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Research Paper Commerce

A Comparision of Long Term Intraocular Pressure Fluctuation in Poag Patients Treated With Bimatoprost And Latanoprost.

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ABSTRACT

BACKGROUND: Glaucoma is an optic neuropathy associated with retinal ganglion cell death that results in visual field loss. Elevated Intraocular Pressure (IOP) is a primary risk factor for the the disease and a prime target for therapy. Various studies suggest that a risk of progression of visual field loss is redused at lower intra ocular pressure. Glaucoma is a potential blinding disease and is second leading cause of blindness worldwide after cataract.

OBJECTIVES: 1. To compare long term intra ocular pressure fluctuation in primary open angle glaucoma patients treated with bimatoprost and latanoprost eye drops. 2. Side effects of the two drugs. 3. Efficacy of one over other.

METHODS: This is a prospective study of comparision of diagnosed cases of primary open angle glaucoma attending eye opd at JLN hospital Ajmer.

Cases were divided randomly into two groups A and B. Group A: 25 patients were treated with 0.03% bimatoprost eye drop. Group B: 25 patients were treated with 0.005% latanoprost eye drop.

RESULTS: Intraocular pressure fluctuation was 2.42 mmHg with Latanoprost and 2.00 mmHg with Bimatoprost. IOP lowering efficacy of Bimatoprost (27.39%) was significantly more than Latanoprost(24.04%) after 6 months of treatment. Conjunctival hyperaemia and hypertrichosis was more in patients treated with bimatoprost .

Conclusion: Bimatoprost has less long term IOP fluctuation and has more potency and efficacy in reducing the IOP. Occular side effects like conjunctival hyperaemia and hypertrichosis were more with bimatoprost.

KEYWORDS :

Introduction

Glaucoma is a common ocular ailment and a potentially blinding condition worldwide[1]. It is the second leading cause of blindness and accounts for 23 % of all cases[2]. Glaucoma is basically a disease of optic nerve leading to progressive loss of neurons. Elevated intraocular pressure is one of the major risk factors that may cause progressive neuronal loss. Recently the term glaucoma has been defined as an optic neuropathy with characteristic morphometric changes at the optic nerve head. This definition is extended to include all types of primary and secondary glaucoma[3]. There are two main treatment modalities for primary open angle glaucoma(POAG) medical and surgical. Out of which medical treatment is the first line treatment[4].

Prostaglandins also known as autacoids are a class of local hormones exerting multiple effects through several types of receptors. They have several favourable characteristics that render them as one of the most potent weapons in combating glaucomas.

Currently available prostaglandin analogs.
FP receptor analogs[5]amides:
1.Latanoprost
2. Travoprost
3. Bimatoprost
4. Unoprostone
5. Tafluprost.

DP receptor agonist:
1. AL-6598

Ep2 receptor agonist:
1. Butaprost
2. 8 isoPGE2
3.17-Phenyl trinor 8-iso PGE2

EP4 receptor agonist:
3,7 dithia PGE1

Mechanism of action: Prostaglandin analogs act primarily by increasing the uveoscleral outflow and also produce a variable increase in the trabecular outflow.

Individual agents

Latanoprost and Travoprost ester prodrug of 17-phenyl PGE2alpha .These are converted by corneal hydrolases to their respective free acids in the corneal epithelium. The esterification makes them more lipid soluble and less polar there by increasing there corneal permeability. The respective free acids then binds to specific PGF2 receptors in the trabecular meshwork and the cilliary body in turn increasing the aqueous outflow through these routes. Latanoprost requires maintenance of cold chain prior to uncapping of the bottle and thereafter has a limited shelf life of 44 days at room temperature.

Bimatoprost on the other hand is an amide prodrug of 17- phenyl PGF2 alpha and hence characterized as a prostamide[6].It is also postulated that bimatoprost may act through a novel prostamidereceptors[7].

Bimatoprost acid is is 3 to 10 times as potent as latanoprost acid[8].Inspite of this the therapeutically used concentration of bimatoprost is six timesthat of latanoprost. This is because of the slow conversion of bimatoprost to bimatoprost acid[9].

Recommended dosing regimen for latanoprost and bimatoprost is once daily topical application preferably in the evening to reduce the early morning diurnal spike[10]. Prostaglandins have excellent 24 hour IOP control.

Material and methods

The present study included total 50 diagnosed POAG patients which were randomly divided into two groups.

Group A: 25 patients were treated with 0.03% bimatoprost eye drop at 9 pm.

Group B: 25 patients were treated with 0.005% latanoprosteye drop at 9 pm.

Inclusion criteria:
1. Adult onset with IOP greater than 21 mmHg during screening examination with open angle on gonioscopy, glaucomatous dics changes and visual field defects.

2. If only one eye was eligible for study the other eye would remain controlled with or without treatment.

3. IOP would remain adequately controlled with a single drug treatment for 3 months without optic dics and visual field progression and if not adequately controlled second drug was added and patient was excluded from study.

Exclusion criteria:
1.Active ocular infection/inflammation.
2. Any corneal pathology preventing gonioscopy and applanation tonometry.
3. Acute congestive glaucoma and secondary glaucoma.
4. Previous intraocular surgery.
5. Hypersensitivity reaction to drug.
6. Pregnancy or nursing mother.
7. History of any acute or progressive posterior segment disease.

Ocular examination including visual aquity, fundus, applanation tonometry, gonioscopy and perimetry done.

All patients were Followed up at 1 week, 1 month, 2 months, 3 months, 6 months interval.

At each follow up complete ocular examination done.

For systemic side effects, pulse B.P were recorded at every follow up .

Observation of optic nerve pallor, cup/disc ratio and visual fields was also recorded at the last follow up at 6 months.

Results and discussion
The present study was undertaken with the aim to compare the long term IOP fluctuation, therapeutic efficacy and side effects in patients treated with bimatoprost (0.03%) and latanoprost (0.005%).

Calculation was done by statistician PSM department of our college by student t test. Both the groups, Group A as well as Group B produced significant pressure reduction in the first week of therapy. Long term IOP fluctuation was more with latanoprost (2.42 mmHg) in comparision to bimatoprost (2.00mmHg). The IOP lowering efficacy of bimatoprost was significantly more than latonoprost. Significant reduction in IOP was achieved in both groups. Bimatoprost caused a reduction in IOP by 27.39% whereas latanoprost caused a reduction by 24.04% after 6 months.

Conjunctival hyperaemia and hypertrichosis was more in patients treated with bimatoprost as compared to latanoprost . In both the groups at the end of 6 months no significant changes were noted in visual acuity , visual field ,cup disc ratio gonioscopy.

The plus rate and blood pressure also remain same in both groups after 6 months.

Conclusion
Bimatoprost has less long term IOP fluctuation and has more potency and efficacy in reducing the IOP than latanoprost but latanoprost has less ocular side effects like conjunctival hyperaemia and hypertrichosis so it has better tolerability than bimatoprost.

Our study was conducted over a period of 6 months involving 50 patients but we need to have longer follow up involving more patients to have any conclusive data regarding the beneficial effects over latanoprost .

Comparision of IOP(in mm of Hg) in Group A and Group B

		Pre treatment IOP	1st week	1 Month	2 Months	3 months	6 months
Group A	Mean (IOP)	22.07	20.11	18.71	17.44	16.5	16.0
	SD	1.53	1.51	1.27	0.99	0.63	0.656
	% Reduction in IOP	-	8.86	15.21	20.95	24.96	27.39
Group B	Mean (IOP)	21.75	20.07	18.61	17.52	17.11	16.52
	SD	1.28	1.23	1.12	0.93	0.61	0.664
	% Reduction in IOP	-	7.74	14.42	19.44	21.32	24.04

SD: standard deviation. IOP: intra ocular pressure

Ocular side effects in Group A and B

Side Effects	Group A	Group B
Conjunctival hyperemia	5	2
Periorbital pigmentation		
Growth of eye lashes	7	3
Itching		
Burning sensation		
Foreign body sensation		
Allergic conjunctivitis		
Total	12	5

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