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INFLUENCE OF IMMUNOLOGICAL TOLERANCE TO FOOD ANTIGENS FOR THE DEVELOPMENT OF METABOLIC SYNDROME

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The study investigated the influence of antigen-dependent immunological inflammation of food in the pathogenesis of primary manifestations of the metabolic syndrome (MS), which is one of the most relevant problems of modern medicine (obesity, insulin resistance, changes in lipid metabolism). It logically follows that systemic inflammation is dependent on the characteristics of antigenicity, immunogenicity, and the critical mass of food tolerogens / antigens and mucosal immunity status of the small and large intestines of an individual. Throughout a person's life, food immuno-logical tolerance - is a constant dynamic process associated with the activity of cell-humoral mechanisms of enzymatic activity of the intestinal cells and the functional activity of symbionts in aggregate carrying out immunological control of the constancy of the surrounding environment of food intake. The trigger for MS is a violation of human eating behavior, change in the antigenic characteristics, the food structure, inflammation of the intestine, which together lead to food disadaptation and induce a specific immune response to a food antigen. Volunteers' venous blood served as clinical material for the experimental and control groups. Experimental group (EG) comprised women (n = 31), 20-55 years of age, body mass index (BMI) > 27 and men (n = 25), 20-60 years of age, with a BMI > 27. Members of the EG at the time the study was conducted, did not register a clinical diagnosis of diabetes (D type 2), or cardiovascular disease (CVD). Participants in the control group (CG) were women (n = 17) aged 20-50 with 18.5 < BMI < 25 and men (n = 12) aged 20-50 with 18.5 < BMI < 25. The main criterion for selection of the control group was the lack of gastrointestinal diseases, type 2 diabetes and CVD. During the experiment, EG and CG tracked dynamics measuring biochemical, endocrine-logical and immunological parameters of inflame-mation: KLA, cholesterol, triglycerides, HDL, LDL, glucose, ALT, AST, IL-4, IL-6, IL-10, TSH, T3, insulin. Diagnosing food intolerance (FI) utilized the methodo-logy employed by

Immunohealth (US) based on the ELISA (IgG) multi-component test. Concentrations of specific immunoglobulins G (sIgG) 111 to food antigens served as a value for a marker. In the process of diagnostics FI clusters determined intolerance to dietary antigens groups for each experiment participant in both groups.

Results: The measurements obtained were statistically significant differences in terms of the lipid profile, glucose, ALT (alanine aminotransferase), insulin, insulin resistance index, the total number of leukocytes, IL-6, IL-10 (in all cases, $p < 0,05$) for participants EG and CG. When determining the frequency of occurrence of intolerance clusters in groups of people with a BMI > 27 and 18.5 < BMI <25, a statistically significant difference in the values for participants averaged across EG and CG for specific IgG for dairy products - 43% (EG), and 0% (CG) to grain - 13% (EG) and 6% (CG) and 23% Nightshades (EG), and 14% (CG). The highest incidence of intolerance to certain cluster of food antigens in a group with increased BMI, compared with normal BMI is observed in the following food antigenes: 49% casein- (EG) and 0% (CG), soy - 51% (EG) and 29% (CG), gluten-free - 16% (EG) and 0% (CG). Based on the statistical analysis conducted, we conclude that the risk of atherogenic changes (IA > 3) linked to the values of specific IgG concentrations to casein (OR = 10,5). In the group with PN casein containing products, there was a statistically significant increase in the concentration of acute phase cytokine IL-6 ($p < 0,05$), associated with the activity of the humoral immune response, as a measure of systemic inflammation. A statistically significant association between indicators of values sIgG to baker's yeast and the development of insulin resistance ($F = 0,02056$, $p < 0,05$) was also recorded.

Conclusions: By analyzing concentrations of specific IgG for food antigens in clusters with biochemical, immunological markers for research groups with heightened and normal BMI, we establish the role of systemic immunological inflammation, linked to food intolerance for tested products, as personified predictors in pathogenesis of metabolic disorders. It has been shown that people in the group with the metabolic syndrome (MS) associated with food intolerance to casein, the likelihood of developing atherogenic changes is 10.5 times higher than that of patients without MS. The findings open the possibility of more precise correction of the initial manifestations of the metabolic syndrome, based on a preliminary control of the immune

system tolerance to group markers, personalized assessment of risk-contributing factors.

RESULTS OF MANY YEARS OF APPLICATION OF PEPTIDE BIOREGULATORS IN PATIENTS WITH RETINITIS PIGMENTOSA

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Retinitis pigmentosa as well as the other inherited degenerative diseases of retina are characterized by a progressive atrophy of photoreceptor cells and as a rule appear in young age, making a person visually impaired and provoking premature aging of the body. Until recently, European medicine didn't have a sufficiently effective method of treatment of retinitis pigmentosa. It is known that in USA there are actively conducted the studies in the field of gene engineering, but the achieved results have not been applied in clinical practice yet. That is why patients do not receive an appropriate medical care.

From the mid 80-s of the last century in Russia there has been developed a new field of clinical medicine called bioregulating therapy. V. Khavinson and V. Morozov have created and have been actively studying peptide bioregulators- preparations that have a high biological activity due to epigenetic regulation of genes. There were obtained more than 200 Russian and international patents for peptide bioregulators.

It is known that pathological processes in retina are based on molecular mechanism of a decrease in functional activity of retinal cells. Numerous experimental studies showed a high retinoprotective activity of peptide bioregulators. An effect of peptide preparations on hereditary pigmentary retinal degeneration in Campbell line rats allowed to increase bioelectric and functional activities of retina by stabilization of its morphological structure, what preserved visual functions of animals for a twofold longer period compared to control. Thirty years of clinical studies showed a high retiniprotective activity of peptide bioregulators in patients with retinitis pigmentosa. Visual functions have been preserved in more than 80 % of