

THE STUDY OF BIOCHEMICAL MECHANISMS DEVELOPMENT OF SOME COMPLICATIONS IN DIABETES MELLITUS TYPE 2

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Introduction. To date, the number of people with the type 2 diabetes mellitus (DM) disease is very large, and the problem is widespread and urgent. According to many literature sources type 2 DM is a metabolic disease characterized by prolonged hyperglycemia on the background of the development of insulin resistance. Most scientists agree that the formation of insulin resistance is associated with obesity and overeating that is accompanied by prolonged hyperinsulinemia. However, it is known that high levels of insulin and glucose in the blood can cause damage to the blood vessels and lead to the formation of certain complications, particularly retino- and nephropathy.

Aim. The aim of this work was the study of complications development mechanisms in type 2 diabetes.

Results. Based on literature data it can be noted that the formation of prolonged hyperglycemia and hyperinsulinemia is accompanied by increased glycosylated hemoglobin forms and the development of endothelial dysfunction. The mechanism of micro-capillary endothelium injury is associated with excessive release of arginine into the cells of vessels intima (controlled by insulin) and increased formation of specific vasodilatatore NO that is oxidized to peroxynitrite (ONOO-) under conditions of systemic inflammation. In turn ONOO- is a powerful factor of endothelial damage accompanied by inflammation, increased blood clots, vasodilation violation and, as a result, hypoxia of organs and tissues. It should be noted that retina and kidneys microcirculatory disorders with the above-mentioned mechanisms may be accompanied by deep lesions of these tissues, up to the complete cell death. However, another factor of the nephrons and retina destruction is glycosylated hemoglobin, which due to its increased molecular weight can accumulate in areas of microcapillaries inflammation and mechanically restrain the blood circulation, which in turn deepens hypoxia and nephrons lesion as well as photoreceptor cells.

Conclusions. Thus, kidney and retina damage in diabetes mellitus type 2 is primarily associated with the development of endothelial dysfunction and hypoxia of these tissues, however the search for other mechanisms of these complications requires further investigation.