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ORIGINAL ARTICLE

Therapeutic Outcomes in Primary Open-Angle Glaucoma with Coexisting Hypertension

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Summary:

Glaucoma is a significant problem in ophthalmology, being a leading cause of incurable blindness. Despite advances in surgical and conservative treatment, glaucoma-related disability accounts for 14.2% of the population, and in recent years, the prevalence of young, working-age patients has increased. In the treatment of glaucoma, beta-blockers are widely used as local hypotensive. A high efficiency, but several side effects have been described with their local use. At the same time, the literature did not reflect the specifics of their action in patients with glaucoma associated with hypertension. Beta-blockers, are widely used in the treatment of hypertension, but there are isolated reports on their effect on hydro- and hemodynamics, in which the indicators were studied in individuals without glaucoma, therefore it remains unclear what effect is observed with a general and local combination of drugs in patients with glaucoma against the background of hypertension. The objective of this study is to improve the effectiveness of treatment of patients with primary glaucoma and hypertension based on a differentiated approach to the selection of local and general hypotensive agents with different mechanisms of action. Hence, a treatment method for patients with glaucoma and hypertension has been proposed, including a combination of topical pilocarpine and timolol and oral capoten. This treatment combination helps stabilize the glaucomatous process and preserve visual function in patients with primary glaucoma. In conclusion; the effect of general and local antihypertensive agents on systemic blood pressure, fluid flow, and hemodynamic parameters in hypertensive patients and in patients with was studied for the first time.

A differentiated approach to the treatment of primary open-angle glaucoma associated with hypertension contributed to the stabilization of the glaucomatous process, increased treatment effectiveness in patients with primary open-angle glaucoma, and, consequently, their medical and social rehabilitation. A significant increase in arteriolar caliber by 2.2±0.25 μm and an arteriovenous ratio by 0.3±0.01 were detected in the microcirculation of the bulbar conjunctiva with systemic administration of atenolol in patients with hypertension. An increase in systolic and diastolic blood flow velocity, a decrease in the resistance index and systolic-diastolic ratio during imaging of the internal carotid arteries, indicating improved blood flow, were also noted. The effect of systemic administration of atenolol, nifedipine, and capoten on visual function, local and systemic hemodynamics, and tonographic parameters was established in patients with primary glaucoma and hypertension. The most pronounced positive effect was observed with capoten. A negative impact on hydrodynamics and visual function was found with the combined use of topical and systemic beta-blockers. Topical adrenergic blockers should not be prescribed when atenolol is administered orally. It is recommended to include capoten in the treatment of patients with primary glaucoma and high blood pressure.

***Keywords**: Primary open-angle glaucoma, hypertension, hypotensive drugs, systemic therapy, topical therapy*

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BIBLIOGRAPHY:

1. Quigley HA. Number of people with glaucoma worldwide. Br J Ophthalmol 1996;80:389-93.
2. Dielemans I, Vingerling JR, Wolfs RC, Hofman A, Grobbee DE, de Jong PT. The prevalence of primary open-angle glaucoma in a population-based study in the Netherlands. The Rotterdam study. Ophthalmology 1994;101:1851-5.
3. Gordon MO, Beiser JA, Brandt JD, Heuer DK, Higginbotham EJ, Johnson CA, et al. The ocular hypertension treatment study: baseline factors that predict the onset of primary open-angle glaucoma. Arch Ophthalmol 2002;120:714-20.
4. Kitazawa Y, Horie T, Aoki S, Suzuki M, Nishioka K. Untreated ocular hypertension. A long-term prospective study. Arch Ophthalmol 1977;95:1180-4.
5. Rossetti L, Marchetti I, Orzalesi N, Scorpiglione N, Torri V, Liberati A. Randomized clinical trials on medical treatment of glaucoma. Are they appropriate to guide clinical practice? Arch Ophthalmol 1993;111:96-103.

6. Epstein DL, Krug JH, Jr., Hertzmark E, Remis LL, Edelstein DJ. A long-term clinical trial of timolol therapy versus no treatment in the management of glaucoma suspects. Ophthalmology 1989;96:1460-7.
7. Schulzer M, Drance SM, Douglas GR. A comparison of treated and untreated glaucoma suspects. Ophthalmology 1991;98:301-7.
8. Heijl A, Bengtsson B. Long-term effects of timolol therapy in ocular hypertension: a double-masked, randomised trial. Graefes Arch Clin Exp Ophthalmol 2000;238:877-83.
9. Kass MA, Heuer DK, Higginbotham EJ, Johnson CA, Keltner JL, Miller JP, et al. The ocular hypertension treatment study: a randomized trial determines that topical ocular hypotensive medication delays or prevents the onset of primary open-angle glaucoma. Arch Ophthalmol 2002;120:701-13.
10. Kamal D, Garway-Heath D, Ruben S, O'Sullivan F, Bunce C, Viswanathan A, et al. Results of the betaxolol versus placebo treatment trial in ocular hypertension. Graefes Arch Clin Exp Ophthalmol 2003;241:196-203.
11. Heijl A, Leske MC, Bengtsson B, Hyman L, Hussein M. Reduction of intraocular pressure and glaucoma progression: results from the early manifest glaucoma trial. Arch Ophthalmol 2002;120:1268-79.
12. Leske MC, Heijl A, Hussein M, Bengtsson B, Hyman L, Komaroff E. Factors for glaucoma progression and the effect of treatment: the early manifest glaucoma trial. Arch Ophthalmol 2003;121:48-56.
13. The effectiveness of intraocular pressure reduction in the treatment of normal-tension glaucoma. Collaborative Normal-Tension Glaucoma Study Group. Am J Ophthalmol 1998;126:498-505.
14. Parmar MK, Torri V, Stewart L. Extracting summary statistics to perform meta-analyses of the published literature for survival endpoints. Stat Med 1998;17:2815-34.
15. Ihaka RG, Gentlemen R. “R”: a language for data analysis and graphics. J Computational Graphical Stat 1996;5:299-314.
16. Higgins JP, Thompson SG, Deeks JJ, Altman DG. Measuring inconsistency in meta-analyses. BMJ 2003;327:557-60.
17. Altman DG, Andersen PK. Calculating the number needed to treat for trials where the outcome is time to an event. BMJ 1999;319:1492-5.
18. Shin DH, Kolker AE, Kass MA, Kaback MB, Becker B. Long-term epinephrine therapy of ocular hypertension. Arch Ophthalmol 1976;94:2059-60.
19. Kitazawa Y. Prophylactic therapy of ocular hypertension. A prospective study. Trans Ophthalmol Soc N Z 1981;33:30-2.

20. Kass MA, Gordon MO, Hoff MR, Parkinson JM, Kolker AE, Hart WM, Jr., et al. Topical timolol administration reduces the incidence of glaucomatous damage in ocular hypertensive individuals. A randomized, double-masked, long-term clinical trial. Arch Ophthalmol 1989;107:1590-8.
21. Holmin C, Thorburn W, Krakau CE. Treatment versus no treatment in chronic open angle glaucoma. Acta Ophthalmol (Copenh) 1988;66:170-3.
22. Altman DG, Bland JM. Interaction revisited: the difference between two estimates. BMJ 2003;326:219.

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