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High Myopia: Reviews of myopia control strategies and myopia complications

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Aims: Most participants in myopia control studies have low and moderate myopia, relatively little is known about myopia control in high myopia. This review aims to evaluate the efficacy of myopia control strategies in high myopia and report on the structural and pathological complications of the eye.

Methods: Comprehensive literature searches were undertaken using keywords in MEDLINE and EMBASE to identify publications in English, evaluating (1) the efficacy of myopia control strategies (environmental, pharmacological and optical) in high myopia (≤-6.00D) and (2) the complications of high myopia. Outcomes include change in spherical error (SE) and/or axial length (AL) to evaluate progression in high myopia.

Results: Twelve studies evaluating the efficacy of optical and pharmacological (none on environmental) interventions on axial elongation and myopic refractive error for high myopia control were identified. A statistically significant reduction in progression of refractive error in high myopes was reported with 1% and 0.5% atropine. Defocus Incorporated Multiple Segment spectacle lenses had lower efficacy in slowing high myopia progression compared to moderate and low myopia. Ortho-K lenses were equally effective in reducing myopia progression in low, moderate and high myopia. All myopic patients have an increased risk of myopic macular degeneration, retinal detachment, cataract and glaucoma; with the risk increasing with level of myopia.

Conclusions: High myopia has significant effects on quality of life and risk of pathological complications and vision impairment. Young children, excluding those with some syndromic associations, who are fast progressing moderate and high myopes require early intervention and close monitoring. Further research investigating the efficacy of myopia control strategies in highly myopic patients, both monotherapies and combination treatments, are necessary.