IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 14, Issue 1 Ver.VII (Jan. 2015), PP 57-61
www.iosrjournals.org

Comparative Study of Brimonidine and Timolol in Treatment of Glaucoma

Dr. Zaheda Bano[1] .M.D , Dr. L .Jagadish Chandra Rao[2] M.D.
[1](Prof and HOD of pharmacology,Guntur medcal college,Guntur ,Andhra praesh, India)
[2] (Dept of pharmacology,Vijayawada, Andhra praesh, India).

Abstract: *Glaucoma is the condition where the intraocular pressure of the eyeball increases more than normal.There are mainly two types of glaucoma 1 . Primary open angle glaucoma, 2. Primary angle closure glaucoma Population affected with primary open angle glaucoma is large. Treatment includes alpha selective adrenergic agents, sympatholytic agents and other drugs. The most commonly used drugs in the Govt General Hospital, Vijayawada, A.P were sympatholytic agents and alpha selective adrenergic drugs .So we carried out the study comparing the efficacy cost effectiveness and adverse drug reactions between timolol 0.5% eye drops and brimonidine tartarate 0.2% eye drops in primary open angle glaucoma. It was a comparative, randomized, prospective study .100 patients were recruited and they were randomly divided in group A and group B .Group A was given timolol 0.5% eye drops and group B was given brimonidine tartarate 0.2% eye drops.The patients were observed during 1st week ,2nd week ,4th week ,8th week,12th week,16th,20 th and 24th week .In the early weeks, Brimonidine tartarate effectively decreased intraocular pressure but in the later weeks timolol reduced more effectively than brimonidine.'P' value was significant. Timolol was cheaper than brimonidine and adverse effects were also less. So, it was concluded that timolol was most effective both in reducing the symptoms and in cost effectiveness when compared to brimonidine in the management of primary open angle glaucoma. Adverse effects were also less for timolol .So it was a better drug in the management if primary open angle glaucoma when compared to brimonidine.*

Keywords: *Brimonidine, Intra ocular pressure,Primary open angle glaucoma,Timolol.*

I. Introduction

The term glaucoma originates from the greek word glucus meaning gray- blue [1].Glaucoma is the condition where the intraocular pressure of the eyeball increases more than normal. Normal pressure is 11-22 mm Hg. The clinical features are visual field loss, cupping and atrophy of optic nerve head. Among two important types of glaucomas, Primary open angle glaucoma is the most prevalent type. It effects both sexes equally and is responsible for 12 % of cases of blind registration in U.K and U.S .There are many drugs for the treatment.The most commonly used drugs in our area were Timolol maleate 0.5% eye drops and Brimonidine tartarate 0.2% eye drops for primary open angle glaucoma cases. So, we want to compare these two drugs.

II. Aims Of Study

1.To compare the efficacy of Timolol 0.5% eye drops with Brimonidine 0.2% eye drops in the treatment of primary open angle glaucoma.
2. To assess which drug treatment schedule was cheaper and affordable by patient.
3. To know which drug has got less adverse effects.

III. Materials And Methods

It was a comparative, randomized, prospective study .100 patients were recruited and they were randomly divided in group A and group B Confirmation of primary open angle glaucoma was done by gonioscopy,slit lamp examination,fundus examination and perimetry.

3.1Study material:

1. Topical eye drops of Timolol maleate 0.5%
2. Topical eye drops of Brimonidine tartarate 0.2%
3. Goldman and applanation tonometer

3.2Inclusion criteria:

Age: 30-70 years
Sex: Both males and females

3.3Exclusion criteria:

1. Patients with brochial asthma and other lung disorders
2. Patients with cardiac disorders
3. patients with no history of recent treatment of glaucoma
4. Patients with closed angle glaucoma
5. Patients on gluco corticoids
6. Patients other eye diseases.
7. Post operative ophthalmic cases such as cataract,trabeculotomy,iredectomy.
8. Pregnancy and lactation
9. Patients with HIV,T.B,Leprosy.
10. Patients with ocular injuries
11. Patients with contact lenses .

Institutional ethical committee approval was taken before starting the study and written informed consent was taken from each patient before the study in local language. They are divided randomly into two groups A and B each group containing 50 patients.Group A was given Timolol 0.5% eye drops and group B was given Brimonidine tartarate 0.2% eye drops twice daily. The patients were observed at an interval of 1st week ,2nd week ,4th week(1st month) ,8th week (2nd month),12th week(3rd month) ,16th week (4th month) ,20 th week (5th month) and 24th week(6th month) . Results were tabulated. Comparison and significance were analyzed statistically using paired student 't' test and p value was calculated. Results were shown graphically also.

IV. Results

In group A patients where Timolol 0.5% eye drops were used the intial mean average of Intra ocular pressure was 24.9 mm Hg .At the end of 24th week they showed variations of mean I.O.P of 8.2 mm Hg. The mean average I.O.P at the end of study was16.7 mm Hg.

In group B patients where Brimonidine 0.2 % was given the initial mean average I.O.P in this group was 24.8 mm Hg. At the end of 24th week group B patients showed a variation of mean intraocular pressure of 6.3 mm Hg. The mean average intraocular pressure at the end of study was 18.5 mm Hg.

Timolol decrease the pressure 1.8 mm Hg more when compared to Brimonidine The p value was significant. Though in early weeks, Brimonidine tartarate effectively decreased intraocular pressure but in the later weeks timolol worked well significantly.

Adverse effects like itching, dryness of mouth were noticed more in Brimonidine therapy than Timolol , but watering of eyes more for Timolol.

Cost of Timolol(Rs 20 per strip of 10 tablets) is lesser than Brimonidine(Rs 24 per strip of 10 tablets)

V. Tables And Graphs

Timolol

Table 1. Response of 1st week treatment of Timolol 0.5%

Initial reading	Mean of 5th Month reading	Difference	Itching	Dryness of mouth	Watering of eyes
24.9	19.1	5.8mm of Hg	4%	6%	6%

Table 2. Response of 2nd week treatment of Timolol 0.5%

Initial reading	Mean of 5th Month reading	Difference	Itching	Dryness of mouth	Watering of eyes
24.9	18.7	6.2mm of Hg	2%	4%	4%

Table.3. Response of 1st month treatment of Timolol 0.5%

Initial reading	Mean of 5th Month reading	Difference	Itching	Dryness of mouth	Watering of eyes
24.9	18.5	6.4mm of Hg	2%	4%	2%

Table 4. Response of 2nd month treatment of Timolol 0.5%

Initial reading	Mean of 5th Month reading	Difference	Itching	Dryness of mouth	Watering of eyes
24.9	17.6	4.3mm of Hg	Nil	2%	Nil

Table.5. Response of 3rd month treatment of Timolol 0.5%

Initial reading	Mean of 5th Month reading	Difference	Itching	Dryness of mouth	Watering of eyes
24.9	17.3	7.6mm of Hg	Nil	Nil	Nil

Table.6. Response of 4th month treatment of Timolol 0.5%

Initial reading	Mean of 5th Month reading	Difference	Itching	Dryness of mouth	Watering of eyes
24.9	16.8	7.8mm of Hg	Nil	Nil	Nil

Table.7. Response of 5th month treatment of Timolol 0.5%

Initial reading	Mean of 5th Month reading	Difference	Itching	Dryness of mouth	Watering of eyes
24.9	16.8	8.1mm of Hg	Nil	Nil	Nil

Table.8. Response of 6th month treatment of Timolol 0.5%

Initial reading	Mean of 5th Month reading	Difference	Itching	Dryness of mouth	Watering of eyes
24.9	16.7	8.2mm of Hg	Nil	Nil	Nil

Brimonidine:

Table.9. Response of 1st week treatment of Brimonidine 0.2%

Initial reading	Mean of 5th Month reading	Difference	Itching	Dryness of mouth	Watering of eyes
24.8	19.0	5.8mm of Hg	4%	8%	Nil

Table.10. Response of 2nd week treatment of Brimonidine 0.2%

Initial reading	Mean of 5th Month reading	Difference	Itching	Dryness of mouth	Watering of eyes
24.8	18.0	6.7mm of Hg	2%	6%	Nil

Table.11. Response of 1st month treatment of Brimonidine 0.2%

Initial reading	Mean of 5th Month reading	Difference	Itching	Dryness of mouth	Watering of eyes
24.8	18.2	6.6mm of Hg	Nil	2%	Nil

Table.12. Response of 2nd month treatment of Brimonidine 0.2%

Initial reading	Mean of 5th Month reading	Difference	Itching	Dryness of mouth	Watering of eyes
24.8	18.4	6.4mm of Hg	Nil	Nil	Nil

Table.13. Response of 3rd month treatment of Brimonidine 0.2%

Initial reading	Mean of 5th Month reading	Difference	Itching	Dryness of mouth	Watering of eyes
24.8	17.7	7.1mm of Hg	Nil	Nil	Nil

Table.14. Response of 4th month treatment of Brimonidine 0.2%

Initial reading	Mean of 5th Month reading	Difference	Itching	Dryness of mouth	Watering of eyes
24.8	17.8	4.0mm of Hg	Nil	Nil	Nil

Table.15. Response of 5th month treatment of Brimonidine 0.2%

Initial reading	Mean of 5th Month reading	Difference	Itching	Dryness of mouth	Watering of eyes
24.8	18.1	6.7mm of Hg	Nil	Nil	Nil

Table.16. Response of 6th month treatment of Brimonidine 0.2%

Initial reading	Mean of 5th Month reading	Difference	Itching	Dryness of mouth	Watering of eyes
24.8	18.5	6.3mm of Hg	Nil	Nil	Nil

Table.17. Distribution of mean difference of intra ocular pressure

Drug	Rt.Eye	Lt.Eye
Timolol	64	68
Brimonidine	36	32

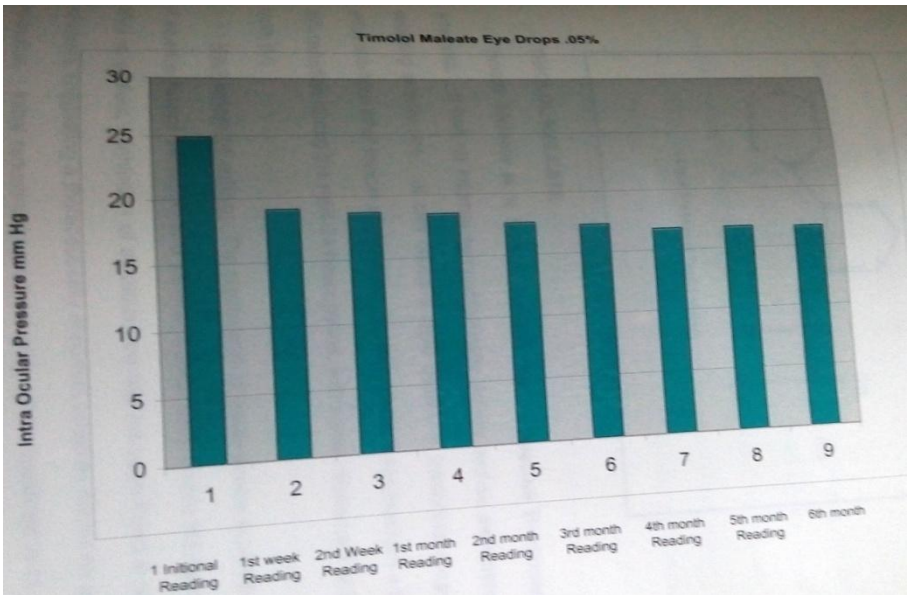

Fig: 1

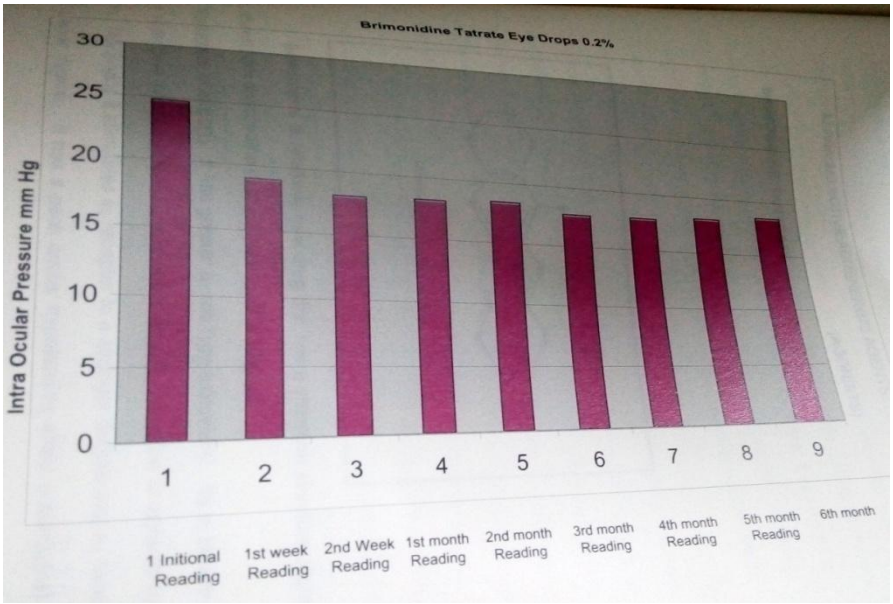

Fig: 2

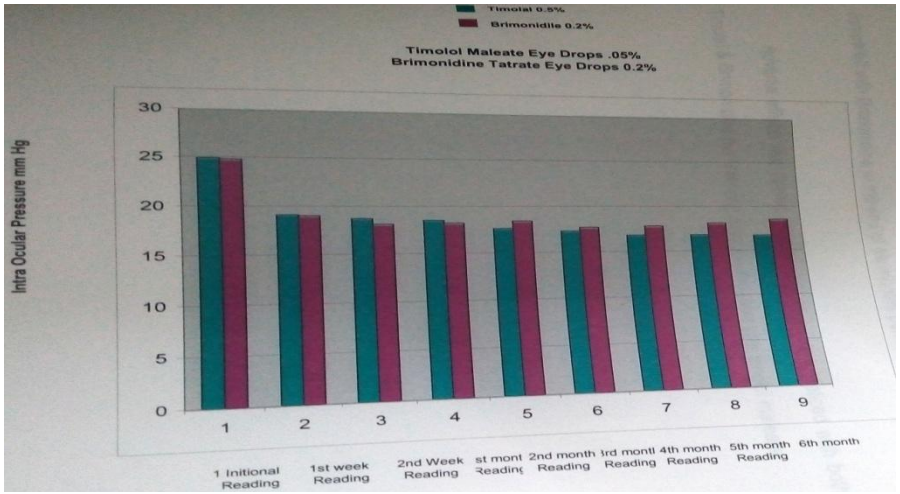

Fig: 3

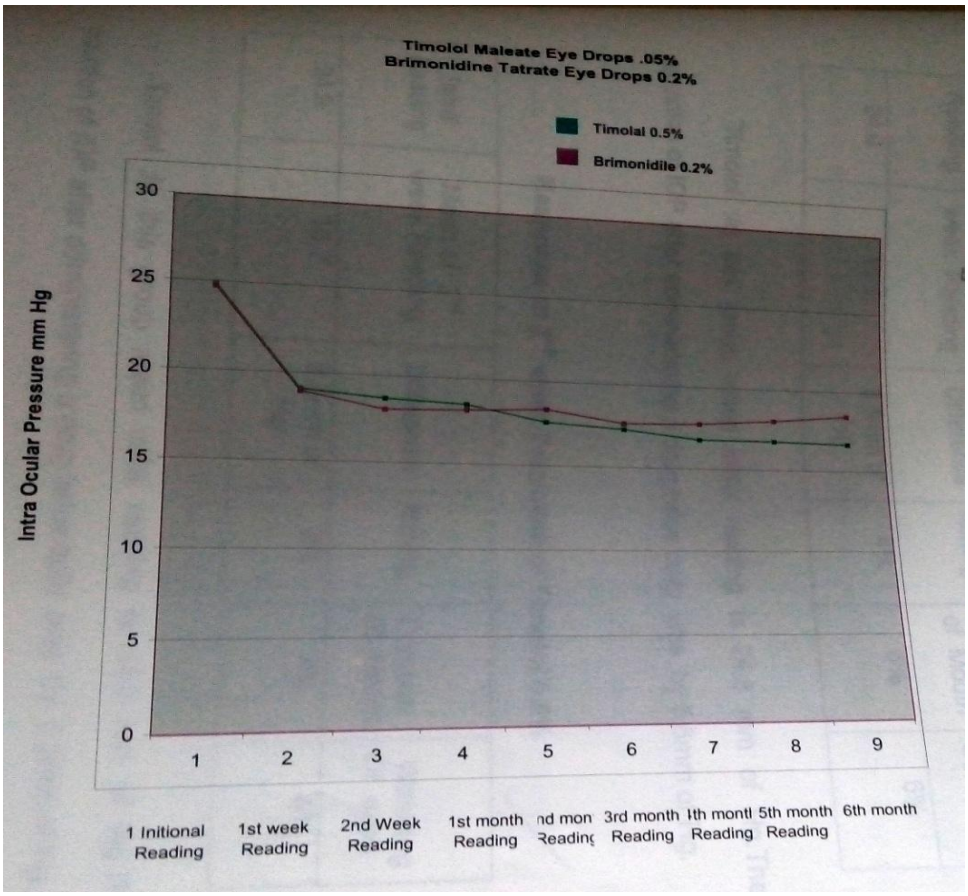

Fig 4

For Right eye : Chi square test value : 14-06 at degree of freedom. P value< 0.001 significant
For left eye : Chi square test value : 11-76 at degree of freedom, P value < 0.001 significant
Paired T test for Timolol=27.03
Paired T test for Brimonidine=30. 31
The reduction in intra ocular pressure by Timolol is significantly more (P value < 0.001) when compared to Brimonidine

VI. Summary And Conclusion

Glaucoma is a most important eye disease in the world.The present study compared the efficacy of topical Timolol maleate with Brimonidine tartarate in the management of primary open angle glaucoma.The two drugs were studied in two different groups i.e., group A and group B for the period of 6 months.

In our six months study between Timolol 0.5% eye drops and Brimonidine 0.2% eye drops in primary open angle glaucoma, it was revealed that Timolol eye drops effectively reduced I.O.P .Though in initial weeks Brimonidine worked well but in later weeks Timolol significantly reduced IOP when compared to Brimonidine.The mean average difference between these two was 1.8 .Cost of timolol was less when compared to Brimonidine. Adverse effects were also less when compared to Brimonidine.So Timolol was a better drug in the management of primary open angle glaucoma when compared to Brimonidine[2,3,4,5]

Acknowledgements

I am thankful to all the patients who co-operated with me in this study

Bibliography

[1]. Josef flammer ,M.D.,Glaucoma 2nd revised edition,2002 pg no : 15
[2]. Albert & Jakobiee,Principles & practice of ophthalmology 2nd edition vol :4 pg 2684
[3]. Wilcons Journal of pharmacy society May/June 2001, pg no: 33,34
[4]. AHEPA-AMJ.Ophthalmology 2001 June 131(6) 729-33
[5]. Holmes KT-Sur.Ophthalmology 1996,Nov 41,Suppl: S 27-37.