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THE EFFECT OF TRAVOPROST 0.004% AS AN ADJUVANT TO TIMOLOL 0.5% THERAPY

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SUMMARY – The aim of the study was to compare the efficacy of travoprost 0.004% eye drops added to therapy with timolol 0.5%. The study included 40 patients (80 eyes) with open angle glaucoma and intraocular pressure (IOP) above 18 mm Hg treated with topical beta blocker (timolol 0.50% twice a day). Travoprost 0.004% was added to timolol 0.5% therapy once daily in the evening. Follow up examinations were scheduled at 7 days, one month and three months. IOP lowering was achieved in all patients. Substantial lowering of 2.42 mm Hg was achieved after the first week of treatment. Further lowering and stabilization of IOP was recorded at three months, with total IOP decrease of 3.97 mm Hg; the difference was statistically significant ($\chi^2=6.7743$; $p<0.01$). At three months, target IOP was recorded in 64 eyes (16.4±0.7 mm Hg) and failed to be achieved in 16 eyes (21.1±2.3 mm Hg). Mild hyperemia was found in two patients and discrete hyperemia in 26 patients. Burning sensation associated with the use of travoprost 0.004% eye drops was reported by 68 patients. In conclusion, the use of travoprost 0.004% eye drops resulted in successful lowering of IOP and achievement of target IOP.

Key words: *Glaucoma, open angle – therapy; Intraocular pressure – effects; Ocular hypertension – therapy; Evaluation; Therapy, combination*

Introduction

Ocular beta-adrenergic receptor antagonists (timolol 0.5%) are primary agents currently used in the treatment of glaucoma. Beta-blockers (timolol 0.5%) have been the standard first line therapy for glaucoma. Beta-blockers reduce aqueous humor production, decreasing intraocular pressure (IOP)[1]. In recent years, prostaglandin analogs such as latanoprost, travoprost and bimatoprost have become a popular choice as therapy for glaucoma. Prostaglandin analogs decrease IOP enhancing uveoscleral flow. A high percentage of patients on prostaglandins need additional therapy to control their IOP. At the beginning they are used as add-on therapy and later as monotherapy for glaucoma.

Since 2005, a new generation of prostaglandin analogs have been used in Croatia.

The aim of the present study was to compare the effects of travoprost 0.004% eye drops added to the existing therapy with timolol 0.5%.

Patients and Method

Forty patients (80 eyes) were included in this prospective study during 2005. There were 18 male and 22 female patients aged 46-81. The patients had been on beta blockers for at least one month, which failed to result in good IOP control (16-28 mm Hg). Travoprost 0.004% was added to current therapy (once daily in the evening) instead of substituting it, trying to improve IOP lowering and achieve target pressure. IOP was measured with Goldmann applanation tonometer at 8.00-10.00 a.m. Follow up examinations were scheduled at 7 days, one month and three months.

Study results were analyzed with Statistica for Windows V 5.0 (StatSoft, Inc. 1995) software. Descritpive statistics, χ^2-test and t-test were used. The level of significance was set at $p<0.05$.

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Results

In patients treated with timolol 0.5% alone, the mean IOP was 21.57±2.3 mm Hg (range 16-28 mm Hg) (Table 1). The mean IOP was 19.15±1.9 mm Hg (range 16-26 mm Hg) at one week, 18.27±1.4 mm Hg (range 16-24 mm Hg) at one month, and 17.60±1.2 mm Hg (range 15-23 mm Hg) at three months of add-on therapy with travoprost solution 0.004%. The mean IOP of 18.37 mm Hg (range 16-23 mm Hg) was achieved in one week to three months, and of 17.93 mm Hg (range 15-23 mm Hg) in one month to three months. At three months, target pressure was obtained in 64 eyes (16.4±0.7 mm Hg), whereas it failed to be achieved in 16 eyes (21.1±2.3 mm Hg). Side effects of the drug such as mild hyperemia were transient and were only recorded in two cases. Discrete hyperemia was found in 26 patients without patient complaints. Burning sensation associated with the add-on eye drops was reported by 68 patients.

Table 1. Mean intraocular pressure (IOP) at 1 week, 1 month and 3 months

Time	Mean IOP (mm Hg)	SD	p*
On admission	21.57	2.32	
At 1 week	19.15	1.91	$p>0.05$
At 1 month	18.27	1.41	$p<0.025$
At 3 months	17.60	1.2	$p>0.05$
1 week – 1 month	18.71	1.3	$p>0.05$
1 week – 3 months	18.37	1.2	$p<0.01$
1 month – 3 months	17.93	1.2	$p<0.01$

*χ^2-test; SD = standard deviation

Discussion

Drugs used in the treatment of glaucoma are expected to be efficacious, safe, well tolerated and associated with a low rate of local and systemic side effects. Many drugs with variable efficacy in IOP lowering are currently in use. The use of prostaglandin analogs in therapy of glaucoma has shown good characteristics[2-4]. There are literature reports on IOP decrease with travoprost comparable to latanoprost and superior to timolol by 1.3-3 mm Hg[5-9]. According to other reports, better IOP lowering effect is achieved with monotherapy (timolol, travoprost, latanoprost) than with fixed drug combinations[6,10]. In our patients, the mean IOP achieved with adjuvant therapy with travoprost 0.004% solution at three months was 17.6 mm Hg, yielding a decrease by 3.97 mm Hg. The IOP decrease recorded at one month of therapy was highly significant. Literature reports describe a mean IOP decrease by 1.9-7 mm Hg with adjuvant therapy with travoprost 0.004% solution[6,7,11]. Adjuvant therapy with travoprost 0.004% solution resulted in the mean IOP of 18.3 mm Hg[12]. In our patients, the mean IOP decrease was somewhat lower and corresponded to the mean values reported elsewhere[6,7,11]. The mean IOP achieved in our patients was slightly better than that reported by Orengo-Nania *et al.*[12]. Some deviations in the IOP achieved could be explained by differences in the patient age groups, i.e. older population (74 *vs.* 56 years), and follow up period (3 *vs.* 6 months). In our patients, local side effects were comparable to those observed by Orengo-Nania *et al.*[12]. In conclusion, the use of travoprost 0.004% eye drops resulted in successful IOP lowering and achievement of target IOP.

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Sažetak

UČINAK TRAVOPROSTA 0,004% KAO DODATNE TERAPIJE UZ TIMOLOL 0,5%

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Cilj studije bio je ispitati uspješnost terapije travoprostom 0.004% pridodanog već postojećoj terapiji timololom 0,5%. U studiju je bilo uključeno 40 bolesnika s glaukomom otvorenog kuta i intraokularnim tlakom (IOT) iznad 18 mm Hg liječenih lokalnim beta blokatorom (timolol 0,5% dva puta na dan). Travoprost 0,004% se davao uz već postojeću terapiju jedanput na dan, navečer. Kontrolni pregledi uslijedili su nakon 7 dana, 1 mjeseca i 3 mjeseca. Sniženje IOT je postignuto kod svih bolesnika. Značajno sniženje IOT od 2,42 mm Hg postignuto je nakon tjedan dana terapije. Daljnje sniženje IOT se postiglo i stabiliziralo nakon 3 mjeseca, s ukupnim sniženjem od 3,97 mm Hg; razlika je bila statistički značajna (χ^2=6,7743; p<0.01). Nakon 3 mjeseca ciljni tlak postignut je kod 64 očiju (16,4±0,7 mm Hg), a nije postignut kod 16 očiju (16,4±0,7 mm Hg). Blaga hiperemija utvrđena je kod dvoje, a diskretna hiperemija kod 26 bolesnika. Peckanje pri ukapavanju lijeka opisalo je 68 bolesnika. Zaključuje se kako je primjena kapi travoprosta 0.004% dovela do sniženja IOT i postizanja ciljnog tlaka.

Ključne riječi: *Glaukom, otvorenog kuta – liječenje; Očni tlak – učinci; Očna hipertenzija – liječenje; Procjena; Terapija, kombinirana*