

DIABETIC VISION DISORDERS

Lamsaouri H., Myronchenko S.

National University of Pharmacy,

Kharkiv, Ukraine

s.mironchenko@ukr.net

According to world statistics, diabetes affects 1 to 15% of the world's population, and the incidence is rising. The prognosis, efficiency and life expectancy of a patient depend on vascular complications of diabetes mellitus. In diabetes, the vessels of the retina, kidneys, lower extremities, brain and heart are affected. Vascular lesions of the eye include diabetic retinopathy, as well as cataracts, secondary neovascular glaucoma, recurrent erosions, trophic ulcers, endothelial dystrophy, blepharitis, hordeolum, iridocyclitis, damage to the oculomotor nerves.

Aim. The purpose of this review is to provide an overview of the mechanisms of development of vision disorders in diabetes mellitus.

Materials and methods. Data analysis of literature and Internet sources.

Results and discussion. The main pathogenetic factors in the development of diabetic retinopathy include metabolic, hemodynamic, hemorheological, and genetic disorders. Metabolic disorders are caused by long-term hyperglycemia (an increase in the polyol (sorbitol) pathway of glucose metabolism with a high activity of the enzyme aldose reductase; non-enzymatic glycosylation of proteins and other compounds containing amino groups, leading to their irreversible structural and functional modification; autooxidation of glucose, lipids and proteins, which leads to an increase in the level of highly reactive free radicals; direct glucose toxicity is a prolonged and uncontrolled effect of glucose on various cell structures). Hemodynamic disturbances include the acceleration of blood flow observed already in the early stages of diabetes mellitus; intracapillary hypertension; violation of autoregulation of vascular tone; arterial hypertension. Hemorheological disorders are the activation of platelets: an increase in their aggregation and adhesive abilities; non-enzymatic glycosylation of hemoglobin of erythrocytes, structural proteins of their membrane reduces the saturation of erythrocytes with oxygen, their ability to deform when passing through the capillaries; increased absorption of plasma proteins on the surface of altered erythrocytes reduces the negative membrane potential, which leads to hyperaggregation and/or increased release of erythrocytes into the extravascular space; activation of leukocytes, release of proteases and free radicals that have a damaging effect on the surrounding cellular structures and contribute to the formation of oxidative stress. Genetic disorders: type 1 diabetes is a classic autoimmune disease that is linked to certain antigens of the human major histocompatibility complex (MHC locus): alleles DR3 and or DR4, as well as antigens of the DQw8 and DQw3,2 locus; various genotypes have been associated with the severity of diabetic retinopathy.

Conclusions. Thus, the most significant and common cause of decreased vision in diabetes mellitus is retinal pathology or diabetic retinopathy.