

## Effect of low-concentration atropine (0.01%) eye drops on higher-order aberrations in myopic children

Dear Editor,

Low-concentration atropine (LCA; 0.01%) has now become one of the mainstays for the treatment of progression of myopia in children.<sup>[1-4]</sup> The effect of LCA on higher-order aberrations (HOA) is not known. We did a study to find out the effect of LCA on HOA after instillation of drops once a day for a period of 1 month, 6 months, and 1 year.

A Shack–Hartmann wavefront aberrometry (Visioni × 120, Luneau, France) was done pre atropine and after 1 month of LCA instillation for controlling the progression of myopia. A total of 88 children were enrolled in the study. All children instilled the drops regularly in both the eyes for a period of 1 month once a day. The mean age was 6.1 ± 3.3 years. The mean spherical component of the myopia for - 2.68 ± 2.2 D (*n* = 176 eyes). Aberrometry was done preatropine and postatropine instillation at 1 month, 6 months, and 1 year. The mean increase in the size of the pupil was 0.6 ± 0.6 mm at the end of 1 month and 0.8 ± 0.2 mm and 0.8 ± 0.4 mm at the end of 6 months and 1 year, respectively.

Only patients who regularly put atropine were included in this retrospective study. A noncompliant patient was defined as one whose parent omitted more than 10% of the weekly instillation of drops.<sup>[5-7]</sup> Our previous work did help us in increasing the communication level and have more compliance.<sup>[5]</sup> Children with refractive error between - 1.5 and -4.0 were included in the study. All children with astigmatism >1.5 were excluded from the study.

The preatropine and postatropine aberrometry was done to look for total aberration with HOA, coma, root mean square (RMS), trefoil, and tetrafoil. A Student *t* test was done to compare the preatropine and postatropine data (1 month, 6 months, and 12 months). *P* values of 0.38, 0.44, and 0.33 when comparing preatropine eyes with postatropine eyes for total HOA were found. When compared for coma, RMS, trefoil, and tetrafoil, the *P* values were not significant.

LCA has become the mainstay of pharmacological control of progression of myopia in children. The drops have been suggested to be used for at least 2 years and may be continued longer.<sup>[2-4]</sup> Although the studies have suggested that LCA is safe for long-term use, few studies have done pattern electroretinograms and multifocal electroretinograms to establish the safety of these drops, but there is no study on HOA after using LCA drops.<sup>[1,8]</sup> There have been studies suggestive of significant changes in the HOA after using atropine 1%, which are induced mainly due to the cycloplegic effect of atropine.<sup>[1]</sup>

This study helps in understanding that even if there is a small increase in the pupil size post LCA eyedrops, the change in various HOAs is not significant and therefore the LCA does not affect or induce the HOA in children with myopia.

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### Conflicts of interest

There are no conflicts of interest.

**Jitendra Jethani, Anisha Kamat<sup>1</sup>, Jai Jaiswal<sup>1</sup>**

Pediatric Ophthalmology and Strabismus, <sup>1</sup>Myopia Control Clinic, Baroda Children Eyecare and Squint Clinic, Vadodara, Gujarat, India

Correspondence to: Dr. Jitendra Jethani,

212-213, Panorama Complex, R.C. Dutt Road, Alkapuri,

Vadodara - 390 007, Gujarat, India.

E-mail: xethani@rediffmail.com

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