

A COMPARATIVE STUDY OF PROPHYLACTIC USE OF SUBCONJUNCTIVAL GENTAMICIN AND INTRACAMERAL MOXIFLOXACIN IN POST OPERATIVE CATARACT SURGERY**Mohamed Yasir Arafath^{*1}, B. Jayaprakash², B. Arul³, Linta Jose⁴, Oliviya C. J.⁴ and Powrnami Raj⁴**¹Assistant Professor, Department of Pharmacy Practice, Vinayaka Mission's College of Pharmacy, Yercaud Main Road, Kondappanaickenpatty, Salem, Tamilnadu, India.²Assistant Professor, Department of Ophthalmology, Vinayakka Mission's Kirupananda Variyar Medical College & Hospitals, Salem.³Professor & Head, Department of Pharmacy Practice, Vinayaka Mission's College of Pharmacy, Yercaud Main Road, Kondappanaickenpatty, Salem, Tamilnadu, India.⁴V Year Pharm.D Students, Vinayaka Mission's college of Pharmacy, Yercaud Main Road, Kondappanaickenpatty, Salem, Tamilnadu, India.***Corresponding Author: Mohamed Yasir Arafath**

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INTRODUCTION

A cataract is a clouding of the lens in the eye leading to a decrease in vision. It can affect one or both eyes. Often it develops slowly for which the symptoms may include faded colors, blurry vision, halos around light, trouble with bright lights, and trouble seeing at night. This may result in trouble driving, reading, or recognizing faces. Poor vision may also result in an increased risk of falling and depression. Cataracts are the cause of half of blindness and 33% of visual impairment worldwide.^[1]

About 20 million people globally are blind due to cataracts. It is the cause of about 5% of blindness in the United States and nearly 60% of blindness in parts of Africa. Cataracts become more common with age. About half the people in the United States have had cataracts by the age of 80. It is estimated that from the global blindness, the South Asia begin which include India about 51% of blindness due to cataract, depending on age, sex and educational status of the people, which is revealed by WHO.^[2]

Endophthalmitis is a rare but potentially a self resolving complication of cataract surgery. Within the literature, its incidence varies from 0% to as high as 1.24% even with the best treatment it can result in severe visual loss. 47% of patients visual acuity is 6/60 or worse. 25% of eyes required Enucleation/evisceration.^[3]

MATERIALS AND METHODS

A Prospective study was carried out over a period of six months in Vinayaka Missions kirupananda variyar medical college and hospitals (VMKVMC & H), Salem. A separate consent form was made for the patient permission purpose and the signature of the patient was taken before starting the study. The study was approved by Institutional Ethical Committee of the VMKVMCH, Salem. A suitable data collection form was designed to collect and document the data. After the surgery, the patient is admitted for one day and later referred for review after first week, second week, fourth and sixth week in order to evaluate the post operative complication (infective endophthalmitis) after phacoemulsification and intra ocular lens implantation in the conjunctiva, cornea, anterior chamber, anterior segment and posterior segment. According to the choice of the drug which include subconjunctival gentamicin (0.25ml) or

intracameral moxifloxacin (0.1ml), can be used as a prophylactic injection at the end of the surgery in order to prevent the post operative endophthalmitis.

RESULTS

A total of 150 cases of cataract surgery were collected and analyzed. The post operative cataract patients were classified according to their gender to know which group of gender is more prone to the Cataract. Out of the selected 150 cataract patients, 78(52%) were male and 72(48%) patients were female, which shows that male are more risk than females.

The age wise distribution was made for the patients with different age groups such as 40-50, 51-60, 61-70, 71-80, and 81-90. The number of patients present in each age group was found to be 26, 36, 50, 30, and 8 respectively.

The data shows that the most of the patients were in the age group of 61-70 followed by 51-60.

Then we have classified the total number of cataract patients in the hospital during the study period. The total number of Cataract surgery patients was found to be 14, 20, 35, 56, 13 and 12 for the months of November, December, January, February, March and April respectively and it was found to be more in the month of February followed by January.

From the total of 78 Male cataract patients, the classification was done according to the surgery done on right eye and left eye as 47(60.25%) and 31(39.75%) respectively. In the same way, the total of 72 female cataract patients were also classified according to the surgery done on right eye and left eye as 38(52.7%) and 34(47.22%) respectively and found that the patients with right eye cataract surgery is having the highest number than the left eye in both the genders.

Table. 1: Number of male patients with Conjunctival complications.

Conjunctival complications	Right eye		Left eye	
	No. of patients	Percentage	No. of patients	Percentage
Congestion	4	8.51	2	6.45
Normal	38	80.85	25	80.65
Subconjunctival Haemorrhage	5	10.64	4	12.90
Total	47	100	31	100

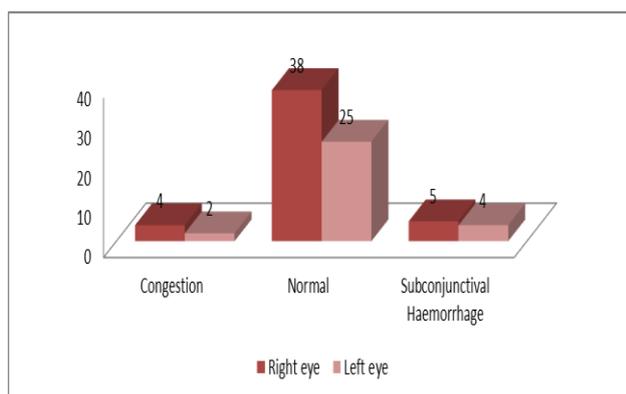


Figure. 1: Number of male patients with Conjunctival complications.

From 47 males who have conjunctival complications in the right eye, the patients with Congestion, Normal and Subconjunctival haemorrhage are 4(8.51%), 38(80.85%) and 5(10.64%) respectively. From the 31 male patients with conjunctival complications in the left eye, the Congestion, Normal and Subconjunctival Haemorrhage incidence are 2 (6.45%), 25 (80.65%) and 4 (12.90%) respectively. From the data it can be concluded that the male patients with conjunctival complications differ with slight increase for subconjunctival haemorrhage when compared with congestion for both the eyes.

Table. 2: Number of female patients with Conjunctival complications.

Subconjunctival complications	Right eye		Left eye	
	No. of patients	Percentage	No. of patients	Percentage
Congestion	3	7.90	3	8.83
Normal	31	81.58	27	79.41
Hemorrhage Subconjunctival	4	10.52	4	11.76
Total	38	100	34	100

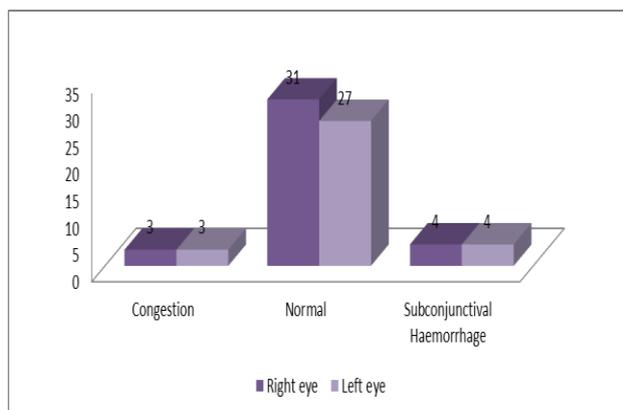


Figure. 2: Number of female patients with Conjunctival complications.

In the same way, from 38 females with the conjunctival complications in the right eye after surgery, the patients with Congestion, Normal and Subconjunctival hemorrhage are 3(7.90%), 31(81.58%) and 4(10.52%) respectively and from the 34 females patients who have undergone left eye surgery, the patients with Congestion, Normal and Subconjunctival hemorrhage are 3(8.83%), 27(79.41%) and 4(11.76%) respectively. From the data it can be concluded that the female patients with conjunctival complications are at equal ranges(3 and 4) for both Congestion and subconjunctival hemorrhage respectively for both eye surgery.

Table. 3: Choice of Subconjunctival Gentamicin administered in both eyes.

Subconjunctival gentamycin	No. of patients	Percentage
Right eye	46	58.98
Left eye	32	41.02
Total	78	100

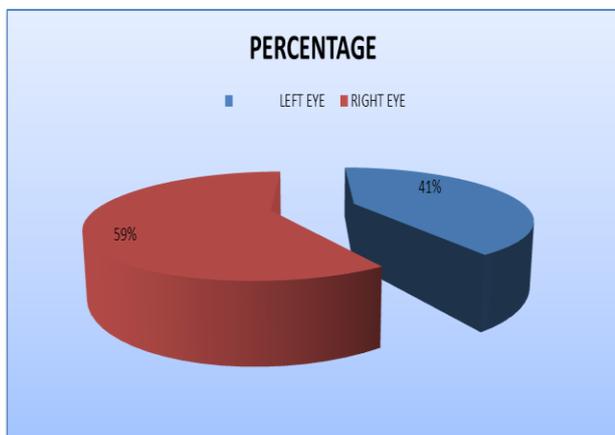


Figure. 3: Choice of Subconjunctival Gentamicin administered in both eyes.

Here we are classifying the patients who are administered with subconjunctival gentamicin in the left eye and right eye from a total of 78 selected patients. From the data it can be concluded that the patients who were administered in the right eye with subconjunctival gentamicin is more which is 46 (58.98%) than that in the left eye which is only about 32 (41.02%).

Table. 4: Choice of Intracameral Moxifloxacin administered in both eyes.

Intracameral moxifloxacin	No. of patients	Percentage
Right eye	39	54.16
Left eye	33	45.84
Total	72	100

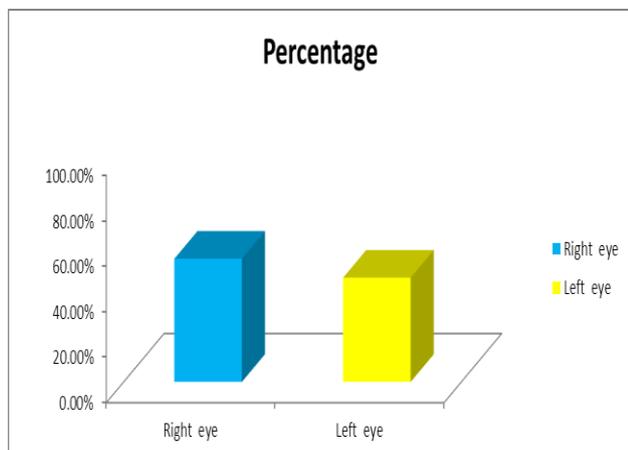


Figure. 4: Choice of Intracameral Moxifloxacin administered in both eyes.

Here also the same case that is, the patients who are administered with intracameral moxifloxacin in the left eye and right eye out of 72 selected patients are classified. As a conclusion we can say that the patients with right eye administration, i.e. 39 (54.16%) of intracameral moxifloxacin is more than that with the left eye which is about 33 (45.84%).

Table. 5: Different ranges of visual acuity in pre-operative cataract surgery.

Visual acuity	No. of patients	Percentage
1/60	4	2.67
2/60	11	7.34
3/60	14	9.33
4/60	21	14.00
5/60	37	24.67
6/12p	2	1.33
6/18	1	0.67
6/24	17	11.33
6/24p	2	1.33
6/36	15	10.00
6/36p	5	3.33
6/60	21	14.00
Total	150	100

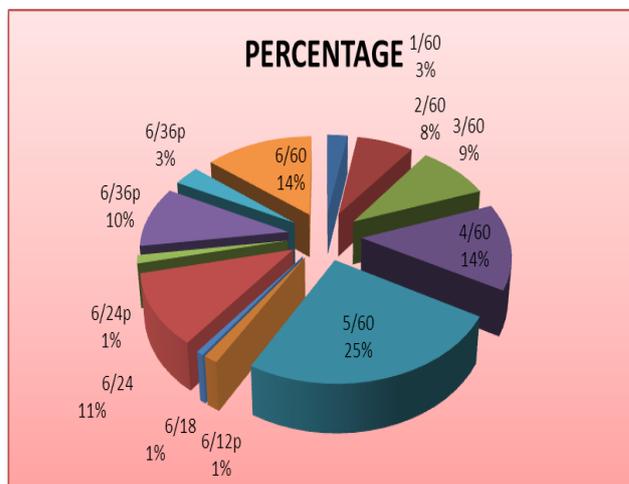
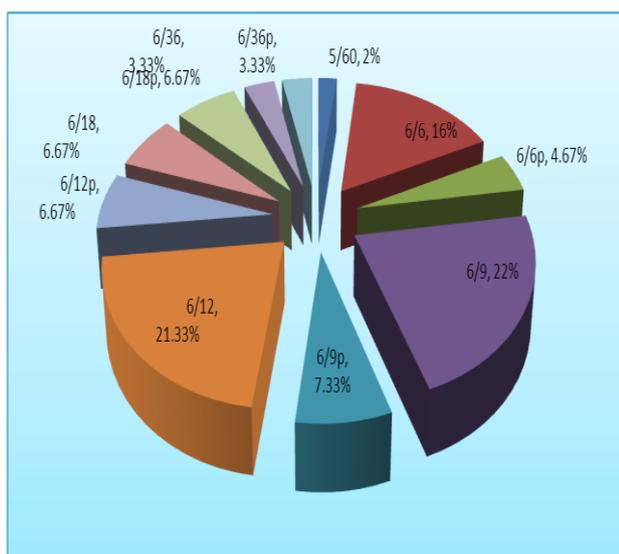


Figure. 5: Different ranges of visual acuity in pre-operative cataract surgery

Here visual acuity is classified in pre-operative cataract surgery patients who include 24.67% for 5/60 as the higher value followed by 14% for 4/60 and 6/60 and 11.33% for 6/24. Other values include 10% for 6/36, 9.33% for 3/60, 7.34% for 2/60 and 3.33% for 6/36p. A very small portion of patients with visual acuities 1/60(2.67%), 6/12p and 6/24p (1.33% each) From this data, it can be concluded that patients is more with visual acuity 5/60, followed by 4/60 and 6/60 in pre operative study population which shows that the visual ability is very poor before the surgery.

Table. 6: Different ranges of visual acuity in post-operative cataract surgery.

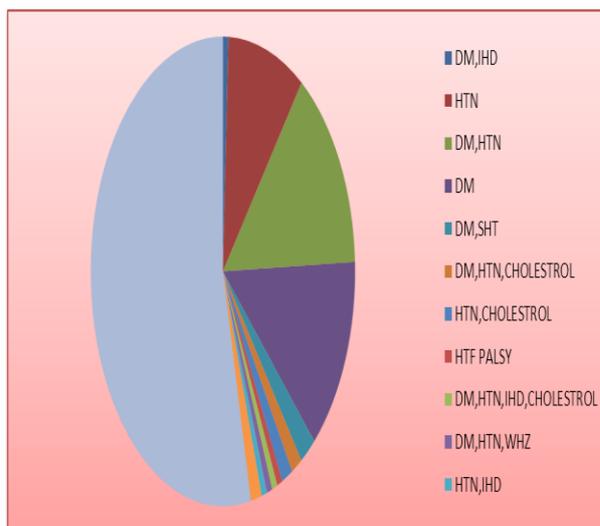
Visual acuity	No. of patients	Percentage
5/60	3	2
6/6	24	16
6/6p	7	4.67
6/9	33	22
6/9p	11	7.33
6/12	32	21.33
6/12p	10	6.67
6/18	10	6.67
6/18p	10	6.67
6/36	5	3.33
6/36p	5	3.33
Total	150	100

**Figure. 6: Different ranges of visual acuity in post-operative cataract surgery.**

In this classification, the highest population of post operative cataract patients have the visual acuity 6/9 which is about 22% followed by 6/12 (21.33%) and 6/6(16%). The patients with visual acuity 6/9p include 7.33% of population followed by 6/12p, 6/18 and 6/18p including 6.67% each. Population with Visual acuity 6/6p include 4.67% and others only include a very small portion of population including 6/36 and 6/36p having 3.33% each and for 5/60 having the very least percentage includes only 2%. From this data, it can be concluded that the post operative cataract patient with highest population is having visual acuity 6/9 followed by 6/12 and 6/6 showing the visual ability improvement after the surgery.

Table. 7: Patients with associated diseases.

Associated disease	No. of patients	Percentage
DM & IHD	1	0.66
HTN	14	9.35
DM & HTN	21	14
DM	20	13.33
DM & SHT	3	2
DM, HTN & Cholesterol	2	1.33
HTN & Cholesterol	2	1.33
HTN & Facial palsy	1	0.66
DM, HTN, IHD & Cholesterol	1	0.66
DM, HTN, WHZ	1	0.66
HTN, IHD	1	0.66
DM, HTN, Asthma	2	1.33
NIL	79	52.66
Total	150	100

**Figure. 7: Patients with associated diseases.**

From this table, it can be analyzed that the patients with associated disease includes highest rate for diabetes and hypertension together which is about 14% followed by diabetes alone with 13.33% and hypertension 9.35%. Others include DM and SHT (2%), DM, HTN and Cholesterol (1.33%), HTN and cholesterol (1.33%). HTN and facial palsy along with DM, HTN, IHD and Cholesterol contribute only a small percentage out of the selected 150 patients. From this data it can be concluded that patients with DM and hypertension are more prone to be affected with cataract.

CONCLUSION

Cataract is one of the most common ocular diseases among the elderly people over the age of 40 and above. Blindness due to cataract presents an enormous problem in India not only in terms of human morbidity but also in terms of economic loss and social burden. So the need

for cataract surgery is inevitable in order to prevent vision loss for such population.

As a post operative care, the use of intracameral moxifloxacin or subconjunctival gentamicin injection is used in order to prevent post-operative endophthalmitis. Since the use of gentamicin cause subconjunctival haemorrhage in some cases, even if it is a self resolving complication, as another option intracameral moxifloxacin is also used.

Infective endophthalmitis is a serious infection of the intraocular tissues usually following intraocular surgery, especially after phacoemulsification done in cataract patients. This study sought to compare incidence with subconjunctival gentamicin and intracameral moxifloxacin used as a prophylactic antibiotic applied at the end of the procedure. From this study, we conclude that intracameral moxifloxacin do not produce any haemorrhage but subconjunctival gentamicin produce subconjunctival haemorrhage but it is not a serious complication and is self resolving. So we concluded that both the drugs are efficient in preventing endophthalmitis with equal efficacy.

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