

## "CLINICAL AND PATHOGENETIC ASPECTS OF DISEASES OF HARD TISSUES OF TEETH AND PERIODONTAL IN PATIENTS WITH THYROID DYSFUNCTION"

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### Annotation

The endocrine system is a system of endocrine glands localized in the central nervous system, various organs and tissues, is one of the main systems of regulation of the body. The endocrine system exerts a regulating influence through hormones.

**Keywords:** genetically, system, injuries, blood supply disorders, lesions, components of hormonal regulation

### Introduction

Endocrine diseases can be associated with genetically determined abnormalities, inflammatory and tumor processes in the body, disorders of the immune system, injuries, blood supply disorders, lesions of various parts of the nervous system, impaired tissue sensitivity to hormones. The loss of any of the components of hormonal regulation from the general system disrupts the unified chain of the functional system of the body and leads to the development of various pathological conditions. The pathology of the endocrine system is expressed by diseases and pathological conditions, which are based on hyperfunction, hypofunction and dysfunction of the endocrine glands.

Changes in the function of the glands of the internal system lead to endocrine disorders and cause certain changes in the oral cavity.

Diabetes mellitus ranks third after cardiovascular and oncological diseases. In the first months of newborns, this pathology is rare, the incidence peaks after the age of 5 and during puberty. According to statistics, diabetes mellitus is the most important medical and social problem of mankind due to its high prevalence and chronic course. Insulin-dependent diabetes mellitus is most common in children. Approximately 2 out of 1000 children aged 5-18 years suffer from this disease. The development of insulin-dependent diabetes occurs due to viral or toxic lesions of the pancreas in children who are genetically predisposed to the development of the disease. There is also an assumption about an autoimmune mechanism of destruction of insulin-producing B cells. Diseases of the oral cavity on the background of diabetes mellitus according to the literature are observed in 87% of patients. With this disease, there are regular

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changes in the tissues of the oral cavity, depending not only on age, but also on the duration of the disease, the degree of metabolic control and the presence of diabetic complications. Hyperglycemia and "jumps" in blood glucose levels during the day often lead to suppression of salivation and a feeling of dryness in the oral cavity. Xerostomia is the first sign of diabetes mellitus in the oral cavity. Saliva is involved not only in the processes of remineralization, but also plays a huge role in maintaining homeostasis in the oral cavity. A decrease in salivation creates favorable conditions for the development of symbiosis; this manifests itself in the form of an increase in the number of microorganisms, especially hemolytic streptococci, staphylococci. In patients with diabetes mellitus, a rapid and significant deposition of plaque of a soft consistency and tartar occurs. M. J. Campbell explains the presence of a significant amount of plaque - a high concentration of glucose in saliva (from 0.44 to 6.33 mg of glucose per 100 ml of saliva, at a rate of 0.24 to 3.33mg), which promotes the reproduction of microorganisms. According to L.W. Burket reduction of alkaline reserves in diabetes contribute to the formation of tartar.

The compensated form of diabetes mellitus entails a violation of mineral metabolism, a decrease in the formation and activation of the destruction of bone tissue, which affect the condition of the hard tissues of the tooth. In case of violation of mineral metabolism, calcium begins to be washed out of the body, and then fluorine. When calcium and fluoride are not enough, the enamel becomes fragile. The acid released by bacteria penetrates into it faster, which contributes to the formation of caries, the high rate of its progression is due to the fact that the dentine tubules are expanded, and this facilitates the spread of the process deeper.

Diabetes mellitus affects the condition of periodontal tissues, as shown by a number of reviews and studies. With this pathology, there is a violation of regional hemodynamics. Vascular disorders in diabetic patients develop not only due to spastic changes in blood vessels and capillaries, but also due to changes in the function of the blood itself (an increase in the diameter of red blood cells, the accumulation of glycated hemoglobin). During the above processes, the wall of blood vessels thickens, which leads to a slowdown in the intake of nutrients and a decrease in the resistance of tissues with microorganisms.

Considering the hormonal system as a whole, it is impossible not to pay attention to the state of the thyroid and parathyroid glands in diabetes mellitus. At the stage of compensation for diabetes mellitus, these glands work in changed conditions, but retain dynamic constancy. However, in childhood, these glands are not yet fully formed themselves. The final formation of the thyroid and parathyroid glands is achieved by the period of puberty, so there is a high probability of the development of their defective structure.

Thyroid hormone, thyrocalcitonin has a hypocalcemia effect and inhibits bone resorption. The thyroid gland has a great influence on the process of deification of

enamel and dentin. The formation of thyroid function coincides with the period of differentiation of the rudiments of milk teeth, so at the 10th week of embryonic development amnioblasts are formed, and at the 12th week odontoblasts and at the 16th week the period of dentin and amylogenesis begins, whereas during the same period other glands are in a state of development and begin to function only at the 20th-26th week of pregnancy.

With diffuse toxic goiter characterized by diffuse hyperplastic changes in the thyroid gland, the body is intoxicated by excessively produced and secreted thyroid hormones into the blood. The disease is 5 times more common in women and is more likely to occur between the ages of 12 and 14 [6]. Patients with toxic goiter have various changes in the hard tissues of the teeth. The hard tissues of the teeth have increased transparency at the cutting edge. There are white chalky spots on the labial surface, the severity of which depends on the duration and severity of the disease. Dental pulp is more common in patients with thyrotoxicosis, according to the literature, almost 3 times [22].

There is a close functional relationship between the salivary glands and the thyroid gland. Toxic goiter leads to a change in the physico-chemical composition of saliva, while its viscosity decreases, which leads to a decrease in the absorption of organic substances on the surface of the teeth, which weaken the mechanism of enamel protection from demineralizing factors.

Hypofunction of the thyroid gland can be either congenital (cretinism) or acquired (juvenile myxedema). Thyroid hormone deficiency is most often secondary to primary thyroid disease and is sometimes associated with dysfunction of the hypothalamus or pituitary gland. Cretinism is rare. Juvenile myxedema can develop for many reasons, such as thyroidectomy, thyroid irradiation, autoimmune diseases, infection, or medication.

Gratkowska N.; Gilbert-Dreyfus A.; Alexandre CL.; Heyden P; Weyers H., note that with hypothyroidism, there is a delay in eruption of milk teeth for 1-2 years. The replacement of milk teeth with permanent teeth is usually delayed by an average of 2-3 years.

Hypothyroidism leads to a change in the microelement composition of the hard tissues of the tooth. Histologically, degenerative changes in the structure of enamel and dentin are revealed, osteodentin is formed, enamel and dentin genesis slows down, late mineralization of the rudiments of teeth. With hypofunction of the thyroid gland, the shape of the crown of the teeth changes, the incisors can be round in cross-section, teeth on the cutting edge. Canines and molars can have the shape of incisors, crowns are shortened. Sometimes they can be doubled (fused rudiments).

In hypothyroidism, vascular fullness, perivascular hemorrhages are detected, separate epithelial cells with dystrophic cell changes appear in the multilayer squamous epithelium, collagen fibers are impregnated with edematous fluid, swell and

homogenize, swelling of the main substance of connective tissue with areas of metachromes is noted.

The parathyroid glands produce substances of a protein nature – parathyroid hormone, or parathyroid hormone, which participates in the regulation of mineral, primarily calcium and phosphorus metabolism, affects the processes of calcification and decalcification in bones. Parathyroid hormone maintains a constant content of calcium in the blood serum (2.2 – 2.5 mmol / L), circulating in the bloodstream in the form of complexes with proteins, usually inactive. With a lack of parathyroid hormone in the body, the metabolism of phosphorus and calcium is disrupted. Vitamin D plays an important role in maintaining a normal level of calcium in the blood, which affects the intake of calcium from the intestine into the body, stimulates the deposition of calcium in bone tissue.

With hypoparathyroidism, there is a violation of protein and mineral metabolism and, as a consequence, there is a violation of the calcification of enamel and dentin. Opaque white spots may appear in the formed teeth. Histologically, the enamel picture is characteristic of hypoplasia: underdevelopment, deformed prisms with bends, defects and folds on the enamel surface, wide and numerous interglobular non-deified zones and cavities in the dentin, the layer of odontoblasts is sparse, the pulp is normal, denticles are often found. Hypofunction of the parathyroid glands significantly slows down teething.

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