

Age effect on myopia control efficacy with contrast management spectacle lenses

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Purpose

To investigate the effect of age on myopia progression amongst Chinese children enrolled in a multicentre randomised controlled clinical trial evaluating contrast management spectacle lenses (Diffusion Optics Technology™, DOT).

Methods

One hundred and eighty-six myopic children aged 6 to 13 years were enrolled in the clinical trial (NCT05562622). Participants were prescribed either DOT spectacle lenses or standard single vision control spectacle lenses in a 2:1 ratio. The cohort was divided into three categories according to enrolment age: Group 1: aged 6-7 (n=27), Group 2: 8-10 (n=101), Group 3: 10-13 years (n=58). Axial Length (AL) and cycloplegic Spherical Equivalent Refraction (cSER) were measured at baseline, 6 and 12 months.

Results

Participant mean age was 9.6 ± 1.8 years; 51.6% female, mean \pm SD baseline AL was 24.45 ± 0.80 mm and cSER was -2.27 ± 0.85 D.

After 12 months, DOT lenses significantly slowed AL progression by 0.26 mm (74%, $p < 0.0001$) and cSER by -0.48 D (75%, $p < 0.0001$), compared to control.

The observed mean changes in both AL and cSER were highest for Group (G)1, followed by G2 and then G3 in the DOT (G1 0.16 ± 0.27 mm, -0.30 ± 0.66 D; G2 0.11 ± 0.22 mm, -0.20 ± 0.46 D; G3 0.03 ± 0.18 mm, -0.04 ± 0.51 D) and control (G1 0.49 ± 0.20 mm, 0.72 ± 0.60 D; G2 0.38 ± 0.16 mm, -0.73 ± 0.37 D; G3 0.23 ± 0.15 mm, -0.48 ± 0.36 D) groups. Compared to control lenses, DOT lenses slowed axial elongation (G1 -0.32 mm, $p = 0.008$; G2 -0.27 mm, $p < 0.0001$; G3 -0.20 mm, $p = 0.0002$) and refractive progression (G1 0.48 D, $p = 0.09$; G2 0.54 D, $p < 0.0001$; G3 0.38 D, $p = 0.004$) amongst each age group.

Conclusion

Interim results from this on-going clinical trial demonstrate DOT spectacle lenses slowed axial elongation and myopia progression amongst children aged 6 to 13 years. These results support previous findings that myopia progression is most rapid in younger children (age 6-7 years) and slows with age.

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