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ORIGINAL ARTICLE

Mean Change in Intra-Ocular Pressure in Patients Undergoing Trabeculectomy with Mitomycin C

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ABSTRACT

Aim: To examine the outcomes of trabeculectomy followed by mitomycin C in term of mean change in intra-ocular pressure in patients presented with primary congenital glaucoma.
Study design: Cross-sectional/observational
Place and duration of study: Department of Ophthalmology, Khawaja Muhammad Safdar Medical College, Allama Iqbal Memorial Teaching Hospital, Sialkot from 7th July 2020 to 6thJanuary 2021.
Methods: Fortypatients of both genders with ages up to 5 years presented with primary congenital glaucoma were enrolled in this study. Patients demographics were recorded after taking written consent from parents/guardians. All the patients were receivedtrabeculectomy with 0.4mg/ml Mitomycin C was applied below the flap for 2 to 3 minutes. Intraocular pressure was examined preoperatively and at 12th day after surgery.
Results: Twenty-four (60%) were males while 16 (40%) were females. 30 (75%) patients were ages ≤2yearsand 10 (25%) patients had ages >2 years. A significant difference was observed regarding mean change in intra-ocular pressure (pre-operatively 30.48±3.62 versus post-operatively 16.35±2.86) with p-value <0.001.
Conclusion: Trabeculectomy with Mitomycin C is very effective for reducing intraocular pressure. A significant decrease in intra-ocular pressure was observed post-operatively.
Keywords: Primary congenital glaucoma, Intra-ocular pressure, Trabeculectomy, Mitomycin C

INTRODUCTION

Reducing intraocular pressure (IOP) is the only evidence-based intervention that can delay the onset and progression of glaucoma, which is sight threatening progressive optic neuropathy.[1,2] A major risk factor for glaucoma is an elevated IOP which is specified as values measured above 21 mmHg. Nevertheless, we know that rather than having an absolute high IOP above 21 mmHg, many patients suffer from an individual high IOP presenting with normal IOP ranges accompanied by glaucomatous damage and disease progression. Especially IOP-fluctuations, defined as the difference between maximal and minimal IOP values measured during a day, are relevant for progression in glaucoma damage.[3,4] Daily IOP-fluctuations ranging from 3.17 to 5 mmHg are considered to be physiological.[5] In contrast, glaucoma patients can show larger IOP variations ranging from 4.8 to 11 mmHg. According to other studies, IOP-fluctuation was not an independent risk factor of glaucoma or glaucoma progression.[6,7] Evaluation of IOP-values and their diurnal and nocturnal fluctuations can be performed in form of diurnal-nocturnal-IOP-profiles (DNP).[8] Especially nocturnal IOP-measurements, which cannot be provided in an outpatient setting but often show nocturnal IOP-peaks, are of special relevance for the therapy of glaucoma patients[9,10]

Trabeculectomy augmented with mitomycin C remains one of the most popular and effective IOP-lowering surgical techniques for open-angle glaucoma.[11]The present study was conducted to examine the outcomes in term of change in intraocular pressure in patients underwent trabeculectomy augmented with Mitomycin C for primary congenital glaucoma.

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MATERIALS AND METHODS

This cross-sectional/observational study was conducted at Department of Ophthalmology, Khawaja Muhammad Safdar Medical College, Allama Iqbal Memorial Teaching Hospital, Sialkot from 7th July 2020 to 6th January 2021.A total of 40patients of both genders with ages up to 5 years presented with primary congenital glaucoma were enrolled. Patient's detailed demographics including age, sex and side of eye were recorded. Patients with traumatic or complicated cataract, previous ocular repair, previous ocular trauma and retinal detachment were excluded. Diagnosis was confirmed by examination under general anesthesia. Both eyes were examined. All the patients were received trabeculectomy under general anesthesia with 0.4mg/ml Mitomycin C was applied below the flap for 2 to 3 minutes. Scleral flap was sutured using 10/0 nylon applied on corners of scleral flap. Conjunctiva was closed with 10/0 nylon suture. Topical combination of steroid and antibiotic medications was started on the first post-operative day for 10 weeks. Follow-up was taken at 12th day after surgery. Preoperatively and postoperatively intraocular pressure was examined by Perkins tonometer to examine the mean change. Data was analyzed by SPSS 24. Chi-square test was done to examine the mean change in intraocular pressure preoperatively and post operatively.

RESULTS

There were 24 (60%) males while 16 (40%) females. Thirty (75%) patients were ages ≤2 years and 10 (25%) patients had ages >2 years. Twenty-two (55%) patients had right

eye involved and 18(45%) had left eye (Table 1). Preoperatively mean intra-ocular pressure was 30.48±3.62 mmHg. Post-operatively we found a significant difference regarding mean change in intra-ocular pressure 16.35±2.86 mm Hg with a significant mean decrease of 14.3±0.76 p-value <0.001 (Table 2).

In male preoperative IOP was 29.42±2.54 mm Hg and at 12th postoperative day it was 17.25±2.44 mm Hg, a significant difference was observed with p-value <0.001. In females preoperatively mean IOP was 30.86±3.62 and postoperatively it was 16.76±2.35, a significant difference was observed with p-value <0.001 (Table 3).

Table 1: Age, sex and side of eye wise distribution

Variable	No.	%
Gender		
Male	24	60.0
Female	16	40.0
Age (years)		
≤2	30	75.0
>2	10	25.0
Side		
Left	22	55.0
Right	18	45.0

Table 2: Mean change in intra-ocular pressure at 12th day after surgery

	Preoperatively	Post-operatively	P-value
Mean IOP mmHg	30.48±3.62	16.35±2.86	<0.001

Table 3: Gender-wise stratification regarding mean change in IOP

Variable	Mean IOP Preoperatively	IOP Post-operatively	P value
Male	29.42±2.54	17.25±2.44	<0.001
Female	30.86±3.62	16.76±2.35	<0.001

DISCUSSION

In present study we found a significant decrease in intra-ocular pressure after trabeculectomy augmented with Mitomycin C (P<0.05). These results showed similarity to several previous studies in which significant decrease in intraocular pressure were reported and average decrease was 15.04 mm Hg.[12-14] In this study we found that the mean intraocular pressure before surgery was 30.48±3.62 mmHg and postoperatively it was 16.35±2.86 mm Hg with a significant decrease of 14.5 mm Hg and p-value resulted <0.001. Rehman et al[15] reported that a significant decrease in mean intraocular pressure after trabeculectomy with Mitomycin C, preoperatively 29.81±4.80 versus postoperative 17.21±3.82 with p-value <0.002.Another study by Beatty et al[16] reported a significant difference regarding intraocular pressure and they resulted mean IOP fell from a preoperative level of 28.4±6.9 to a level of 16.63±8.06 mmHg at the last follow up (P<0.0001).

In this study according to gender wise stratification of mean change in intraocular pressure we found that female had high IOP before surgery than the male. In male preoperative IOP was 29.42±2.54 mm Hg and at 12th postoperative day it was 17.25±2.44 mm Hg, a significant difference was observed (P<0.001). In females preoperatively mean IOP was 30.86±3.62 and postoperatively it was 16.76±2.35, a significant difference was observed (P<0.001). However a significant difference was observed regarding decrease in IOP at 12th day after surgery. These results were comparable to many of previous studies.[17,18]

In present study 24 (60%) were males while 16 (40%) were females. 30 (75%) patients were ages ≤2 years and 10 (25%) patients had ages >2 years. 22 (55%) patients had right eye involved and 18 (45%) had left eye. These results were similar to the study by Rehman et al[15] in which male were predominant 63.15% as compared to females and majority of patients had ages >1 years 63.16%. Our study was conducted at pediatric population and it may be resulted the variation regarding age and gender-wise distribution. A study conducted by Sharma et al[19] reported that the male to female ratio was 0.92:1. The maximum number of cases was between the fifth and eighth decade in both sexes. Another study by Esfandiariet al[20] reported male patients were high in numbers 54.3% as compared to females and the mean age was 62.2±13.5 years.

CONCLUSION

Trabeculectomy with Mitomycin C is very effective for reducing intraocular pressure. A significant decrease in intra-ocular pressure was observed post-operatively with a p-value <0.0001. So, Trabeculectomy augmented with Mitomycin C should be performed where need to decrease elevated intra-ocular pressure.

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