



FEATURES OF THE DIAGNOSIS OF DIABETIC RETINOPATHY IN ADULTS

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Abstract:

Diabetic retinopathy (DR) is a serious complication of diabetes mellitus (DM), which, with progression, threatens with a significant decrease or complete loss of vision. It is the leading cause of blindness in the working-age population and, according to global estimates, occurs in every third patient with DM. DR has been studied for more than 160 years, and the introduction into clinical practice first of laser retinal coagulation in the 20th century, and then, in the 21st, of vascular endothelial growth factor (VEGF) inhibitors allowed to influence vascular proliferation in DR and reduce the risk of vision loss from diabetic macular edema (DMO). Nevertheless, these tools are only able to stop the progression of DR at the stages with complications with vision loss, and the main method of management for patients remains prevention – screening and influence on risk factors (hyperglycemia, hypertension, dyslipidemia). Currently, attention is being paid to possible new risk factors (physical inactivity, obesity, underweight, obstructive sleep apnea syndrome), the search is underway for early markers of DR on the fundus, which would allow more active influence on the pathological process in its early stages. This review is devoted to epidemiology, the history of study, proven and probable risk factors, modern and promising approaches to the prevention and treatment of DR, including accurate, less traumatic laser techniques (PASCAL, NAVILAS, D-MPL) and intravitreal antiangiogenic drugs studied in research.

Keywords: Diabetic retinopathy, diabetic macular edema, epidemiology, anti-VEGF, laser coagulation, screening, prevention, risk factors, early changes on the retina

Duration of the course of diabetes mellitus. When diagnosing type 2 diabetes mellitus, most patients already have one or another stage of diabetic retinopathy, which cannot be said about patients with type 2 diabetes, where retinopathy is extremely rarely detected at the time of diagnosis. However, 20 years after the onset of the disease, the vast majority of patients with diabetes of both types will suffer from diabetic retinopathy.

Hyperglycemia. The most important risk factor and progression of the development of DRP is a high concentration of glucose in the blood plasma. A more informative indicator is the concentration of glycosylated hemoglobin. This indicator is much less subject to daily fluctuations and reflects the average glucose level over the past 2-3 months.

The method of systemic treatment: rapid normalization of carbohydrate metabolism after the appointment of intensive insulin therapy in poorly compensated insulin-dependent diabetes mellitus or insulin-independent diabetes mellitus during the transition from oral drugs to insulin can cause the progression of DRP. In this regard, it is highly desirable to gradually reduce the level of glucose in the blood. The rate of

reduction of glycosylated hemoglobin should not exceed 2% for 6 months. Baseline level of diabetic retinopathy. The greater and more pronounced the manifestations of DRP by the time the patient is monitored, the higher the risk of DRP going into the proliferative stage.

Stereoscopic photographing of standard retinal fields can be used to detect diabetic retinopathy. Such a study allows you to obtain and archive objective information about the state of the retina.

The method of stereoscopic photographing of standard retinal fields has the highest sensitivity, however, is very expensive. Direct ophthalmoscopy, despite subjectivism, allows the researcher to register signs of DRP, and with a certain skill, to sketch what he saw. This method of detecting diabetic retinopathy is optimal for our country. In patients with diabetes mellitus, ophthalmoscopy should be performed exclusively with a wide pupil. It is possible to significantly replenish information about the state of the retina in diabetic retinopathy by using optical coherence tomography (OCT) and fluorescence angiography (PHAG), thanks to which pathological changes are detected that are indistinguishable with



conventional ophthalmoscopy. Optical coherence tomography is a study that allows us to assess the thickness and topography of various layers of the retina in the central (macular) region. It provides very important information about the severity and nature of macular edema. The procedure is not harmful to the patient and has no side effects. Fluorescent angiography is a technique based on the phenomenon of fluorescence - the ability to cause a substance injected into the bloodstream (sodium salt of fluorescein) to glow in response to light exposure.

The main modifiable risk factors for the development and progression of DR are considered to be chronic hyperglycemia (assessed by the level of glycated hemoglobin – HbA1c), hypertension and dyslipidemia [7]. Thus, according to the DCCT study (n=1441), a decrease in HbA1c<6% reduced the risk of development and progression of DR in patients with DM1 by 76% in primary prevention and by 54% in secondary prevention [8]. Intensive glucose monitoring in people with DM2 according to the results of UKPDS (n=3867) also makes it possible to achieve a significant reduction in the risk of DR progression and the need for laser photocoagulation – by 21% and 29%, respectively.

At the same time, maintaining the target blood pressure level (BP) <144/82 mmHg in UKPDS study participants with subsequent 9-year follow-up showed a reduction in the risk of DR progression by two steps (according to ETDRS classification) - by 34%. Currently, the negative impact of obesity and underweight, low physical activity, obstructive sleep apnea syndrome and inflammatory markers on the occurrence and progression of DR is being discussed [10]. Despite the fact that studies ambiguously assess their contribution to the development of DR, it makes sense to influence them as part of a systematic approach to the management of SD.

DR is a chronic progressive disease, and in the absence of proper management, it naturally ends with a decrease in vision up to its complete loss. But, as it turned out, visual impairment may not be the only complication of DR. There is more and more data linking DR with the development of other micro- and macrovascular complications.

Diabetic retinopathy is characterized by the presence of specific abnormalities in the vessels and retinal tissue. It is characterized by a change in the caliber and tortuosity of retinal vessels, the appearance of microaneurysms, hemorrhages, edema, hard and soft exudates, newly formed vessels, glial proliferation, vitreoretinal traction. The study of morphological changes in DR revealed a thickening of the basement membrane, the loss of capillary pericytes as a result – the development of capillary acellularity, which leads

to the fact that microcapillaries are represented by tubes consisting of the basement membrane. Oxygen perfusion through their wall worsens and retinal ischemia and hypoxia develop. All this ultimately leads to the development of neovascularization. Newly formed vessels, in turn, are functionally defective and become a new source of hemorrhages. According to E.R. Berman (1991), the retina may be particularly sensitive to damage, since it has the highest rate of glucose and oxygen utilization per unit weight than any other tissue, and has a high activity of the glycolytic and aerobic pathways of glucose metabolism. It is an indisputable fact that the main role in the development of DR is played by chronic hyperglycemia. There are data obtained as a result of multicenter studies performed in type 1 and type 2 diabetes mellitus, confirming the paramount importance of normoglycemia. Long-term observations of patients with type 1 diabetes mellitus, in whom modern methods of intensified insulin therapy, self-control, training managed to maintain the state of normoglycemia for a long time, confirmed a significant reduction in the risk of progression of microvascular complications. The results of a multicenter international study – Diabetes Control and Complication Trial – showed that maintaining satisfactory glycemic control in a group of individuals without vascular complications contributed to a 76% reduction in the risk of developing diabetic retinopathy%; diabetic neuropathy – by 60%; microalbuminuria – by 39%; albuminuria – by 54%.

IN CONCLUSION, it should be said that the promising directions in the treatment of DR today are still the training of patients and doctors, achieving the highest possible degree of glucose and blood pressure control throughout the patient's life, providing patients with the most modern hypoglycemic drugs and self-monitoring tools, mandatory and timely screening and monitoring of patients, the study of pathogenesis and the development of new effective drugs and treatment methods.

REFERENCE:

1. Bikbov M.M. Modern approaches to surgical treatment of diabetic retinopathy /M.M. Bikbov, R.R. Fayzrakhmanov, A.L. Yarmukhametova et al. //Medical Almanac. - 2015. - №1 (36). - pp. 86-89.
2. Vorobyeva I.V. Diabetic retinopathy in patients with type II diabetes mellitus. Epidemiology, a modern view of pathogenesis. Review /I.V.



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Vorobyeva, D.A. Merkusenkova // Ophthalmology. - 2012. - No. 4. - pp. 18-21.

3. Kasimov 3.M. Comparative analysis of the results of IAG laser vitreolysis and posterior vitrectomy in diabetic hemophthalmos / 3.M. Kasimov N.I. Alieva // Ophthalmology. - 2014. - No. 3. - pp. 33-37.