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MEASURES TO CONTROL THE PROGRESSION OF NEAR SIGHTEDNESS

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Conflicts of Interest: Nil

ABSTRACT:

Myopia (near sightedness) is a most common refractive error which causes blurred vision for distant objects. slowing the progression of myopia has considerable concern for myopic patients. clinical science is rapidly advancing the knowledge about methods to slow down the progression of myopia. Measures that are explored to slow down the progression of myopia include bifocal spectacles, cycloplegic drops, intraocular pressure lowering drugs, contact lenses. the purpose of this review is to find the systemic effective strategies to the progression of myopia.

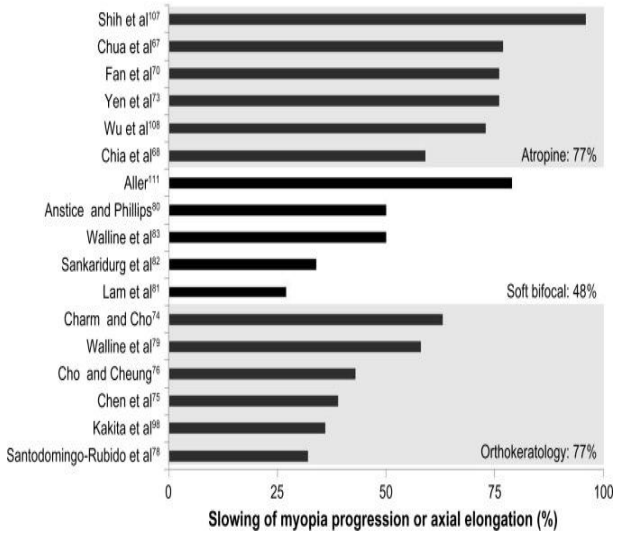
Keywords: Near sightedness, myopia, progression, orthokeratology, anti muscarinic agent, varifocal.

Introduction

Myopia is a most common refractive error that affects the world wide which causes blurring of distance vision. myopia is of four types congenital myopia that is present since birth, simple myopia that occurs in school age also known as school myopia, pathological myopia is a genetic inherited myopia ,when the eyeball is too long or the cornea is too curved the parallel rays of light not able to focus on retina properly, the ray focus in front of retina this causes myopia. patient complains of blurring of distance vision headache and eyestrain .the myopia is overcome by giving appropriate concave lenses to the patient. with advancement of technology myopia is corrected by concave lenses ,contact lens, lasik surgery ,orthokeratology. To analysis the effects of several types of measures to control the progression of myopia includes eye drops,varifocal glasses, under correction of near sightedness, outdoor time and comparison was made with single vision glasses(spectacles).

Methodology:

It includes almost 23 studies the children who were under corrected progressed on average 0.25d more than fully corrected wearers in one year.RGP were found to have no evidence of effect on myopia eye growth. PALS show small progression in four studies. the largest positive effect for slowing myopia progression were exhibited by anti muscarinic eye drops. both keratology and soft bifocal have shown slow myopia progression by less than 50% in most of the studies.



Graph 1:

Orthokeratology:

Orthokeratology contact lens were used overnight to flatten the corneal shape temporarily to reduce myopia.orthokeratology provides clear vision without any assisting device and also slow progression of myopia.it corrects central vision by leaving the peripheral blur.because of wearing of overnight orthokeratology may may cause microbial keratitis.

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Table 1: Axial elongation of orthokeratology contact lens wearers compared to controls

Reference	Study design	Study duration (years)	Control method	Mean change (±SD) in axial length (mm)	
				Orthokeratology	Control
Charm and Cho	Randomized clinical trial	2	Single vision spectacles	0.19±0.21	0.51±0.32
Chen et al	Self-selected prospective	2	Single vision spectacles	0.31±0.27	0.64±0.31
Cho et al	Randomized clinical trial	2	Single vision spectacles	0.36±0.24	0.63±0.26
Hiraoka et al	Self-selected retrospective	5	Single vision spectacles	0.99±0.47	1.41±0.68
Kakita et al	Self-selected retrospective	2	Single vision spectacles	0.39±0.27	0.61±0.24
Santodomingo-Rubido et al	Self-selected prospective	2	Single vision spectacles	0.47	0.69
Swarbrick et al	Randomized, contralateral crossover	1	Spherical gas permeable contact lenses	0.02±0.09 mm in first 6 months	0.04±0.06 mm in first 6 months
Walline et al	Prospective, historical controls	2	Soft contact lenses	0.25±1.02	0.57±1.12

Abbreviation: SD, standard deviation.

Orthokeratology reduces axial length growth compared to single vision gas permeable contact lens and soft contact lens.

Soft bifocal lens – soft bifocal contact lens with a central distance design also slow myopia progression by creating a myopic defocus in the periphery which slows the eyeball growth,soft bifocal contact lenses slow the progression of myopia in children by nearly 50% similar to orthok lenses.

Table 2: Changes in refractive error with soft bifocal contact lenses compared to single vision contact lens wearers

Reference	Study design	Study duration	Control method	Mean (± SE) spherical equivalent cycloplegic refractive error	
				Soft bifocal contact lens	Control
Anstice and Phillips	Randomized, crossover	20 months	Single vision contact lens	Period 1: −0.44±0.33 Period 2: −0.17±0.35	Period 1: −0.69±0.38 Period 2: −0.38±0.38
Lam et al	Randomized clinical trial	2 years	Single vision contact lenses	−0.59 D	−0.80 D
Sankaridurg et al	Prospective matched design	1 year	Single vision spectacles	−0.57 D	−0.86 D
Walline et al	Prospective matched design	2 years	Single vision contact lenses	−0.51±0.06	−1.03±0.06

Abbreviations: SE, standard error; D, diopter.

Conclusion:

Atropine provides the best myopic control but the mydriatics have side effects so these are less prescribed. outdoor time has shown to be effective for reducing the onset of myopia but not slowing the progression of myopia. anti muscarinic agent also slows down the progression of myopia but it is light sensitive and causes near blur. most likely effective treatment for myopia includes orthokeratology, soft bifocal contact lens both provide myopic blur to retina which acts as slow myopic eye.

The pathological myopia is strong genetic basis the hereditary transfer of disease may be higher so to decrease the chance of myopia progression from one generation to other genetic counselling is required.

Over past decades there has been many learned about that how to control the progression of myopia but still we have to learn a lot.

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