MODERN APPROACHES TO THE TREATMENT OF FUNDUS CHANGES IN ARTERIAL HYPERTENSION

[1]Zhalalova D.Z. [2]Shernazarov Farrukh
[1]Samarkand State Medical University, associate professor at the Department of Ophthalmology
[2]Student of group 608 of the Samarkand State Medical University Faculty of Medicine
https://doi.org/10.5281/zenodo.10391114

Abstract. *Treatment of GR and chorioretinopathy is aimed at reducing systemic blood pressure and, if necessary, managing the underlying disease. The optometrist or ophthalmologist who discovers hypertensive chorioretinopathy in a patient with undiagnosed hypertension is in a position to reduce the patient's morbidity and mortality. There are no formal recommendations for routine screening for hypertensive retinopathy in asymptomatic patients diagnosed with systemic hypertension. However, if a patient without a diagnosis of hypertension presents with signs of mild hypertensive retinopathy, we recommend referral to a general practitioner within one week. For moderate HF, the patient should be assessed by a general practitioner within one or two days. Patients presenting with severe hypertensive retinopathy or hypertensive chorioretinopathy should have their blood pressure measured immediately and referred to the nearest emergency room for urgent blood pressure correction. There are no formal recommendations for screening women with pregnancy-induced hypertension; however, we recommend that pregnant women presenting with hypertensive retinopathy be referred to an obstetrician/gynecologist for evaluation of preeclampsia. Although optometrists and ophthalmologists do not routinely manage hypertension, close collaboration with general practitioners is necessary to ensure patients receive appropriate treatment.*

Keywords: *the reduction in blood pressure achieved with the use of ACE inhibitors may reduce the risk of progression of GH changes.*

These patients should be monitored frequently to evaluate regression of changes caused by hypertensive chorioretinopathy. The current approach to treatment of GH primarily focuses on controlling systemic blood pressure to normal, which is primarily achieved through oral pharmacotherapy. The reduction in blood pressure achieved with the use of ACE inhibitors may reduce the risk of progression of GH changes. Such therapy also leads to an improvement in arteriole architecture, reduction and increase in arteriolar density. Unlike more severe retinopathy, early onset retinopathy is more likely to be reversible. For this reason, early detection of retinal lesions may be useful not only for effectively preventing further disease progression, but also for finding new therapeutic options. A major barrier to therapy based primarily on oral medications is poor patient compliance. A 2017 meta-analysis on a group of 12,603 patients with hypertension found non-adherence to pharmacotherapy in 45.1% of patients. Recent reports also indicate that severe lesions associated with malignant hypertensive retinopathy may regress or even disappear completely. Strachan and McKnight described the case of a 34-year-old woman who was diagnosed with hypertension and KWB stage IV hypertensive retinopathy. Changes visible in the fundus of the eye disappeared 10 months after treatment with irbesartan (AT1- R antagonist), atenolol (β1 -adrenergic receptor antagonist) and amlodipine (calcium channel blocker). Another anecdotal report focused on a 23-year-old patient with worsening vision and malignant hypertensive retinopathy that appeared 1 month after stopping antihypertensive medications. Six

weeks after returning to pharmacotherapy, signs of malignant GR disappeared and visual acuity improved. In addition, the presence of pheochromocytoma, a tumor characterized by frequent fluctuations in blood pressure, can lead to the rapid development of malignant GH. Treatment based on adrenalectomy and normalization of blood pressure was successful, and improvement was observed in papilledema and fatty and soft exudates. Unfortunately, there is a lack of research focusing primarily on the treatment of retinal lesions that occur during hypertension. Most information about new treatment options is based on case reports and studies with small patient samples. One promising approach is based on the correlation between systemic hypertension and increased intraocular pressure (IOP). Attempts have been made to use local administration of drugs that reduce IOP in systemic hypertension in order to improve blood flow and saturation of arterioles with blood. However, timolol (a beta-adrenergic antagonist) and dorzolamide (a carbonic anhydrase inhibitor) had no or minimal effect on retinal blood flow. Interestingly, the latest report implies that a diet rich in L -methylfolate and vitamin D may be beneficial for patients with hypertensive retinopathy. However, this approach needs to be confirmed in a larger group of patients. Targeting neovascularization, which may play an important role in the pathophysiology of GH, appears promising. Bevacizumab, an anti- VEGF antibody, is widely used in ophthalmology to treat diseases associated with increased vascular permeability, such as exudative age-related macular degeneration (AMD) and diabetic retinopathy (DR). Vascular leakage is also observed during malignant GR. When hypertensive retinopathy progresses to the exudative stage, damage to the blood-retinal barrier occurs and increased vascular permeability. Intraocular injections of anti- VEGF antibody were successfully used in 2 patients with hypertension and malignant hypertensive retinopathy with macular and optic disc edema. One month after the injection, visual acuity improved, and the lesions characteristic of the exudative stage disappeared. This is not the only report of the possible effectiveness of anti- VEGF antibody treatment in malignant retinopathy. Three more cases, two using bevacizumab and one using ranibizumab, also an anti- VEGF antibody, confirmed their effectiveness. The decision to administer ranibizumab injection was based on the lack of retinal image improvement during malignant GR despite extensive blood pressure control. Therefore, targeting VEGF and neovascularization as a potential pathomechanism of GH seems reasonable.

The 2018 European Society of Cardiology (ESC) and European Society of Hypertension (ESH) guidelines on the management of hypertension recommend fundusoscopy in patients with KWB grade 2 or 3 hypertension or in hypertensive patients with diabetes who are more likely to have significant retinopathy. While in patients in the early stages of the disease, signs of hypertensive retinopathy have less predictive value and are limited by interobserver variability. A study by Biesenbach et al. (1994) has already shown that funduscopy and ophthalmological examination in the assessment of arterial hypertension improves the indications for systemic therapy. Diagnosis of hypertensive retinopathy may indeed help select patients with hypertension who require more aggressive treatment. Grosso et al (102) recommended the use of an additional stream of risk assessment framework, which can help clinicians further guide their treatment. In the presence of borderline hypertension or discordant hypertension scores, an eye physician's assessment and classification of hypertension may be helpful and may help the physician determine whether additional antihypertensive therapy should be initiated or more stringent lifestyle modifications are sufficient. For hypertensive patients with grade 1 or 2 VHD It is recommended to consider referral to an ophthalmologist for patients with diabetes or vision

symptoms. When mild signs of retinopathy are present, ophthalmologists may refer individuals for additional cardiac evaluation to improve cerebrovascular risk stratification, and pharmacologic treatment may be required. The presence of retinopathy may be an indication for more aggressive intervention for associated cardiovascular risk factors and comorbidities, and has important practical implications for treatment decisions and for close monitoring. For all patients with grade 3 hypertension, there is a strong indication for ophthalmological examination to identify and treat vascular complications of the retina. In case of malignant hypertensive retinopathy, the patient needs immediate treatment for hypertension. Studies have been conducted on intravitreal antibodies against vascular growth factors in acute hypertensive retinopathy and they showed a decrease in macular edema and retinal hemorrhages. Additionally, another study showed rapid recovery of malignant hypertensive retinopathy in patients after administration of bevacizumab. However, the use of these agents has not yet been widely used or approved.

Conclusion

In conclusion, modern approaches to the treatment of fundus changes in arterial hypertension have significantly evolved, focusing on a comprehensive management strategy for both blood pressure control and preservation of retinal health. These approaches often involve a combination of pharmacological interventions targeting blood pressure reduction, lifestyle modifications, and close monitoring of fundus changes through regular ophthalmic examinations. In addition, emerging therapies, such as anti-vascular endothelial growth factor (VEGF) agents and neuroprotective agents, show promise in preserving retinal function and preventing progression of fundus changes. By adopting these modern approaches, healthcare professionals can effectively address the complex interplay between arterial hypertension and fundus changes, ultimately improving patient outcomes and reducing the risk of vision loss and cardiovascular complications.

REFERENCES

1. Zhalalova D.Z. , Makhkamova D.K. Multicomponent approach to the diagnosis of retinal changes in arterial hypertension Journal “ Problems of biology and medicine” - 2021. No. 5 C - 205-211.
2. Zhalalova D.Z. , Makhkamova D.K. OCT angiography in assessing the vascular bed of the retina and choroid Journal “ Problems of biology and medicine” - 2021. No. 6 C - 211-216.
3. Zhalalova D.Z.The content of endothelin and homocysteine in blood and lacrimal fluid in patients with hypertensive retinopathy Web of Scientist:International Scientific Research Journal Volume 3,ISSUE 2,February-2022,C. 958-963
4. Zhalalova D.Z. Modern aspects of neuroprotektive treatment in hypertensive retinopathy Web of Scientist:International Scientific Research JournalVolume 3,ISSUE 2,February-2022,C. 949-952
5. Zhalalova D.Z.Development of classification criteria for neuroretinal ischemia in hypertension Web of Scientist:International Scientific Research Journal Volume 3,ISSUE 2,February-2022,C. 972-978
6. Jalalova D.Z. Classification criteria for changes in retinal vessels in arterial hypertension Journal “ Problems of biology and medicine” - 2022. No. 1 C - 50-53.

7. Zhalalova D.Z. Diagnostic criteria for optical coherence tomography with angiography function for ischemic diseases of the organ of vision against the background of arterial hypertension Journal “ Problems of biology and medicine” - 2022. No. 5 C –73-78
8. Zhalalova D.Z. Evaluation of markers of endothelial dysfunction in tear fluid in patients with arterial hypertension . Journal of Biomedicine in Amaliet. Tashkent - 2022, Volume No., No. WITH.
9. Zhalalova D.Z. OCT angiography in the assessment of retinal and choreoretinal microcirculation in patients with uncomplicated arterial hypertension International Ophthalmological Congress IOC Tashkent 2021, P 95-96
10. Zhalalova D.Z. Modern aspects of neuroprotective treatment for hypertensive retinopathy Journal TMA - 2022. No. 4 P 84-87
11. Shernazarov Farrukh ORGANIZATION OF DIGITALIZED MEDICINE AND HEALTH ACADEMY AND ITS SIGNIFICANCE IN MEDICINE // SAI. 2023. №Special Issue 8. URL: https://cyberleninka.ru/article/n/organization-of-digitalized-medicine-and-health-academy-and-its-significance-in-medicine (дата обращения: 20.11.2023).