

## THEORIES ON THE ORIGIN OF DENTAL CARIES

Iskandarova Adiba

Tashkent Medical Academy

4<sup>th</sup> year student of Faculty of Stomatology, Urganch branch

Quryazov Akbar Qurambayevich

Research advisor

**Abstract:** *The origin of dental caries is related to the nutrition disorder of the hard tissue of the tooth. Removal of the pulp, which is one of the methods of treatment of complications of caries, does not cause structural and functional changes of the tooth enamel, but the tooth continues its work as a complete organ.*

**Key words:** *demineralization of tooth hard tissues under the influence of acid, decay under the influence of microbes, the organic substance of the enamel, fetal period.*

There are hundreds of theories explaining the origin of caries. Let's consider a few of them: Chemical-parasitic theory (W.D. Miller, 1884). According to Miller, caries occurs as a result of the combined effect of acid and microorganisms on the tooth and occurs in 2 stages:

- 1) demineralization of tooth hard tissues under the influence of acid;
- 2) decay under the influence of microbes.

At the first stage, as a result of the decomposition of food residues in the oral cavity, organic acids appear, which dissolve the inorganic part of the enamel. In the second stage, the organic substance of the enamel is dissolved under the action of proteolytic enzymes of the microorganism. The author tries to explain his theory in the following experiment: he puts the extracted tooth in chewed bread, meat, saliva, food containing 2-4% sugar for different periods of time. Observations show that enamel demineralization has occurred. The presence of acidic salts and acids in oral fluid lowers the pH of saliva and has a negative effect on enamel, causing its demineralization. Advantages of Miller's theory:

- Microorganisms play a major role in tooth decay.
- The caries process occurs as a result of demineralization of the hard tissues of the tooth under the influence of organic acids.
- It has been confirmed that the caries process manifests itself in natural pits - fissures, chewing and contact surfaces of the teeth.

Physico-chemical theory (D.A. Entin, 1928). The tooth is located between two environments (saliva and blood vessels), and according to Entin, osmotic currents appear between the two environments. The direction of these branches is from the outside to the inside (from the enamel to the pulp) and tends to the center, which is mainly observed in caries. As a result, the nutrition of the enamel is disturbed, due to this, the enamel colloids are twisted, swollen, and its conductivity changes. Normally, the direction of the tooth is reversed: from the pulp to the enamel. D.A. Entin placed great emphasis on the pellicle, and in his opinion, the physico-chemical processes in the tooth itself depend on the electric charge and physico-chemical state of this membrane. Entin based his theory on the following factors: neuroglandular, phenotypic. Below them are central factors: salivary biochemistry, microflora and nutrition. He said that their effect is focused on tooth tissues and caries is caused. But D.A. Entin's theory raises contradictions with modern theories. A.E. Sharpenak's (1949) theory explains his vitamin theory with vitamin Bx deficiency. In the case of vitamin B deficiency, proteins in the whole body and especially in the enamel decrease, as a result, proteolysis increases and the enamel becomes weak. Slowing down of protein biosynthesis is due to the reduction

or absence of rare amino acids included in food. According to Sharpenak, if the body digests a large amount of carbohydrates, the need for vitamin B increases. Therefore, in the case of vitamin B deficiency, pyruvic acid accumulates in tissues and increases proteolysis even more. But this theory has not been proven. In addition, Sharpenak denied the process of demineralization at the stage of white spot in enamel and also made a mistake that microorganisms and their products do not initially participate in the development of caries. It is known that caries does not develop without microorganisms. I.G. Lukomsky's trophic (biological) theory. In his biological theory, he assumed that various exogenous conditions of the organism lead to endogenous changes. Initially, the functional disturbances of odontoblasts lead to morphological changes, as a result of which substance connections are broken in enamel and dentin, and gross changes are manifested. According to Lukomsky's theory, odontoblasts are a trophic center. Lukomsky's theory has not been proven. Disadvantages of the theory:

1. It has not been proven that odontoblasts are the "trophic center" of the tooth.

2. The importance of sugars in the development of caries has been denied, and the preventive value of ftom has not been seen.

3. It is said that the activity of odontoblasts increases during the development of caries, but vacuolization and atrophy of odontoblasts can be observed even in a healthy (intact) tooth. B.E. Platonov's trophoneurotic theory. The origin of dental caries is related to the nutrition disorder of the hard tissue of the tooth. Removal of the pulp, which is one of the methods of treatment of complications of caries, does not cause structural and functional changes of the tooth enamel, but the tooth continues its work as a complete organ. The permanent contact of the depulped tooth with oral fluid ensures its high mineralization, as a result of which the tooth's microhardness, structural unity, and acid tolerance increase. Disadvantages of the theory:

- The author did not take into account local factors rich in microorganisms, tooth decay and plaque, and oral hygiene. positive aspects of the theory:

- the author connected the pathological process in the tooth with the general state of the body.

A.I. Ribakov's working concept of the pathogenesis of dental caries. A.I. According to Ribakov's working concept, dental caries is a polyetiological disease. Based on the concept, it is explained that the age-related compatibility of the development of the tooth-jaw4 system, exo- and endogenous factors cause dental caries. The author considered dental caries as a disease of polyetiological nature. A.I. Ribakov fully explains the endogenous and exogenous factors that cause the development of the caries process during the development of each person:

- ◆ Fetal period. Hereditary factors are given great importance. Diseases experienced by the mother to the formation of organs and systems of the fetus; metabolic disorders in thyroid diseases, pregnancy toxicosis and drug overdose, chronic infection and allergic diseases of the mother, mental trauma and extreme conditions have a great impact on the fetus. All these diseases affect the tooth-jaw system and the hard tissue of the teeth.

- ◆ The period from 6 months to 6 years. During this period, great importance is attached to natural nutrition, chronic and infectious diseases. He believes that exogenous factors are non-observance of oral hygiene rules, pricus deformation and trauma, violation of saliva secretion, change in order.

- ◆ Childhood and adolescence period from 6 to 20 years. Distinguish between exogenous and endogenous factors causing dental caries. Endogenous factors: previous diseases (somatic), high consumption of carbohydrates, puberty, high level of metabolism, deficiency in the metabolism of trace elements, liver dysfunction, incomplete nutrition. Decreased immunity of tooth tissue, lack of fluoride, changes in dental pulp. Exogenous factors include poor oral hygiene, pricus deformity,

injury, saliva secretion disorder, oral pH disorder, difficulty in erupting some teeth, tooth depulcation, and diseases of the jaw system.

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