Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.53555/6zwtep25

COMPARISON OF NEPAFENAC PLUS STEROID VERSUS STEROID ALONE FOR CONTROL OF OCULAR INFLAMMATION AFTER PHACOEMULSIFICATION

Dr Manpreet kour[1*], Dr. Nancy Sharma[2], Dr Malvika Sharma[3]

[1*]MS Ophthalmology, Senior resident, Deptt. of Ophthamology, GMC Jammu
[2]MS Ophthalmology, Senior resident, Deptt. of Ophthamology, GMC Jammu
[3]MS Ophthalmology, Senior resident, Deptt. of Ophthamology, GMC Jammu

***Corresponding Author** - Dr Malvika Sharma
*MS Ophthalmology, Senior resident, Deptt. of Ophthamology, GMC Jammu

ABSTRACT

Introduction: Cataract is the most common surgical procedure. Study was done to compare the effect of nepafenac 0.1% plus prednisolone 1% vs prednisolone 1% alone in controlling ocular inflammation after phacoemulsification

Material and Methods: A total of 140 patients were randomized to receive prednisolone 1% (group I) vs nepafenac plus prednisolone 1% (group II) after uneventful phacoemulsification. Patients were examined on first day, one week and one month for vision, slit lamp evaluation for anterior segment inflammation and cystoid macular edema.

Results: Average visual acuity was 6/9 in both groups. Anterior segment inflammation was significantly less in group II on first post operative day. On later visits, there was no significant difference in inflammation in both groups. CME was not seen in any group.

Conclusion: This study suggests that addition of nepafenac 0.1% to prednisolone 1% significantly reduces the intraocular inflammation after phacoemulsification in the early postoperative period.

Keywords: Nepafenac, Prednisolone, Iritis, Phacoemulsification

INTRODUCTION: Cataract surgery is one of the most common and most effective surgical procedure performed worldwide.1 After the surgery, it is also the postoperative care of the patients that determines a good outcome. The routine postoperative care after cataract surgery consists of prevention of infection and prevention of inflammation. Broad-spectrum antibiotics like moxifloxacin eye drops are the mainstay for prevention of infection. Steroids like prednisolone are most potent for prevention of inflammation.2,3 Inflammation is caused by the release of arachidonic acid that subsequently forms prostaglandins, the main inflammatory mediator.4,5 Steroids inhibit arachidonic acid release by inhibiting the enzyme phospholipase A2, thereby decreasing the synthesis of all prostaglandins, thromboxanes and eicosanoids.6,7 However, steroid use can lead to elevation of intraocular pressure and an increased risk of infection.8 Therefore, several non steroidal anti-inflammatory drops (NSAIDs) are increasingly being used to prevent post operative inflammation and cystoid macular edema (CME).7,9,10 NSAIDs inhibit prostaglandin release through inhibition of cyclo-oxygenase enzyme that catalyzes the conversion of arachidonic acid to prostaglandins.6,7,9 Studies have compared various NSAIDs with steroids and have found them to be equally effective and safer in controlling inflammation.11,12 NSAIDs are also found to be better

than steroids for corneal and limbal wound healing.13 However, their role as an add-on treatment to steroids is still debated. We conducted a prospective study to compare whether addition of nepafenac to the routine antibiotic and steroid regimen had any added advantage in controlling postoperative inflammation.

MATERIAL AND METHODS: This was a prospective randomized control study done from March 2023 to April 2024 in upgraded department of ophthalmology at Government Medical college Jammu, India. A total of 280 patients who were > 50 years of age and operated for cataract without any intraoperative complications were included in the study. Patients with any pre-existing ocular or systemic illness like corneal opacity, glaucoma, uveitis, complicated cataract, macular pathology, trauma, diabetes or arthritis were excluded. Pre-operatively, thorough clinical examination including vision, intra-ocular pressure (IOP) measurement by applanation tonometry, slit lamp examination for anterior segment and fundus examination was done for all patients. Written informed consent was taken from all patients prior to surgery. Phacoemulsification was done and intra-ocular lens (IOL) was implanted in all. Patients were randomly distributed in two groups by simple randomization. In the first group, patients were given moxifloxacin 0.5% drops 4 times/day for 2 weeks and Prednisolone 1% drop 4 times/day for 1 week followed by gradual tapering over next 3 weeks. In the second group, in addition to the medications given in group I, patients were also given nepafenac 0.1% eye drops thrice a day for 4 weeks. Post-operatively patients were examined on day 1, day 7 and 1 month. On each visit, best-corrected visual acuity (BCVA) was noted, anterior segment was examined on slit-lamp for presence of cells, flare and posterior segment was examined for presence of CME. Anterior segment inflammation was graded in accordance with standardization of uveitis nomenclature (SUN) working group classification:14 None- 50 cells, fixed and plastic iris

STATISTICAL ANALYSIS: Statistical analysis was done using SPSS software version 20.0. Quantitative data was analyzed using independent sample t-tests and qualitative data was analyzed using chi square test. Alpha error of $p<0.05$ was considered significant

RESULTS: There were 140 patients in each group. The mean age of patients in group I was 65.24 years and group II was 64.68 years (P= 0.57). In group I, there were 40 males and 30 females while in group II, there were 42 males and 28 females (P=0.73). The average BCVA of patients in both groups was 6/9. On slit lamp examination on day 1, 24 patients in group I and 8 patients in group II had iritis (P=0.03). On day 7, 6 patients (4.2%) in group I and 2 patients (1.4%) in group 2 had iritis (P= 0.31). On day 30, none of the patients in both groups had iritis (Table1). None of the patients in both groups developed CME on clinical fundus evaluation.

DISCUSSION The groups were comparable in terms of age and gender. Average visual acuity was same in both the groups, implying that addition of nepafenac did not change the visual outcome. Anterior segment inflammation on postoperative day 1 was significantly less in the nepafenac plus prednisolone group (group II) compared to prednisolone alone group (p=0.03). On day 7, 3 patients in prednisolone alone group and 1 in nepafenac plus prednisolone group had iritis, though the difference was not statistically significant (p=0.31). Zaczek et al had compared nepafenac plus dexamethasone vs dexamethasone alone and had also found that addition of nepafenac reduced inflammation and subjective complaints.15 There are other studies which have compared steroid alone with NSAIDs alone and have found NSAIDs to be equally effective in reducing inflammation.11,12,16,17 In addition, studies have reported that NSAIDs decrease the chances of macular edema post cataract surgery.18,19 Wittpenn et al compared ketorolac plus steroid vs steroid alone and found that adding ketorolac significantly decreases the incidence of CME.20 However, in this study, CME on clinical examination A2 was not found in any group, so comparison could not be done on this aspect. The limitation of our study is that comparison was done on the basis of only the clinical signs. Further studies, with a larger sample size, and detecting CME using optical coherence tomography can be done.

CONCLUSION: This study suggests that addition of nepafenac 0.1% to prednisolone 1% significantly reduces the intraocular inflammation after phacoemulsification in the early postoperative period.

Funding : nil

Conflict of interest : nil

REFERENCES

1. Thompson J, Lakhani N. Cataracts. Prim Care. 2015;42:409-23
2. McGhee CN, Dean S, Danesh-Meyer H, Locally administered ocular corticosteroids: benefits and risks, Drug Saf 2002;25:33-35.
3. J. Polansky, and R. Weinreb. Steroids as anti inflammatory agent. In M. Sears (ed.), Pharmacology of the Eye, Springer, New York, 1984, pp. 460–583.
4. El-Harazi SM, Feldman RM. Control of intra-ocular inflammation associated with cataract surgery. Curr Opin Ophthalmol. 2001;12:4-8.
5. Harry J., Mission G. Clinical Ophthalmic Pathology, Principles of Diseases of the Eye and Associated Structures. Oxford, UK: Butterworth Heinemann; 2001
6. Ku EC, Signor C, Eakins KE. Anti-inflammatory agents and inhibition of ocular prostaglandin synthetase. Adv Prostaglandin Tromboxane Leukotriene Resp 1976;2:819-23.
7. Ahuja M, Dhake AS, Sharma SK, Majumdar DK. Topical ocular delivery of NSAIDs. AAPS J. 2008; 10:229–241.
8. M. Raizman. Corticosteroid therapy of eye diseases; f ifty years later. Arch. Ophthalmol 1996; 114:1000 1001.
9. Schalnus R. Topical nonsteroidal anti-inflammatory therapy ophthalmology. Ophthalmologica. 2003;217:89–98.
10. Lane SS, Modi SS, Lehmann RP, Holland EJ. Nepafenac ophthalmic suspension 0.1% for the prevention and treatment of ocular inflammation associated with cataract surgery. J Cataract Refract Surg. 2007;33:53-8.
11. Miyanaga M, Miyai T, Nejima R, Maruyama Y, Miyata K, Kato S. Effect of bromfenac ophthalmic solution on ocular inflammation following cataract surgery. Acta Ophthalmol. 2009; 87:300–305.
12. Simone JN, Pendelton RA, Jenkins JE. Comparison of the efficacy and safety of ketorolac tromethamine 0.5% and prednisolone acetate 1% after cataract surgery. J Cataract Refract Surg. 1999;25:699-704.
13. Barba KR, Samy A, Lai C, Perlman JI, Bouchard CS. Effect of topical anti-inflammatory drugs on corneal and limbal wound healing. J Cataract Refract Surg. 2000;26:893-7.
14. Jabs DA, Nussenblatt RB, Rosenbaum JT; Standardization of Uveitis Nomenclature (SUN) Working Group. Standardization of uveitis nomenclature for reporting clinical data. Results of the First International Workshop. Am J Ophthalmol. 2005;140:509-16.
15. Zaczek A, Artzen D, Laurell CG, Stenevi U, Montan P. Nepafenac 0.1% plus dexamethasone 0.1% versus dexamethasone alone: effect on macular swelling after cataract surgery. J Cataract Refract Surg 2014;40:1498 505.
16. Duong HQ, Westfield KC, Singleton IC, Comparing Three Post-Op Regiments for Management of Inflammation Post Uncomplicated Cataract Surgery. “Are Steroids Really Necessary?”, J Clin Exp Ophthalmol 2011;2:163.
17. Walter KA, Estes AJ, Watson S, Ellingboe M. Management of Ocular Inflammation following Routine Cataract Surgery— Topical Corticosteroid (Prednisolone) versus Topical Non-steroidal (Bromfenac). US Ophthalmic Review 2011;4:97–100.
18. Wang QW, Yao K, Xu W, Chen PQ, Shentu XC, Xie X, Weng Y, Zhang L, Jin CF, Wu W, Zhu YN, Yu YH. Bromfenac sodium 0.1%, fluorometholone 0.1% and dexamethasone 0.1% for

control of ocular inflammation and prevention of cystoid macular edema after phacoemulsification. Ophthalmologica. 2013;229:187 94.
19. Kessel L, Tendal B, Jørgensen KJ, Erngaard D, Flesner P, Andresen JL, Hjortdal J. Post-cataract prevention of inflammation and macular edema by steroid and nonsteroidal anti-inflammatory eye drops: a systematic review. Ophthalmology. 2014;121:1915-24.
20. Wittpenn JR, Silverstein S, Heier J, Kenyon KR, Hunkeler JD, Earl M; Acular LS for Cystoid Macular Edema (ACME) Study Group. A randomized, masked comparison of topical ketorolac 0.4% plus steroid vs steroid alone in low-risk cataract surgery patients. Am J Ophthalmol. 2008;146:554-560.