from 3-4 months of age. The first teeth erupt at about that time. Moreover, the napkins can be used to reduce pain caused by teething or as an additional management of oral cavity diseases (stomatitis, thrush).

Teeth should be cleaned from the first tooth eruption. There are special oral hygiene aids designed for oral care of a baby in the first year of life, e.g. toothbrushes manufactured by "Sompol», «Colqate», «Butler», «ORAL-B», tooth gel, gel toothpaste, children's toothpaste "Drakosha", "Colqate Kariesschutz Gel", "Colqate Dent", napkins for mouth treatment, foams for teeth brushing. The toothbrush can be made of silicone in a form of fingertips for mother or it can be a regular brush (its choice depends on the number teeth in the child's mouth) with large handles and soft bristles. However parents should know that children cannot clean their teeth efficiently because of immature hand manipulation until the age of six years, so they should help their children brush teeth and be an example to them. It was proven that adequate treatment and prevention depending on child's age, physical and dental state [1, 5] allows preventing from a number of complications to child's general and oral health [3, 4].

Caries affecting primary teeth in children under the age of 2 years is localized mainly on the tooth surfaces that were formed in the antenatal period (smooth surfaces of the upper and lower incisors), especially if this period was unfavourable for foetus development (hypoxia of various aetiology, malnutrition, mother's chronic extra-genital diseases, anaemia, toxaemia of pregnancy, etc.). Two opposing processes affect teeth continuously, i.e. demineralization and recovery of mineralization (remineralisation). Due to the influence of microorganisms, minerals such as calcium are washed out, firstly from the tooth enamel and then from dental hard tissues, which is referred to as tooth demineralization. The saliva neutralizes this process: the excess of mineral substances in its composition are incorporated back into the solid substance of teeth which is called remineralisation of teeth. Shift of equilibrium toward demineralization leads to weakening of the tooth enamel. Demineralised tooth surface area looks like white spots. It is difficult to detect caries at this stage because white spots on teeth are confused easily with the manifestation of dental fluorosis. Caries in baby's first teeth develops slowly, the process can take months. However, it is quite fast when mineralization of the enamel is reduced. Later, the infection progresses and these white spots can turn brown.

Therefore, wide prevalence of local demineralization is observed 2-3 years after tooth eruption. Its likelihood increases with insufficient oral hygiene and eating of too much carbohydrates. Fortunately since the initial stage of tooth decay is reversible, timely prevention and treatment of it is most important [4].

In children over 3 years of age, caries affects chewing surfaces of the molars and the best way to protect child's teeth from decay is to prevent their damage. The most effective and feasible strategy to combat tooth decay at an early age is to introduce healthy oral hygiene habits and methods to promote dental care at home. Parents and persons caring for children should regularly perform hygienic procedures to clean child's oral cavity. To entrench and deeply reinforce daily oral hygiene procedures, oral hygiene aids should be effective, safe and comfortable. It is important, that they are positively perceived by a child. Based on modern ideas about causes of dental caries, caries prevention can be achieved with a set of measures [1] beginning with the elimination of cariogenic situation in the mouth to enhance the resistance of dental tissues. Current trends include individualized approach to treatment of children's dental caries, in addition to teeth fluoridation from 3rd year of age, treatment of caries at an early stage of chalky spots using gel "RocS Medical Minerals". As the main indication, a set of conservative treatment and preventive measures is often prescribed, i.e. improving mouth hygienic condition, normalization of diet (elimination of carbohydrate factors), local therapy of remineralisation with gel ROCS Medical Minerals (at home), clinical checkups at least 4 times per year, teaching individual hygiene of the mouth and daily mouth care to parents and children [1, 2].

#### CONCLUSION

Thus, deviations from the normal terms and the order of tooth eruption in patient's history indicate a developmental disorder with high probability, i.e. disontogenesis that indicates possible dental diseases accordingly, including possible dental caries.

### REFERENCES

- Кисеvlak W. I., 2005. Заболевания твердых тканей зубов у детей раннего возраста с генетически обусловленной патологией соединительной ткани. В. И. Куцевляк, Е. Г. Ярошенко (Eds.). In: Медицина сьогодні і завтра. 3, 135-137. Kharkiv (in Ukrainian).
- Janushevicz O. O. (Еd.), 2009. Медицинская и клиническая генетика для стоматологов: учебник для вузов, 400 (in Russian). Мониторинг и оценка оздоровления полости рта: Доклад Комитета экспертов BO3. Медицина, 1991, 73. Moscow, (in Russian).
- Кигтіпој Е. М., 2001. Профилактика стоматологических заболеваний (под редакцией проф. Moscow, Изд-во «Поли Медиа Пресс» 216 (in Russian).
- Szpringer-Nodzak M., Wochna-Sobańska M. (Eds.), 2010. Stomatologia wieku rozwojowego. PZWL, Warsaw (in Polish).
- Haritonova T. P., Lebiedeva C. N., Kazakova L. N., 2011. Ранняя профилактика кариеса зубов у детей. In: Т. П. Харитонова, С. Н. Лебедева, Л. Н. Казакова. Саратовский научномедицинский журнал. 7, 260-262 (in Russian).