

THE ROLE OF VITAMIN D DEFICIENCY IN THE DEVELOPMENT OF DIABETES

Chernyakova V., Burykina O., Kononenko N., Chikitkina V.

National University of Pharmacy, Kharkiv, Ukraine

valeriya.chernyakova.96@mail.ru

Introduction. In recent years it was accumulated a considerable amount of material on the relationship of various deficiency of certain micronutrient with diabetes risk – first of all it is chromium, magnesium, zinc, vitamin A and vitamin D. Today, vitamin D deficiency is associated with obesity, high body mass index, insulin resistance, adverse effects on insulin secretion and with glucose tolerance.

Aim. Theoretical studying the role of vitamin D deficiency in the development of diabetes. **Materials and methods.** Data analysis of literature and Internet sources.

Results and discussion. Experimental and clinical studies proved that at vitamin D deficiency there is an increase of risk for diabetes mellitus (DM) development in healthy patients. In patients, which suffer from diabetes mellitus and metabolic syndrome, indices of insulin resistance are growing. Thus, depressed level of 25-hydroxycholecalciferol (25(OH)D) in blood serum correlates with simultaneous presence of cardio-metabolic risk factors at diabetes mellitus. Among patients with low concentrations of 25(OH)D in serum there is increased risk of metabolic syndrome on 70 %. Insufficiency of 25(OH)D also correlates with increased waist circumference, increased systolic pressure and reduced level of cholesterol LDLP.

Level of vitamin D in plasma influence on concentration of glycosylated hemoglobin (HbA1c) – long-term index of glucose tolerance. In elderly people (70-74 years) levels of 25(OH)D – less than 50 nmol/k – increased risk of diagnosed DM type 2 in two times. At the same time at higher concentrations of 25(OH)D the decrease of HbA1c was observed. There is an opinion that formation and accumulation of final products of glycosylation affects on metabolism in bone and its solidity. Especially, diabetic neuropathy can lead to exacerbation of bone resorption process, and macro- and microangiopathies – can disturb blood inflow to bones.

It is proven that pharmacological doses of 1,25-dihydroxycholecalciferol prevent DM type 1 in obesity in mice, and cause immunomodulating effect, therefore directly influencing on pancreatic β -cells. On pancreatic β -cells, as well as on cells of immune system special vitamin D and vitamin D-binding protein receptors are present. In studies on rats with induced diabetes the decrease of vitamin D-binding protein level on 62% comparing to healthy animals was established. Likewise, it is considered that vitamin D can contribute to maintenance and stimulation of insulin secretion. At DM type 2 vitamin D raises susceptibility of cells to insulin and decrease inflammation in pancreatic tissue.

Conclusions. Thuswise, shown data specifies the necessity of vitamin D use in DM and metabolic syndrome therapy.