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To compare the efficacy of timolol maleate 0.5% vs fixed combination of timolol maleate 0.5%, and brimonidine tartrate 0.2% in control of raised intra ocular pressure in patients undergone Nd-Yag laser capsulotomy.

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ABSTRACT

Purpose: The purpose of the study is to compare the efficacy of Timolol maleate alone vs fixed combination of Timolol maleate 0.5% with Brimonidine 0.2% in patients undergone Nd-Yag laser capsulotomy.

Methodology: 100 patients with posterior capsular opacification were enrolled though OPD. They were placed in 2 groups with 50 patients each. Group A received Timolol maleate 0.5% alone while group B received combination of timolol maleate with Brimonidine tartrate.

Results: In group A 3 patients developed acute raise of intraocular pressure despite of Timolol maleate use while goup B patients who received combination of Timolo maleate and Brimonidine had controlled intraocular pressure.

Conclusion: Fixed combination of Timolo maleate 0.5% and Bremonidine tartrate 0.2 % is more effective in controlling of IOP raise in patients undergone Nd-Yag laser capsulotomy for posterior capsular opacification then Timolo maleate0.5% alone.

Keywords: *Nd-Yag laser, Timolol maleate 0.5%, Brimonidine Tartrate0.2%, Posterior capsular opacification.*

INTRODUCTION

The most common cause of preventable blindness worldwide after refractive errors is cataract[1].Posterior capsular opacification remains the most common long term complication of modern Cataract surgery[2]. Posterior capsular opacification occurs in up to 50% of eyes following Cataract extraction[3].Posterior Capsular opacification treatment with Nd-yag laser is not without complications[4]. Raised intra ocular pressure is common among them[5]. Currently the standard treatment for posterior capsular opacification is Nd-Yag laser posterior capsulotomy with a success rate of more than 95 %[6]. Most common indication for Nd-yag laser was decreased vision due to PCO[7]. In the absence of anti-glaucoma and anti-inflammatory prophylaxis 59-67% of patients showed IOP increment of at least 10 mm/hg following Nd Yag laser capsulotomy[8].

Despite the prophylaxis treatment increased IOP was 15-30% of patients[9]. Explanation for raised intra ocular pressure include deposition of debris in the trabecular meshwork, trabeculitis as a result of radiating shockwaves, Neurovascular mechanisms, pupillary block and inflammatory swelling of Cialiary body or iris root associated angle closure[10]. Various hypotensive topical medications been used for control of IOP spikes like Timolol maleate 0 .5% Brimonidine tartrate 0.2% and both in combination also Aprachlonidine 0.25%[11]. Raise in intra ocular pressure is directly proportional to amount of energy used for capsulotomy[12].

Nd-Yag laser is Photo-disruptive laser which cause tissue disruption by ionization method by producing extreme heat of about 10,000 C. along with an acoustic shockwave[13]. Bremonidine is alpha 2 adrenergic agonist with dual mechanisms of actions, firstly it decreases the aqueous humor formation and secondly it increases uveo-scleral outflow[14,15]. As there is 2-7% raise of intra ocular pressure with Timolol maleate 0.5% use[8,16]. So we use combination of Timolol maleate 0.5% with Brimonidine tartrate 0.2% to contribute to local statistics and may contribute to enhance better patients' management.

MATERIAL AND METHODS

This comparative cross sectional study was conducted at District Head Quarter Hospital Timergara from Jun 2018 to Oct 2018. Approval from the hospital ethical committee was obtained and informed consent was taken from the participants. Inclusion criteria were age 30 to 75 years, any gender, posterior capsular opacification, IOP in between 12 to 18 mm/hg. Patients with history of glaucoma, Trabeculectomy, corneal diseases and posterior segment surgery were excluded from the study.

A total of 100 patients having posterior capsular opacification diagnosed on slit lamp examination were included in this study by using non-probability purposive sampling. The data were collected using a predefined Proforma. Samples were selected from all the patients who underwent Nd-Yag laser capsulotomy. All the compounding variables were recognized during the study and were excluded through exclusion criteria. One drop of proparacaine hydrochloride was used for topical anesthesia. Baseline intraocular pressure was measured by Perkin applanation tonometer. Pupil was dilated with one percent Tropicamide eye drops.

An opening of 3-4 mm was made in the posterior capsule, using minimum possible pulses of Nd-Yag laser with the help of Abraham capsulotomy lense. Total amount of Patients were divided into two groups, patients put on Timolol 0.5% were put in group A and patients put on fixed combination of Timolol maleate 0.5% with Brimonidine tartrate 0.2% were put in group B.

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Intraocular pressure was measured at interval of 1 hour, 3 hour, 24hours and 7days after the procedure using perkin applanation tonometer.

RESULTS

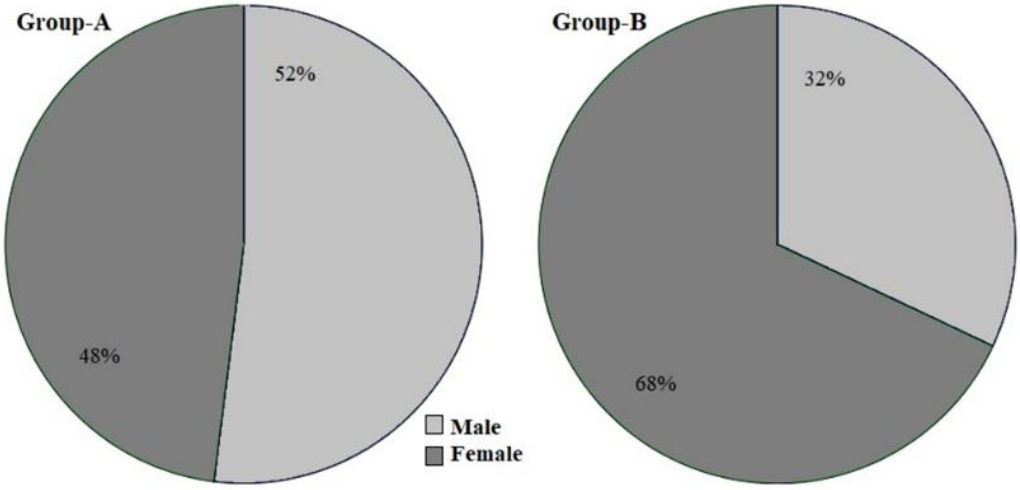

Figure 01: Gender distribution.

Mean IOPs with standard deviations shown in in histograms

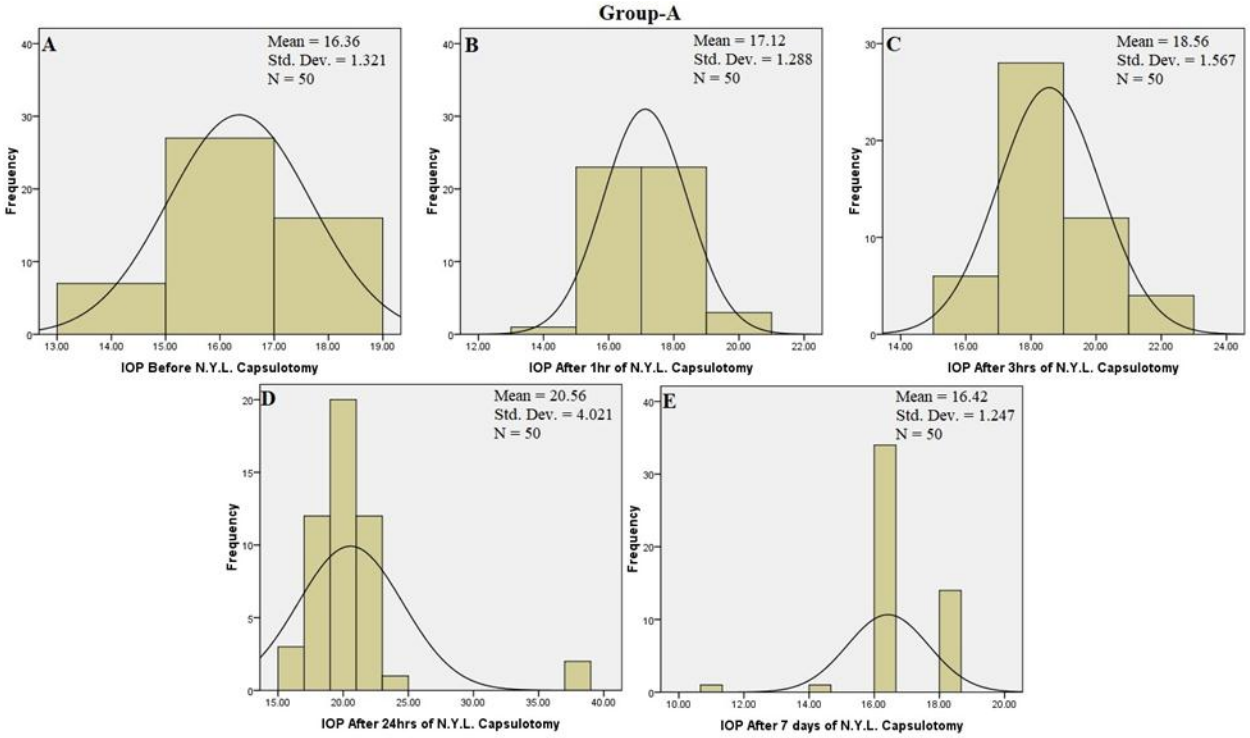

Figure 02: Group A Pre Nd-Yag laser mean IOP is 16.36+- 1.32 SD.

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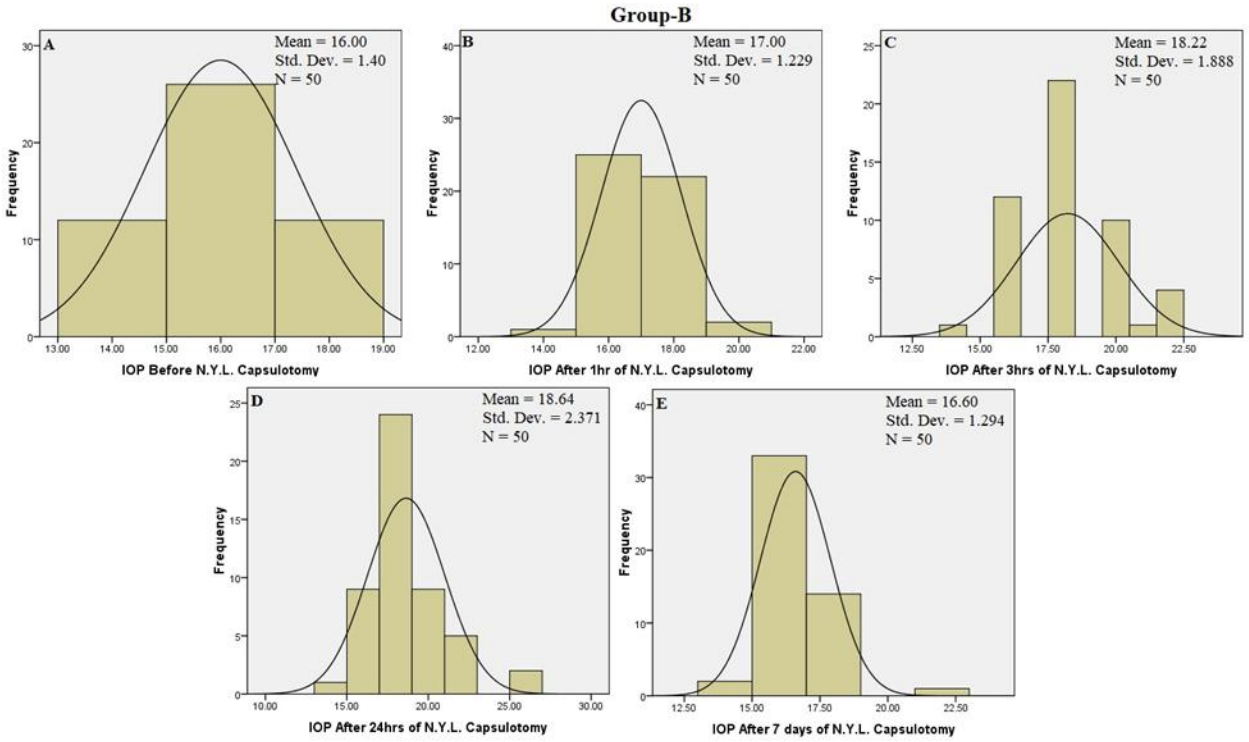

Figure 03: Group B Pre Nd-Yag laser and post procedure mean IOPs with standard deviations.

Post Yag-laser analysis of data done through SPSS –Version 16 using One-way ANOVA, showing significance of Timolol meleate 0.5% used except in 3 patients who were excluded from the study for further treatment. Tuky test applied for comparison of means in different stages of analysis

DISCUSSION

Cataract is the second most common cause of preventable blindness after refractive errors[1]. Posterior capsular opacification has a profound impact on the patients' life by causing social and economic burden. It also affect the daily routine life by reducing visual acuity and increasing the glare. Various surgical techniques have been devised to delay the incidence of PCO but still there are no conclusive results to halt the development of PCO. Posterior capsular opacification occurs in up to 50% of patients undergone cataract extraction with posterior chamber IOL[3].

Since the advent of Nd-Yag laser in 1981, its applications have ranged remarkably in various medical fields. It is widely accepted in the management of PCO among the surgeons as well as the patients, due to its Non-invasive approach and being out door procedure. Standard treatment of posterior capsular opacification consist of making an opening of 3-4 mm in the central part of posterior lense capsule[6] Nd- Yag laser posterior capsulotomy is the treatment of choice. Nd-Yag laser treatment of posterior capsular opacification is not without complications and raised intraocular pressure is one of them[5]. In the absence of Anti-glaucoma and anti-inflammatory prophylaxis 59-67% showed IOP increment of at least 10 mm hg following Nd-Yag laser capsulotomy[8]. It has been studied that despite of keeping lasers shots number and energy level to

minimum possible also results in post laser raised Intra ocular pressure and IOP elevation was noted 2 hours post procedure irrespective of the number of shots[17]

In this study, it was found that Group A had were 3 patients who developed acute raise in intraocular pressure and needed further treatment on emergency basis those who received Timolol maleate 0.5% alone. According to Marry lynch, the outflow facility of acqueous decreased by 80% in patients undergone Nd-Yag laser capsulotomy due to deposition of debris in the trabecular meshwork, trabeculitis as a result of radiating shockwaves, Neurovascular mechanisms, papillary block and inflammatory swelling of Cialiary body or iris root associated angle closure[10]. In a study by Channel MM and Beckmen showed that raised IOP by 5 mmHg or more be observed with in 24hour even with hypotensive medications[18]. It has been reported that IOP raise may be up to 60 mm/Hg despite normal IOP at 2 hours after treatment even with use of beta adrenergic or aprachlonidine alone[19]. In other two separate studies by Garg D and Raykolsky, they found IOP elevation of more than 5mm/Hg despite use single hypotensive medication i.e. Timolol maleate 0.5%.[20] Gartaganis SP et al., found that Brimonidine is effective in controlling IOP elevation following Nd Yag capsulotomy[21] while Seong GJ et al., found that the effectiveness of Brimonidine tartrate alone in controlling of IOP elevation in patients undergone Nd Yag laser capsulotomy is up to 7.3% of patients[22].This discrepancy in efficacy of single hypotensive medicine compelled the researchers to study efficacy of double medicines for control of IOP in patients undergone Nd Yag laser capsulotomies at local level.

CONCLUSION

The Fixed combination of Timolo maleate 0.5% and Bremonidine tartrate 0.2 % is more effective in controlling of IOP raise in patients undergone Nd-Yag laser capsulotomy for posterior capsular opacification then Timolo maleate0.5% alone.

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