

CLINICAL SIGNS WHEN ACCOMPANIED BY DENTAL DISEASES AND METABOLIC SYNDROME

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Abstract: According to the World Health Organization, there are 40-60 million people with insulin resistance who are at high risk of developing type 2 diabetes in Europe. Therefore, metabolic syndrome is one of the most urgent problems of modern medicine. The clinical significance of disorders and diseases combined within the syndrome is that their combination significantly accelerates the development and progression of atherosclerotic vascular diseases, which, according to WHO, are the leading cause of death in industrialized countries. The prevalence of periodontal diseases in our country is 80%, and periodontal tissue changes in people over 40 years old reach 99.9%.

Keys words: Prosthodontics, dental diseases, metabolic syndrome, insulin resistance.

Metabolic syndrome (MS) is a condition, which constitutes a group of risk factors that occur together and increase the risk for Coronary Artery Disease, Stroke and type 2 diabetes mellitus. This disorder is found prevalent in the industrialized societies of the world in epidemic proportions. Periodontitis is an oral disease of microbial origin characterized by loss of attachment apparatus of tooth, resulting in edentulism if untreated. Periodontitis has been attributed to produce a low grade systemic inflammatory condition. The link of periodontitis to various systemic disorders has led to the evolution of a new branch termed as “periodontal medicine.” Studies reviewed in the present paper have indicated a positive link between the MS and periodontitis and it is suggested that subjects displaying several components of MS should be submitted to periodontal examination. Present studies have displayed coherent relation between the two entities. This review will address the vicious association between MS and periodontitis, depicting the commonality of pathophysiological pathway between the two entities. Systematic reviews, meta-analysis addressing the concerned subject were screened. Whether the systematic periodontal therapy in individuals exhibiting MS has the potential to reduce the incidence of various adverse systemic complications remains a logical proposition. Further, longitudinal and controlled trials with a large population would be imperative to depict the robustness in the association between MS and periodontal disease in human subjects.

According to WHO data (2000), severe periodontitis occurs in 5-20% of cases, moderate periodontitis in 25-45% of cases, and non-tact periodontitis occurs in only 2-10% of cases. Thus, we can say that the prevalence of periodontal disease in the whole world is on average 94.3%. Periodontitis (in the English literature, the term "parodontitis" is a synonym of the concept of "periodontitis", "parodontosis" is a synonym of the concept of "periodontosis") is an inflammation of the periodontal tissues, a process accompanied by the destruction of the periodontal ligament and alveolar bone. According to many researchers, the main etiological factor of inflammatory periodontal diseases is the microorganisms, their waste, unfavorable conditions that develop in the oral cavity and can strengthen or weaken the pathogenic effect of microorganisms. In addition, microcirculation, metabolic, enzymatic and immunological disorders are of great importance in the pathogenesis of pathological processes in periodontal tissues. Risk assessment is an integral part of the diagnosis and treatment of periodontitis. Obviously, the risk and severity of periodontitis is significantly higher in patients with concomitant systemic diseases (eg, diabetes). Such factors mainly affect the development and course of the disease.

Diseases such as diabetes, arterial hypertension, and lipid disorders may affect the development of periodontal disease more than periodontal pathogens. On the other hand, periodontitis as an agent of metabolic stress may increase the development of certain diseases of internal organs. Periodontal pathogens and their metabolic products are systemic enters the bloodstream and helps with systemic inflammation. Bacterial toxins alter the immune response. The mechanism by which diabetes affects the severity of periodontitis is still not fully understood, but it should affect the regulation of all types of metabolism by insulin, as well as growth processes and immunity. It has a negative effect on periodontal tissues, which are dependent on insulin.

Many authors study the dental condition of patients with type 2 diabetes. Based on the research, the following were found: - in type 2 diabetes, the topographical redistribution of functional microbial alkaloid zones occurs due to the disruption of the balance of the microflora of the oral cavity. the activity of tongue microbes increases up to 1.5 times ; - in patients with type 2 diabetes mellitus, periodontitis worsens, the control of acid-alkaline balance in the oral cavity slows down, and it leads to destabilization of the friction systems. The severity of periodontal tissue damage directly depends on the degree of damage.

The reason for the increase of tartar on the background of acidosis of the oral cavity in periodontitis is the local and long-term uncompensated increase in the ammonia-producing activity of the gurase-positive microflora of the surface of the tongue and teeth. As a result of the study of the relationship between periodontal diseases and type 2 diabetes mellitus, it was determined that there is only "diabetic periodontitis" and vice versa - "periodontitis-diabetes mellitus". According to studies,

the effectiveness of insulin released by the body decreases with severe periodontitis . There is a possibility that taste disturbance may be associated with changes in the innervation of taste buds in type 2 diabetes. However, there is no clear relationship between taste disturbance and the degree of glycemic disturbance, as well as the duration of diabetes. There is evidence of the high prevalence and intensity of type 2 diabetes. The study of the dental status of children born to mothers with diabetes is also of great interest. Electron microscopy has shown that the negative effect of motherhood on the formation of antennal periosteal cartilages and the decrease in the activity of the mineralization process of the teeth. The method of determining salivary microcrystallization was used to study the mineralization potential of saliva of children born to diabetic mothers - low potential, types II and III of crystal formation predominate. The author considers this to be one of the factors of caries development [26]. Given that type 2 diabetes has clear and scientifically proven clinical manifestations in dentistry, it can be assumed that there will be changes in the oral cavity and with IR. However, the study of MS and IR is particularly recent, and many issues have not been fully explored. IR is often associated with obesity, which studies show is common not only among adults but also among children in various countries around the world .

Children who suffer from excess body weight develop IR and compensatory hyperinsulinemia, which can be manifested in the background of long-term MS. In children and adults, excessive accumulation of upper body and central type of adipose tissue has been shown to be associated with an increased risk of metabolic diseases. Recent studies have shown the importance of the role of adipose tissue and adipokines released by it in the development of obesity, IR and type 2 diabetes. According to the literature, with an increase in body weight, there is a decrease in the level of adiponectin in the blood serum, which clearly shows the presence of IR. The level of adiponectin is related to the amount of insulin in blood serum and IR indices. But not all people who suffer from excess weight are resistant to insulin. It can develop against the background of physiological conditions of the body, such as pregnancy and puberty. The onset of puberty is accompanied by an increase in the concentration of immunoreactive insulin, which reaches maximum values in the middle of puberty, after which it gradually decreases. The same thing happens during pregnancy. Physiological IR is formed against the background of neurohumoral changes. The homeostatic assessment model (HOMA-Homeostatic Model Assessment) using body mass index (TMI), which is used to determine obesity, is widely used to determine IR. Indicators of the lipid spectrum. For practice, it is very important to take into account the common clinical risk factors for the appearance and development of IR in overweight, for example, obesity and type 2 diabetes with heritable burden, low birth weight (from 2700 g low), triglyceride (TG) levels in adulthood (more than 1.18 nmol/l) and very

low density lipoproteins (VLDL) (0.54 nmol/l). When risk factors are identified, targeted screening of obese patients is required to diagnose IR. Insulin resistance is a condition that causes a cascade of metabolic, neurohumoral and hemodynamic diseases, which are the basis for the formation of socially important diseases. The clinical manifestation of IR occurs in almost all organs and systems of the human body, and the face-jaw area is not an exception. Changes in the oral cavity in IR have not been sufficiently studied.

Insulin resistance was presented as high insulin (>140.0 nmol/l) without considering the HOMA index. Patients with IR have been reported to have periodontal diseases such as gingivitis (5% of patients with IR) and generalized periodontitis (95% of patients). Excess weight, type 2 diabetes, increased TG in the blood were considered as separate components of MS. its complications are not described in the literature. Therefore, the study of IR is a new, relevant and promising direction in dentistry.

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