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Сборник материалов XII Республиканской конференции с международным участием «Актуальные вопросы офтальмологии (реальность, мифы и противоречия)» : сб. науч. тр. / под общ. ред. Т.А. Имшенецкой – Минск, 2018. – 230 с.

В сборнике представлены работы, отражающие актуальные вопросы современной офтальмологии, современные подходы к диагностике и лечению заболеваний органа зрения, реабилитации пациентов с офтальмопатологией, трудности диагностики и выбора лечения в сложных случаях, а так же достижения офтальмологии в Беларуси и за рубежом.

Сборник представляет интерес для практикующих врачей-офтальмологов, врачей смежных специальностей, врачей общей практики, ученых-клиницистов и студентов высших учебных заведений.

MY DEEP SCLERECTOMY IS STARTING TO FAIL: HOW I SHOULD PROCEED?

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The postoperative management of Non Penetrating Deep Sclerectomy is strong related with the surgical success. Recognizing the signs and locating the source of the early failure allow us to act directly on the cause and increase the success rate. Late failure bleb could be managed by same-site deep sclerectomy re-operation with subconjunctival and subscleral collagen matrix and minimal use of mitomycin.The half part of collagen matrix is placed under the superficial scleral flap while the other half part rests under conjunctiva communicating both spaces. A guideline is presented for medical and surgical postoperative management of failure after NPDS

MY DEEP SCLERECTOMY TECHNIQUE

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Non Penetrating Deep sclerectomy (NPDS) technique with uveoscleral hema implant (Esnoper Clip, AJL Ophthalmics - Álava, Spain) is presented. The implant has been developed at the Glaucoma Unit of the Hospital Universitari Germans Trias i Pujol, Barcelona (Universitat Autonoma of Barcelona, Spain). It is a non-reabsorvable and foldable hema implant (2-hydroxyethyl methacrylate) with two plates designed to maintain supraciliar and intrascleral spaces and to achieve higher intrascleral blebs. One plate is placed in a full-thickness suprachoroidal bag 2 mm behind the scleral spur. After folding the implant the other plate is placed into the intrascleral lake. It can be fixed without suturing because it has 2 lateral notches that do not allow anterior displacement. NPDS with the uveoscleral hema implant is a safe and effective technique for the management of open-angle glaucoma.

CORRECTION OF METABOLIC DISORDERS IN THE PREVENTION AND TREATMENT OF DIABETIC RETINOPATHY.

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The dissertation is devoted to the effectiveness increase in prevention and treatment of diabetic retinopathy for patients with insulin-dependent diabetes mellitus and correction of antioxidant system disorders (AOS) by short-chain drugs based on new scientific data on the peculiarities of changes in antioxidant processes in patients' blood depending on the stage.

Based on the analysis of the literature, it has been revealed that diabetic retinopathy remains one of the most urgent problems in ophthalmology, as it often leads to the development of irreversible changes in the fundus and significant reduction of vision in the working age. The incidence of adult insulin-dependent diabetes mellitus in 10 years has increased by 1.5 times [1]. Lack of knowledge for individual links in pathogenesis and their interaction does not allow to fully create a harmonious system of treatment, as well as the prevention of diabetic retinopathy. In the study of the pathogenesis of diabetic retinopathy, the activation of lipid peroxidation (LPO) and reduction of the activity of the AOS system (catalase, HPA, superoxide dismutase) in the blood, also increased the level of prohangiogenic vascular endothelial growth factor, and decreased the activity of the factor derived from the pigmentary epithelium of blood vessels (PEDF) in the system of eye metabolism and attenuation of antioxidant defense in these patients.
Free radicals as a result of oxidative stress can destroy biological molecules, including nucleic acids, proteins, carbohydrates and lipids with the participation of various enzymes. As a result of these reactions, new compounds are formed, which can become the biomarkers for changes in the system of LPO and AOS.

The most available biological materials such as blood and mucous membrane (CP) can be used to measure the level of these compounds for patients with diabetic retinopathy, thus mediating the normalization of the state of AOS to

prevent degenerative retardation and delay the progression of diabetic retinopathy. In the literature, there are isolated reports about the reduction of antioxidant reserves of the body with complicated DR and with changes in the fundus. Early detection of AOP abnormalities with DR is extremely important for further correction and prevention of development of degenerative changes in retina and the proliferative stage [2,3].

The search for new medicines for therapy that could strengthen the antioxidant protection of retina cells, provide detoxification, protective effect on the system of peroxide-oxidative reactions in patients with diabetic retinopathy with a view to possible suspension of its progression remains relevant.

The research is based on an analysis of the results of the state of the antioxidant system in the blood of patients with DR of varying degrees of severity before and after treatment with the use of an antioxidant drug. The results of clinical and biochemical studies performed in 178 patients, 356 eyes (85 men and 93 women), 45-70 years old, middle age (53.0 ± 1.9 years), and 20 patients (40 eyes) without diabetes - of the same age.

AOS has been evaluated for the activity of enzymes (superoxide dismutase, catalase, glutathione peroxidase, nitrites), as well as for the concentration of iNOS, PEDF, VEGF. The activity of the enzymes involved in the detoxication of LPO products was determined by Libra S32PC spectrophotometer at a wavelength of 230 nm.

The concentrations of immuno-enzyme markers were determined on the full-wave immuno-enzyme analyzer SIRIO S, at wavelengths 198-1100 nm.

In order to correct the thiol status for patients with insulin-dependent diabetes and to increase the treatment efficacy, in addition to the traditional treatment, the product of the group of short-chain carotenoids Multicarenol-6 has been included in the treatment complex, which was successfully used for the treatment of age-related macular degeneration and dystrophic changes in the eye. The preparation of short-chain carotenoids in patients with DR was prescribed according to the scheme: one teaspoon twice a day during meals, 45 days, four courses per year.

The results of the study of the activity of the enzymes AOC in patients with DR showed that the activity of the superoxide dismutase, catalase and glutathione peroxidase enzymes was lower in the blood of patients with diabetic retinopathy compared to the healthy group and it depends on the DR phase, with more decreased activity of glutathione peroxidase which is responsible for the protection of lipid membrane cells from oxidative stress (OS).

The state of the AOC was determined by the content of the OMB products judged by the number of formed aldehyde and ketone groups, the activity of blood catalase, superoxide dismutase. Significant increase in the indicator of the optical density of the formed dinitrophenylhydrazones in the groups of patients with insulin-dependent diabetes mellitus with different stages of DR and without ocular complications of diabetes, namely an increase in patients with a proliferative stage of 67.6%, with pre-proliferative stage - 51.2%, with nonproliferative stage - 21.4% compared with the control group, at the same time there is an increase in the second group by 15.4% ($p < 0,05$). The activity of glutathione peroxidase involved in the transfer of aminoacids through the membrane and the restoration of protein molecules in the blood is significantly lower in DPS compared with healthy (6.2 ± 0.98 μc / mol) and nonproliferative stage (3.4 ± 0.28 mccat / mol) and proliferative stage (2.5 ± 0.75 μcat / mol) compared with patients with preproliferative DR stage (3.1 ± 0.53 μcat / mol) (respectively, $p = 0.05$). The level of the PEDF cluster in serum was significantly increased by the inclusion of carotenoids in the treatment of DR at all stages and had an antiangiogenic effect, there was an increase in the density of the macular pigment, which in turn was one of the protective barriers for the destructive action of the oxidants to the pigment epithelium.

In the main group, when conducting computer perimetry, the photosensitivity of the retina increased in the 0-10 degree range by 118 dB, in the zone 11-50 degrees at 890 dB mA ($p < 0.01$), the number of relative livestock decreased. In the control group, we also observed the growth of photosensitivity of the retina in the central zone of 10.37% against the main group by 11%, in the peripheral zone from 10 to 50 degrees by 37% versus 42.18%, which was 781 Db

versus 890 Db. The combined method of DR treatment allowed to improve the electrophysiological parameters of the optic nerve in the group receiving the preparation of short-chain carotenoids in comparison with the control group, which is confirmed by the normalization of the threshold of electroencephalic sensitivity for phosphine (PRF) at 49.9%, and increased lability of the optic nerve in general and substantially of patients with diabetic retinopathy (39.0 ± 4.8) Hz, p = 0.007.

The relationship between oxidative stress activation, NO dysfunction and the factors regulating angiogenesis in the formation of diabetic retinopathy is first shown. It has been shown for the first time that the antioxidant from the group of short-chain carotenoids can cause regression of molecular-biochemical and clinical signs of retinopathy in patients with insulin-dependent diabetes mellitus. It was first established that under the action of AOS of short-chain carotenoids, the expression of key molecular regulators of angiogenesis-pigmentary factor of epithelial origin (PEDF) and vascular endothelial growth factor (VEGF) - regulations, as well as indicators of the NO-expression of iNOS expression and the maintenance of a stable metabolite NO-was normalized. It has been established that this effect of the drug is associated with inhibition of AFK-dependent mechanisms of retinopathy and inhibition of oxidative stress reactions (reduction of markers of oxidative modification of protein) against the background of increased activity of antioxidant enzymes-SOD, catalase and GPR. On the basis of detected AFO-dependent mechanisms of the formation of diabetic retinopathy, the expediency of incorporating short-chain carotenoids into the complex therapy of diabetic retinopathy has been substantiated and proved to correct the expression of molecular factors of angiogenesis, nitroxidergic system and visual functions. On the basis of obtained clinical and biochemical results, the study of the use of the drug, formulated recommendations for its inclusion in the integrated therapy of patients with DR. It was found out that it is expedient for laboratory diagnostics of diabetic retinopathy and control of the effectiveness of its treatment to determine in the blood of patients with diabetes markers of oxidative stress - AFO and KFK,

nitroxyergic system - iNOS, angiogenesis - VEGF for predicting the further development of DR.

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