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Short Communication

Comparing the Effect of Diclofenac and Dexamethason after Strabismus Surgery

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ABSTRACT

Background: This study has been conducted to compare anti inflammatory effect of topical diclofenac with topical dexamethason following strabismus surgery.

Methods: In this study 50 patients who had undergone strabismus surgery were evaluated. They were divided into two groups randomly. 25 patients received topical 0.1% diclofenac sodium (group A) and 25 patient received 0.1% dexamethason (group B) for 6 weeks. The baseline parameters were similar in both groups. At each visit ocular examinations was performed to record ocular discomfort, conjunctival inflammation, conjunctival repair, and intra ocular pressure (IOP). Follow-up visits were 1, 2, 4, and 6 weeks, post operatively.

Results: There were no statistically significant difference in the rate of resolution of the inflammation, conj healing, and intra ocular pressure (IOP) except a non significant rise of intra ocular pressure (IOP) at the end of fourth postoperative week and statistically significant rise in intra ocular pressure (IOP) at 6th week post operative visit in group B.

Conclusion: The results of this study suggest that diclofenac may be used as an alternative for dexamethason after strabismus surgery.

Keywords: diclofenac, dexamethason, strabismus surgery

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Topical steroids are frequently used after ocular surgeries to decrease inflammation, but the use of this drugs can be associated with several complications such as elevated intra ocular pressure (IOP), delayed wound healing, decreased resistance to infection, and cataract formation [1, 2]. To overcome these problems, researchers have investigated a number of topical nonstreroidal anti inflammatory drugs (NSAIDs) and found them to be equally affective or even superior to the use of steroids efter ocular surgeries [3, 4].

In addition, NSAIDs have additional advantages for patients undergoing strabismus surgery; significantly, they reduce postoperative pain without impairment of corneal wound healing. Therefore, these agents can be used effectively to control inflammation while avoiding some of adverse effects of steroids.

This study evaluates the comparative efficacy of topical diclofenac 0.1% and dexamethason 0.1% for their anti-inflammatory and analgesic effects, as well as their effect on IOP after strabismus surgery.

Subjects and methods

60 patients who had undergone two muscle surgery (recess & resect) for horizontal deviation (ET or XT) in one eye randomly received diclofenac or dexamethason, postoperatively. Patients who have history of allergic eye reaction, family history of glaucoma, systemic abnormality, previous ocular surgery (any type), and uveitis were excluded.

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All patients were operated by the author. Limbal conjunctival incision was the same in all patients. Conventional recession and resection procedure was performed depending on the type of strabismus. Muscles were reattached with double-armed 5-0 vicryl sutures. Conjunctival incisions were closed with 6-0 silk sutures.

Patients were divided in to two groups randomly and received voltaren (diclofenac 0.1%) in group A dexamethasone in group B.

Both drops applied Q4h for the first week, Q6h for the second week, and Q8h for the third and fourth weeks, and Q12h for the remaining period. All medications were stopped at the end of sixth week. All patients were examined at 1st day, 1st week, 2nd week, 4th week, and finally at 6th week after the surgery.

Studied parameters were postoperative pain and discomfort, conjunctival gap, intra ocular pressure (IOP), and inflammation. Grading of conjunctival inflammation and post operative discomfort is presented in table 1. This type of scoring of inflammation enabled us to analyze the qualitative datas.

Intraocular pressure was measured with applanation tonometer. Conjunctival gap was measured in mm with slit lamp examination. Finally, ten patients were excluded from the study. The results of 50 patients were analyzed. The age of the patients were 2 to 26 years. Mean age was 9±10.50 in group A and 10.5+9.5 in group B. There were 12 males and 13 females in group A and 10 males and 15 females in group B.

Results

There was no statistical significant difference between two groups for any of the inflammatory parameters. The intraocular pressure (IOP) was almost identical in both the groups at first and second week after the surgery but the intraocular pressure (IOP) was higher in group B, in comparison with group A, at the end of the 4th and 6th weeks which was statistically significant (P<0.001) with t-student test. The results are listed in table 2.

Table 1. Grading of conjunctival inflammation and discomfort.

Score	Grade
0	None
0.5-1.0	Mild
1.5-2.0	Moderate
2.5-3.0	Severe

Table 2. Postoperative scores of various parameters.

Parameters	1st week		2nd week		4th week		6th week	
	A	B	A	B	A	B	A	B
Discomfort	1.6±0.5	1.5±0.5	0.4±0.3	0.5±0.3	0	0	0	0
Chemosis	1.5±0.5	1.5±0.4	0.4±0.3	0.4±0.3	0	0	0	0
Inflammation	1.4±0.5	1.3±0.4	0.3±0.3	0.3±0.3	0	0	0	0
Conjunctival gap	1±0.3	1.2±0.3	0.2±0.3	0.2±0.2	0	0	0	0
Intraocular pressure (IOP)	11.5±3.5	11.4±3.5	12.4±3.4	12.7±0.4	12.6±0.4	14.2±0.8	12.6±0.5	17.3±0.9

* Conjunctival inflammation, chemosis, and discomfort grading are according to types of grading in table 1.
+ Conjunctival gap is graded by millimeter.
# Intra ocular pressure (IOP) is graded by mmHg.

Discussion

The controversy about the results of routine use of topical steroids following strabismus surgery has been continued for years. Topical corticosteroids are commonly are prescribed for reducing inflammation after strabismus

surgery. Howere, steroid induced glaucoma, superimposed microbial infection, and delayed wound healing all have been reported after the use of topical corticosteroids [7]. The aim of this study was to find a method to avoid these potential complications.

Several studies have demonstrated the efficacy of NSAIDs in reducing post operative inflammation [5, 8, 9]. APT and associates [5] and wright and colleagues [8] reported no difference between the NSAIDs-treated group and the steroid-treated group for controlling inflammatory response. Kroff's and Snir's [9] groups reported that diclofenac was more effective in reducing surgical induced inflammation. Moreover, the use of postoperative steroid drops delayed the surgical wound healing, whereas diclofenac had no such effects.

The pathological mechanism of post surgical inflammation appears to be mediated by prostaglandins as well as other chemicals [11]. NSAIDs attenuate the prostaglandin synthesis by inhibiting the activities of cyclooxygenase pathway, the enzyme which catalyzes the formation of endoperoxides, the precursor of prostaglandin, from arachidonic acid.

In our study, no difference was seen between two groups regarding to inflammatory reactions and wound healing, but there was only a mild rise in intraocular pressure (IOP) at the 4th post operative week which became more significant at the end of 6th week.

An important finding in our study was that there were no inflammatory reactions in more than 75% of patients by the end of 2nd week; We therefore hypothesize that no medication is required postoperatively after the second or third week to minimize the risk of elevated intraocular pressure (IOP). Another hypothesis is that topical NSAIDs appears to be a good substitution for topical corticosteroids after strabismus surgery.

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