ORIGINAL RESEARCH

Assessment of efficacy of dorzolamide 2%/timolol 0.5% fixed combination therapy in patients of primary open angle glaucoma

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ABSTRACT

Background: Glaucoma is a chronic and progressive condition characterized by degeneration of the optic nerve, which can be differentiated from other types of acquired optic neuropathy by the distinctive morphology of the optic nerve head. The present study was conducted for assessing efficacy of dorzolamide 2%/timolol 0.5% fixed combination therapy in patients of primary open angle glaucoma. **Materials & methods:** 20 Patients having unilateral/bilateral primary open angle glaucoma diagnosed by tonometry and gonioscopy.Cases of established POAG are eligible for the study if the IOP is >21 mm Hg after discontinuation of all ocular hypotensive medication for a wash out period. 20 patients diagnosed with POAG werebe selected. Baseline IOP was recorded. The eye that was affected was considered as the study eye. IOP readings will be taken from the study eye with the Goldmannapplanation tonometer (GAT) at each visit. All the results were recorded in Microsoft excel sheet and were subjected to statistical analysis using SPSS software. **Results:** A total of 20 patients were evaluated. Mean age of the patients was 41.8 years. Majority proportion of patients were males. 70 percent of the patients were of urban residence. Mean IOP at baseline, first follow-up and second follow-up was 27.3 mm of Hg, 17.9 mm of Hg and 15.1 mm of Hg respectively. Conjunctival hyperemia, eye hyperemia, eye irritation and taste perversion was seen in 20 percent, 5 percent and 10 percent of the patients respectively. **Conclusion:** Significant improvement in IOP occurs among POAG patients undergoing dorzolamide 2%/timolol 0.5% fixed combination therapy.

Key words: Dorzolamide, Timolol, Open angle glaucoma

INTRODUCTION

Glaucoma is a chronic and progressive condition characterized by degeneration of the optic nerve, which can be differentiated from other types of acquired optic neuropathy by the distinctive morphology of the optic nerve head. In glaucoma, there is a gradual thinning of the neuroretinal rim, leading to an increase in the size of the optic nerve cup, a process known as optic nerve cupping.[1, 2]This condition arises from the degeneration of retinal ganglion cell axons, along with the associated glial cells and blood vessels. Notably, the remaining neuroretinal rim usually maintains its typical pink hue. In contrast, other forms of optic neuropathy are marked by a loss of this pink coloration and do not exhibit cupping, with the exception of arteritic anterior ischemic optic neuropathy, where cupping may also be present. Patients suffering from glaucoma often experience a decline in peripheral vision, and without appropriate intervention, they risk complete vision loss.[3, 4]

Initial treatment typically begins with monotherapy; however, if this approach does not successfully achieve the desired intraocular pressure (IOP), additional medications may be introduced. The selection of a particular agent is influenced by several factors, including its efficacy, safety profile, ease of administration, and cost considerations. Fixed drug combinations can simplify the dosing regimen associated with multi-drug glaucoma therapy, thereby enhancing patient compliance. Numerous fixed combinations of widely utilized IOP-lowering agents have been formulated and are accessible in various global markets.[5, 6]

AIM AND OBJECTIVES

The present study was conducted for assessing efficacy of dorzolamide 2%/timolol 0.5% fixed

combination therapy in patients of primary open angle glaucoma.

MATERIAL AND METHODS

The present study was conducted for assessing efficacy of dorzolamide 2%/timolol 0.5% fixed combination therapy in patients of primary open angle glaucomain the Department of OphthalmologySantosh Medical College & Hospital Ghaziabad, NCR Delhi, India following the acquisition of informed consent from all patients or their relatives if the patient was unable to provide consent due to their medical condition. The procedure, along with its associated risks, benefits, and potential complications, was thoroughly explained to all participants. The duration of study was from March 2017 to February 2018.20 Patients having unilateral/bilateral primary open angle glaucoma diagnosed by tonometry and gonioscopy.Cases of established POAG are eligible for the study if the IOP is >21 mm Hg after discontinuation of all ocular hypotensive medication for a wash out period. 20 patients diagnosed with POAG werebe selected. Baseline IOP was recorded. The eye that was affected was considered as the study eye. IOP readings will be taken from the study eye with the Goldmannapplanation tonometer (GAT) at each visit.

Statistical Analysis

All the results were recorded in Microsoft excel sheet and were subjected to statistical analysis using SPSS software.

RESULTS

A total of 20 patients were evaluated. Mean age of the patients was 41.8 years. Majority proportion of patients were males. 70 percent of the patients were of urban residence. Mean IOP at baseline, first follow-up and second follow-up was 27.3 mm of Hg, 17.9 mm of Hg and 15.1 mm of Hg respectively. Conjunctival hyperemia, eye hyperemia, eye irritation and taste perversion was seen in 20 percent, 5 percent and 10 percent of the patients respectively.

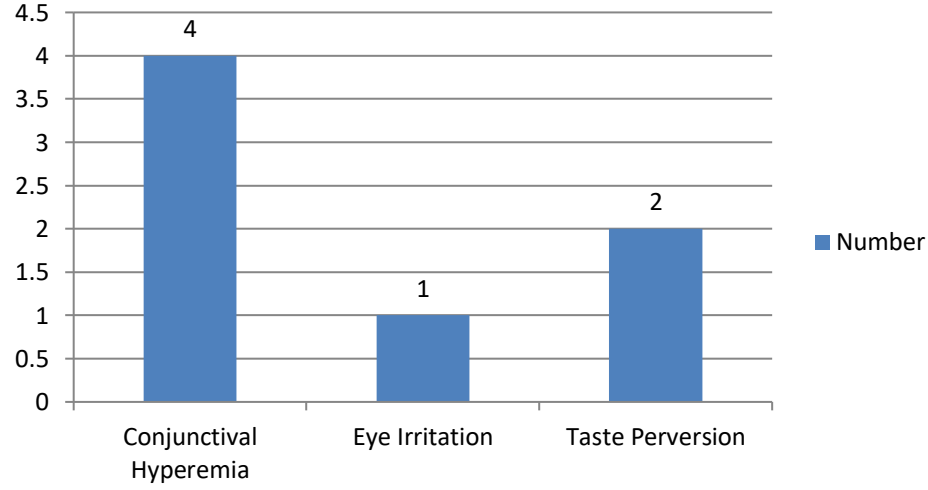
Table 1: Comparison of IOP at different time interval

Time interval	Mean	p-value
Baseline	27.3	0.001 (Significant)
First follow-up	17.9	
Second follow-up	15.1	

Table 2: Complications

Complications	Number	Percentage
Conjunctival Hyperemia	4	20
Eye Irritation	1	5
Taste Perversion	2	10

Figure 1: complications



DISCUSSION

Glaucoma ranks as the second most common eye disorder globally, following cataracts, and is a significant contributor to blindness. Approximately 66.8 million individuals are affected by glaucoma worldwide. In the United States alone, an estimated 4.4 million people suffer from this condition, with over 120,000 experiencing blindness as a consequence. The precise causes of glaucoma remain elusive, and currently, there is no definitive cure. The

term "glaucoma" encompasses various eye disorders, including congenital glaucoma, secondary glaucoma, primary angle closure glaucoma (PACG), normal tension glaucoma (NTG), pigmentary glaucoma, and primary open-angle glaucoma (POAG). These disorders lead to the degeneration of the optic nerve, which transmits visual signals to the brain, ultimately resulting in blindness. POAG constitutes approximately 70% of all glaucoma cases globally. Normal tension glaucoma, a subtype of POAG, occurs despite normal intraocular pressure (IOP), and some researchers suggest that inadequate blood flow to the optic nerve may be a contributing factor. In the case of POAG, a dysfunction in the ocular drainage system leads to the buildup of aqueous humor, elevating IOP and continuously exerting pressure on the optic nerves, causing damage.[7- 10]

A total of 20 patients were evaluated. Mean age of the patients was 41.8 years. Majority proportion of patients were males. 70 percent of the patients were of urban residence. Mean IOP at baseline, first follow-up and second follow-up was 27.3 mm of Hg, 17.9 mm of Hg and 15.1 mm of Hg respectively. Conjunctival hyperemia, eye hyperemia, eye irritation and taste perversion was seen in 20 percent, 5 percent and 10 percent of the patients respectively. Day DG et al conducted a comparative study to evaluate the efficacy and safety of a fixed combination of timolol 0.5% and dorzolamide 2% against a regimen of timolol maleate 0.5% combined with unoprostone 0.15%, administered twice daily. A total of thirty-two participants completed the study. The initial baseline trough intraocular pressure was recorded at 24.3 mm Hg, while the diurnal pressure averaged 23.4 mm Hg. For the fixed combination treatment, the trough pressure was reduced to 20.8 mm Hg, with a corresponding diurnal pressure of 19.6 mm Hg. In contrast, the combination of timolol and unoprostone resulted in a trough pressure of 20.1 mm Hg and a diurnal pressure of 19.8 mm Hg. Statistical analysis revealed no significant differences between the treatment groups at any measured time point, nor in the overall reduction from baseline for the diurnal curve. Additionally, there were no notable differences in the incidence of ocular or systemic adverse events, whether solicited or unsolicited. The most frequently reported adverse effects included burning, stinging, and conjunctival hyperemia, with no serious adverse events recorded throughout the study. The findings indicate that both the timolol/dorzolamide fixed combination and the concomitant therapy of timolol maleate and unoprostone exhibit comparable efficacy and safety profiles during the daytime diurnal curve.[10]

CONCLUSION

Significant improvement in IOP occurs among POAG patients undergoing dorzolamide 2%/timolol 0.5% fixed combination therapy.

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