A 10 Year Long-Term Follow-Up Study Of A Child With Myopic Accommodative Esotropia

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Introduction:

Accommodative esotropia with high AC/A ratio is usually associated with hypermetropia.

The aim is to demonstrate the presentation and management of a child with myopic accommodative esotropia and its long-term follow-up of 10 years.

Case details:

A 4 year old child reported with inward deviation of right eye since last 2 years, which increased with the use of myopic glasses. The best corrected visual acuity in both eyes was 6/18; N6 at 20 cms..

On examination the child had right convergent squint measuring 25 prism diopter for distance and 40 prism diopter for near. With +3.00 diopter near add the deviation reduced to 20 prisms. The AC/A ratio was calculated to be 6.6:1. Extra ocular motility was full in both eyes.

The child was diagnosed to have myopic accommodative esotropia with high AC/A ratio. She was prescribed executive bifocals with full cycloplegic correction and +3.00 diopter sphere add. The left eye was also started on part time patching.

In subsequent visits with constant use of bifocals and patching both eyes vision improved to 6/9. So the patching was tapered and stopped. The near addition was also reduced as the amount of deviation decreased to 5 prisms of esophoria at near. The child was weaned off bifocals and single vision glasses were prescribed at the age of 12 years in view of minimal angle of deviation of 2 prisms at near. Now the child has a stable minimal esophoria at near with single vision glasses and is maintaining good binocularity.

In the complete 10 years of follow up of the child, BCVA improved from 6/18 to 6/6. Child developed fusion. Stereo acuity improved from >600 to 40 sec. of arc.

Table 1: A 10-year follow-up case study, including refractive status, best corrected visual acuity, sensory and motor evaluations, and management strategies.

Age	**Cycloplegic Refraction (BCVA)**	**Worth four dot test (Distance)** **Stereo acuity (Near)**	**H.Berg/ Cover Test**	**Alternate Prism Cover Test**	**Management**
4 years	OD: -1.00/-1.25X10° (6/18) OS: -1.00/-1.25X170° (6/18)	Right suppression >600 sec. of Arc EOM: OU: Full, free, painless	H.Berg: RCS CT (D and N): RCS–ACS Fixation pattern: OU: C/S/M	D: 25 BO N: 40 BO N (+3.00DS): 20 BO AC : A = 6.6:1	Executive Bifocals: Full cycloplegic correction with +3.00 add bisecting pupils OS: Patching 2 hours/day
5 years	OD: -1.00/-1.25X10° (6/12) OS: -1.00/-1.25X170° (6/9)	Right suppression 200 sec. of Arc	H.Berg: RCS CT (D and N): RCS–ACS Fixation pattern: OU: C/S/M	D: 25 BO N: 40 BO (US) N: 20 BO (LS)	Continue glasses and patching
6 years	OD: -2.00/-1.50X10° (6/9) OS: -1.50/-1.50X170° (6/9)	Alternate suppression 140 sec. of Arc	H.Berg: RCS CT (D and N): RCS–ACS Fixation pattern: OU: C/S/M	D: 25 BO N: 40 BO (US) N: 8 BO (LS)	Started weaning off bifocals OU: +2.50DS add Tapper PTO 1 hour/day for 4 months then stop
7 years	OD: -3.00/-2.00X10° (6/9) OS -2.75/-1.75X160° (6/9)	Fusion 100 sec. of Arc	H.Berg: Ortho CT (D and N): ACS	D: 10 BO N: 18 BO (US) N: 5 BO (LS)	Add further reduced OU: +2.00DS add Low dose atropine e/d 1/d

9 years	OD: -3.50/-2.00X10° (6/9) OS: -2.75/-1.75X160° (6/9)	Fusion 63 sec. of Arc	H.Berg: Ortho CT: D: Ortho N: Esophoria	D: Ortho N: 10 BO (US) N: Ortho (LS)	Add further reduced OU: +1.00DS Continue topicals
12 years	OD: -4.75/-2.00X180° (6/6) OS: -4.00/-1.75X160° (6/6)	Fusion 40 sec. of Arc	H.Berg: Ortho CT: D: Ortho N: Flick Esophoria	D: Ortho N: 2 BO (US) N: Ortho (LS)	Bifocals successfully weaned off Single vision glasses Continue topicals
14 years	OD: -5.50/-2.00X180° (6/6) OS: -4.75/-1.75X160° (6/6)	Fusion 40 sec. of Arc	H.Berg: Ortho CT: D: Ortho N: Flick Esophoria	D: Ortho N: 2 BO (US) N: Ortho (LS)	Minimal Esophoria at near with single vision glasses Continue topicals

Discussion:

We know accommodative esotropia with high AC/A ratio is usually associated with hypermetropia. Myopes are known to have reduced accommodation. To analyze the reason for high AC/A ratio in this child we did a review of literature and found that once the full myopic correction is given some children need to accommodate relatively more for near than before leading to more convergence. So the accommodative requirements are altered which lead to increase in AC/A ratio causing esophoria/ esotropia at near.[1]

Myopic accommodative esotropia with high AC/A ratio does well with bifocals thus it is the first choice of treatment as in our case.[2]

However, little evidence is available on predictive factors for successful withdrawal of bifocals in these cases.[3,4,5]

Strabismus surgery is indicated either to eliminate the need for bifocals or in difficult weaning off situations.

Surgical options are medial rectus recession with augmentation, Faden, Slanted recession, combined recession resection may result in high rates of over and under corrections, which have variable success rates.[6]

Conclusion:

Accommodative esotropia with high AC/A ratio is not commonly associated with myopia. An individualized approach depending on the age, degree and type of refractive error, AC/A ratio, angle at distance and near, coexisting amblyopia should be considered before choosing any treatment option. Long term meticulous approach can result in successful weaning off bifocals in these cases.

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Conflicts of interest: Nil

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