

Compliance in usage of low-dose atropine for prevention of progression of myopia in Indian children

Dear Editor,

Myopia is the one of the common refractive error in children and is progressive mainly due to an excessive axial elongation of the eye. The risk factors of myopia are working with focus on close objects, greater time spent indoors, and a family history of the condition. Prevention of myopia progression is of current intense research interest. Previous studies have reported decreased myopic progression rates with atropine eye drops.^[1-8]

Low-concentration atropine (LCA) eye drops have now been accepted as a preventive modality for prevention of progression of myopia in children with minimal side effects.^[1-8] Although a lot of studies talk about the effect of LCA eye drops,^[9] there is very minimal literature on the actual compliance of these children to drops. We did a prospective observational study to look for the compliance of these eye drops in children and to find out the drop-out rate and the reason behind cessation of LCA eye drops.

A total of 27 children were included in the study in March 2019 and were followed up for next 6 months. All children who presented to the Myopia control clinic of Baroda Children Eyecare and Squint Clinic were

- a. Diagnosed with axial myopia for the first time.
- b. Willing to participate in the study
- c. History of myopic progression of at least 0.5 diopter in the last one year.
- d. Did not have a history of LCA eyedrops discontinuation previously.
- e. Subjects included were prescribed LCA eye drops to be used once a day.
- f. Subjects were included with were in the age of 5–16 years.
- g. Patients that agreed to put drops regularly once a day in evening and maintain log.

Only those patients who could follow-up for a period of 6 months were included in the study. A simple compliance form was made to see if the patients were instilled the drops. The patients were followed up at 1 month and next 5 months. All children were enrolled in a single month of March 2019 to avoid any bias regarding change of season, change of child's activities like studies, school opening, play time, etc.

The form included details like

- Demographic data;
- current glass prescription;
- duration of using glasses;
- regular use of LCA drops; and
- if not, reasons for noncompliance.

All the parents were asked as per questionnaire and the form was filled by the optometrist at 1 month and at 6 months interval to assess the compliance of the once a day eye drops usage. The data was recorded to upload in MS Excel. The means and standard deviation were calculated along with the percentage of various groups depending on compliance and noncompliance. A good compliance was defined as children and parents who put drops regularly and most importantly maintained the log book. Based on the patient's replies, a compliant patient was defined as one who omits only less than 10% of the weekly doses.^[10-13]

A total of 27 children were enrolled in the study. The mean age is 6.96 ± 2.4 years with 18 males and 9 females with the mean age of 7.2 ± 2.7 and 5.3 ± 1.8 years, respectively. All the children were started atropine eye drops during the enrollment.

Out of the 27 children advised to put LCA drops, 6 (22.2%) did not comply at the end of the first month. Out of these, four (14.8%) were not keen on continuing the drug for a long time and so had stopped the instillation. The parents of these four children were counseled again regarding the usage, and three parents agreed on starting the drops again. However, at the end of 6 months, they had again missed out on putting the drops and had tried alternate therapy. When the child showed increase in the glasses, they were explained about the

drops once more. Rest of the two (7.4%) children developed conjunctivitis and so they stopped.

At the end of 6 months, the initial four (14.8%) did not continue regularly. Another two (7.4%) children stopped or were not regular due to unavailability of the drops. Therefore, a total of eight (29.6%) children did not comply at the end of 6 months with three patients completely stopping the treatment and five were irregular in putting the drops. None of them stopped using the drops owing to its side effects like reduced near vision, glare, or photophobia.

The compliance of these drops has been discussed very briefly.^[2,7,8] Most of the studies would remove the noncompliant patients from their data. Noncompliance has been known to be one the biggest hurdle to patient care especially in chronic diseases where medications are continued for an extended period of time.^[10] Reduced compliance with these drops may result in either no effect or rebound effect once the drops are stopped suddenly.^[11] A similar situation arises in chronic treatment of glaucoma. Another factor for noncompliance has been poor communication with the patient.^[12] However, at least in this particular study, this factor was taken care of.

A limitation of this study was that although all parents were asked to report if one or two doses were missed, some parents may have overlooked it. A log was maintained by the parents. None of the parents seemed to have missed out on even a single dose.

We conclude that almost one-third of total patients who are prescribed LCA eye drops do not comply for various reasons. Even after counseling the compliance is irregular in these groups, a small percentage of children may be allergic to the drug and may need to withdraw it.

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Conflicts of interest

There are no conflicts of interest.

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References

- Saxena R, Vashist P, Tandon R, Pandey RM, Bhardawaj A, Gupta V, *et al.* Incidence and progression of myopia and associated factors in urban school children in Delhi: The North India myopia study (NIM study). *PLoS One* 2017;12:e0189774.
- Chia A, Lu QS, Tan D. Five-year clinical trial on atropine for the treatment of myopia 2: Myopia control with atropine 0.01% eyedrops. *Ophthalmology* 2016;123:391-9.
- Chua WH, Balakrishnan V, Chan YH, Tong L, Ling Y, Quah BL, *et al.* Atropine for the treatment of childhood myopia. *Ophthalmology* 2006;113:2285-91.
- Gong Q, Janowski M, Luo M, Wei H, Chen B, Yang G, *et al.* Efficacy and adverse effects of atropine in childhood myopia: A meta-analysis. *JAMA Ophthalmol* 2017;135:624-30.
- Jethani J, Dave P. Low concentration atropine (0.01%) to control the progression of axial myopia in children. *All India Ophthalmological Society Proceedings* 2018;178-81.
- Yam JC, Jiang Y, Tang SM, Law AKP, Chan JJ, Wong E, *et al.* Low-concentration atropine for myopia progression (LAMP) study: A randomized, double-blinded, placebo-controlled trial of 0.05%, 0.025%, and 0.01% atropine eye drops in myopia control. *Ophthalmology* 2019;126:113-24.
- Yam JC, Li FF, Zhang X, Tang SM, Yip BHK, Kam KW, *et al.* Two-year clinical trial of the Low-concentration atropine for myopia progression (LAMP) study: Phase 2 report. *Ophthalmology* 2020;127:910-9.
- Anders LM, Heinrich SP, Lagrèze WA, Joachimsen L. Little effect of 0.01% atropine eye drops as used in myopia prevention on the pattern electroretinogram. *Doc Ophthalmol* 2019;138:85-95.
- Jethani J, Memon S. Comments on: Changes in pattern electroretinogram after application of 0.01% atropine eye drops. *Indian J Ophthalmol* 2020;68:259-61.
- Rudd P. In search of the gold standard for compliance measurement. *Arch Intern Med* 1979;139:627-8.
- Kass M. Compliance and prognosis in glaucoma. *Arch Ophthalmol* 1983;103:504.
- Buller AJ, Connell B, Spencer AF. Compliance: Clear communication's critical. *Br J Ophthalmol* 2005;89:1370.
- Abu Hussein NB, Eissa IM, Abdel-Kader AA. Analysis of factors affecting patients' compliance to topical antiglaucoma medications in Egypt as a developing country model. *J Ophthalmol* 2015;2015:234157.

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