European Journal of Ophthalmology / Vol. 16 no. 2, 2006 / pp. 247-250

The comparison of eyelash lengthening effect of latanoprost therapy in adults and children

U. ELGIN, A. BATMAN, N. BERKER, B. ILHAN

Department of Glaucoma, Ministry of Health, Ankara Ulucanlar Eye Research Hospital, Ankara - Turkey

PURPOSE. *To compare the eyelash lengthening effect of latanoprost in adults and children with glaucoma.*

METHODS. *Twenty eyes of 13 men and 7 women (mean age: 54.9, range 42–69 years) with primary open-angle glaucoma and 20 eyes of 9 boys and 11 girls (mean age: 10.7, range 6–16 years) with glaucoma were included in this prospective study. In 19 children, juvenile glaucoma and in one, pseudophakic glaucoma had been detected. A single eyelash was pulled from the center of the upper eyelid before latanoprost therapy and at the sixth month of therapy, and measured.*

RESULTS. *In adult cases, the mean eyelash length was 5.79±0.18 mm (5.5–6.1 mm) at baseline and 6.45±0.21 mm (6.2–6.8 mm) at the sixth month. In children, the mean length was 5.66±0.22 mm (5.3–6.0 mm) at baseline and 6.39±0.37 mm (5.9–6.9 mm) at the sixth month. The mean difference in eyelash lengths at baseline and the sixth month was 0.67±0.09 mm (0.5–0.7 mm) in adults and 0.75±0.25 mm (0.4–1.2 mm) in children.*

CONCLUSIONS. *The differences in mean eyelash lengths at baseline and at the sixth month of latanoprost therapy were statistically significant in both adults and children (p=0.000). The mean of the difference of the eyelash length in children was higher than in adults but the result was not statistically significant (p=0.678). (Eur J Ophthalmol 2006; 16:247-50)*

KEY WORDS. *Glaucoma, Latanoprost, Eyelash lengthening, Hypertrichosis*

Accepted: October 25, 2005

INTRODUCTION

Latanoprost, a 17-phenyl-substituted analog of PGF2α, is an effective agent that reduces intraocular pressure (IOP) by increasing uvea-scleral outflow (1, 2). Although it does not have systemic side effects, some ocular side effects such as increased iris pigmentation, hypertrichosis, or increased pigmentation of eyelashes and hair in the region of the eye can be seen, according to the literature (2-17).

Hypertrichosis is one of the most frequent side effects and it can be caused by mitogen or growth factor act of latanoprost. Because of the increased growth activities in children, we thought this effect of the drug must be stronger in children. In our prospective study, we compared the eyelash lengthening effect of latanoprost in children and adults with glaucoma.

MATERIALS AND METHODS

We included 20 eyes of 20 adults with primary open-angle glaucoma (POAG) and 20 eyes of 20 children (juvenile glaucoma in 19 eyes and pseudophakic glaucoma in 1 eye) in our study. In all cases, glaucoma had been diagnosed recently, and all patients were all examined in Ankara Ulucanlar Eye Research Hospital between February 2001 and August 2004. In the adult group, there were 13 men (65%) and 7 women (35%) with a mean age of 54.9±8.03 (range 42–69) years; the children included 9 boys (45%) and 11 girls (55%) with a mean age of 10.7±2.8 (range 6–16) years.

Patients were included after they or their parents had been informed about the study and the side effects of the drug. Cases with a history of previous ocular inflammation or injury

1120-6721/247-04$15.00/0

Fig. 1 - *Eyelashes of a 12-year-old girl with pseudophakia before latanoprost therapy.*

Fig. 2 - *Eyelashes of the same case as in Figure 1 at the sixth month of therapy. This patient had the greatest difference in eyelash length before and after therapy.*

and those with light colored irises were excluded from the study. There was no history of ocular surgery except in a 12-year-old girl with pseudophakia who had bilateral cataract surgery for congenital cataracts at age 4 (Tab. I).

All the cases underwent detailed ophthalmologic examinations, including best-corrected visual acuity measurements with Snellen charts, slit lamp examinations, fundus and angle examinations with 90 D fundus lenses and Goldmann triple-mirror lenses, IOP measurements with Goldmann applanator, and perimetric examinations with Humphrey automated perimeter in cooperative patients. Glaucoma was detected based on elevated IOP (higher than 21 mmHg) for more than 3 weeks, cup to disc (C/D) ratios greater than 0.3, and glaucomatous visual field defects. Latanoprost 0.005% monotherapy was given once daily at bedtime. Right eyes were chosen in all cases. Before latanoprost therapy, a single eyelash, which appeared to be the longest one, was pulled from the center of the upper eyelid with tweezers, and stretched with the help of two forceps. As the curve of the eyelash made the measurement difficult, a silk thread was used to trace the eyelash, and was measured with a micrometer under a microscope. This procedure was repeated at the sixth month of the therapy. All measurements were done by the same observer (U.E.). Eyelashes were photographed at baseline and at the sixth month and the cases were investigated prospectively.

The eyelash lengths before and after the therapy in both groups were compared by Mann-Whitney test, and the differences in eyelash lengths in both groups were compared by Wilcoxon signed rank test.

TABLE I - MEAN AGE AND SEX OF THE PATIENTS

	Adults	Children
Female, n (%)	7 (35)	11 (55)
Male, n (%)	13 (65)	9 (45)
Mean age, yr	54.9±8.03	10.7±2.8
Range, yr	42–69	6–16

TABLE II - MEAN LENGTH OF THE EYELASHES BEFORE AND AT THE SIXTH MONTH OF THERAPY

	Adults	Children
Mean length at baseline	5.79±0.18 (5.5–6.1)	5.66±0.22 (5.3–6.0)
Mean length at the sixth month	6.45±0.21 (6.2–6.8)	6.39±0.37 (5.9–6.9)
Difference of the means	0.67±0.09 (0.5–0.7)	0.75±0.25 (0.4–1.2)

Lengths are in mm. Values are mean ± SD (range)

RESULTS

The drug was well-tolerated in all cases. No patient or parent complained of eyelash lengthening, and there was no significant lid or iris pigmentation. Before latanoprost therapy, the mean IOP of the eyes in adult group was 24.3±1.2 mmHg (23–26 mmHg), while it was 23.9±1.2 mmHg (23–27 mmHg) in children. At the sixth month of

the latanoprost therapy, the mean IOP was 16.7±1.13 mmHg (15–19 mmHg) in adults and 16.4±1.2 mmHg (14–19 mmHg) in children.

The mean length of the eyelashes in the adult group was 5.79±0.18 mm (5.5–6.1 mm), while it was 5.66±0.22 mm (5.3–6.0 mm) in the children before latanoprost therapy.

At the sixth month of the therapy, the lengths of the eyelashes were measured again. In adult patients, the mean eyelash length was 6.45±0.21 mm (6.2–6.8 mm) while it was 6.39±0.37 mm (5.9–6.9 mm) in children. The eyelash lengthening at the sixth month was found to be statistically significant in both groups (p=0.000).

The difference in the mean eyelash lengths between baseline and the sixth month of the latanoprost therapy was 0.67±0.09 mm (0.5–0.7 mm) in adult cases, while it was 0.75±0.25 mm (0.4–1.2 mm) in children. The differences in eyelash lengths in children before and at the sixth month of therapy were higher than the differences in adult cases, but this result was not statistically significant (p=0.678) (Tab. II, Figs. 1 and 2).

DISCUSSION

Latanoprost has some ocular side effects, including increased iris pigmentation, hypertrichosis, and increased pigmentation of eyelashes and hair in the region of the eye, which are all thought to be reversible (1-15).

According to Johnstone and colleagues' study, latanoprost was speculated to be a mitogen or a growth factor (2). They found that it stimulated cell surface receptors, prevented apoptosis, and triggered the activation of protein kinases which were important in cell growth. In Sugimoto and colleagues' study, the authors saw early lengthening of eyelashes within 2 weeks and found a mean increase of eyelash length of 12.1% at 6 weeks and 13.8% at 10 weeks (8). Also, there are studies with other prostaglandin analogs like bimatoprost, travoprost, and isopropyl unoprostone, and they all caused lengthening and thickening of eyelashes (16, 17).

In our study, our aim was to compare the lengthening effect of latanoprost in child and adult glaucoma cases. As this effect is speculated to be by the mitogen or the growth factor act of latanoprost, we thought this effect must be stronger in growing children. In both groups, the mean length of the eyelashes at the sixth month of the therapy was longer than the mean length at baseline and this result is statistically significant (p=0.000). The difference of the mean of the eyelash lengths between baseline and the sixth month of latanoprost therapy was 0.67±0.09 mm (0.5–0.7 mm) in adult cases, while it was 0.75±0.25 mm (0.4–1.2 mm) in children. Although the mean of the differences was found to be higher in child cases, this result was not statistically significant (p=0.678).

Lengthening of eyelashes is one of the frequent ocular side effects of latanoprost in glaucoma cases, and this effect is almost equal in children and adults. Patients or their parents should be informed about this side effect of latanoprost before initiating the therapy.

The authors have no commercial, proprietary, or financial interest in the products or companies mentioned in this article.

Reprint requests to:
Ufuk Elgin, MD
24. sokak 13/4 Bahcelievler
Ankara 06490, Turkey
k.elgin@superonline.com

REFERENCES

1. Watson PG. Latanoprost. Two years experience of its use in the United Kingdom. The Latanoprost Study Group. Ophthalmology 1998; 105: 82-7.
2. Alm A, Widengard I. Latanoprost experience of 2-year treatment in Scandinavia. Acta Ophthalmol Scand 2000; 78: 71-6.
3. Bito LZ. Prostaglandins: a new approach to glaucoma management with a new, intriguing side effect. Surv Ophthalmol 1997; 41 (Suppl.): S1-14.
4. Chiba T, Kashiwagi K, Kogure S, et al. Iridial pigmentation induced by latanoprost ophthalmic solution in Japanese glaucoma patients. J Glaucoma 2001; 10: 406-10.
5. Chiba T, Kashiwagi K , Iijima K, et al. A prospective study of iridial pigmentation and eyelash changes due to ophthalmic treatment with latanoprost. Jpn J Ophthalmol 2004; 48: 141-7.
6. Johnstone MA. Hypertrichosis and increased pigmentation of eyelashes and adjacent hair in the region of the ipsilateral eyelids of patients treated with unilateral topical latanoprost. Am J Ophthalmol 1997; 124: 544-7.
7. Johnstone MA, Albert DM. Prostaglandin-induced hair growth. Surv Ophthalmol 2002; 47 (Suppl.): S185-202.
8. Sugimoto M, Sugimoto M, Uji Y. Quantitative analysis of

eyelash lengthening following topical latanoprost therapy. Can J Ophthalmol 2002; 37: 342-5.
9. Stecchi G, Saccucci S, Molinari S, De Gregorio F. Eyelash hypertrichosis induced by topical latanoprost: 6-month follow-up study. Acta Ophthalmol Scand Suppl 2002; 236: 56-7.
10. Kook MS, Lee K. Increased eyelid pigmentation associated with use of latanoprost. Am J Ophthalmol 2000; 129: 804-6.
11. Chen CS, Wells J, Craig JE. Topical prostaglandin F(2alpha) analog induced poliosis. Am J Ophthalmol 2004; 137: 965-6.
12. Strober BE, Potash S, Grossman ME. Eyelash hypertrichosis in a patient treated with topical latanoprost. Cutis 2001; 67: 109-10.
13. Mansberger SL, Cioffi GA. Eyelash formation secondary to latanoprost treatment in a patient with alopecia. Arch Ophthalmol 2000; 118: 718-9.
14. Reynolds A, Murray PI, Colloby PS. Darkening of eyelashes in a patient treated with latanoprost. Eye 1998; 12: 741-3.
15. O'Toole L, Cahill M, O'Brien C. Eyelid hypertrichosis associated with latanoprost is reversible. Eur J Ophthalmol 2001; 11: 377-9.
16. Chiba T, Kashiwagi K, Chiba N, et al. Comparison of iridial pigmentation between latanoprost and isopropyl unoprostone: a long term prospective comparative study. Br J Ophthalmol 2003; 87: 956-9.
17. Eisenberg DL, Toris CB, Camras CB. Bimatoprost and travoprost: a review of recent studies of two new glaucoma drugs. Surv Ophthalmol 2002; 47 (Suppl.): S105-15.