



Management of Accommodative Insufficiency with Optometric Vision Therapy: A Case Report

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Case Report

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Abstract

Background: Accommodative Insufficiency (AI) is a condition in which a patient has an inability to focus or sustain focus at near. Several management options are available including plus lenses for near and optometric vision therapy.

Case Report: A 14 years old female presented with complaints of headache and blur vision at distance and near, visited optometry clinic. The symptoms were reported as intermittent and associated with reading up close for even short period of time. A comprehensive binocular vision evaluation was performed to determine the presence of any non-strabismic binocular disorder. Accommodative Insufficiency was reported. Optometric vision therapy was recommended with near added lens. Patient reported good compliance and no longer experience blur or headache after long periods of reading using the glasses.

Conclusion: Accommodative insufficiency can be successfully managed by optometric vision therapy in conjunction with added plus lens. A detailed binocular and accommodative evaluation is must before prescribing added lens.

Keywords: Accommodative insufficiency; Non-Strabismic Binocular Disorder; Optometric Vision Therapy

Introduction

Accommodative insufficiency (AI) is a condition that affects the ability to maintain near vision focus for a prolonged time. This is shown clinically by insufficient amplitude of accommodation based on age-expected norms [1]. The American Optometric Association defines accommodative insufficiency as occurring when the amplitude of accommodation is lower than expected for the patient's age and is not due to sclerosis of the crystalline lens [2]. AI has been reported to be a common cause of asthenopia and other symptoms, in schoolchildren, associated with near vision [3].

The inability to concentrate for long periods during near visual work can reduce the level of student achievement, so AI is presented as negative factor in relation to health and quality of life, as it interferes with reading and near work, contribut-

ing to diminished performance at school [3-5].

Case Report

A 14 years old female presented with complaints of headache and blur vision at distance and near visited our clinic. The symptoms were reported as intermittent and associated with reading up close for even short periods of time. Her previous eye exam was 1 year back and she was advised to visit physician to rule out the cause of headache. Eventually, no reasons could be ruled out. There was a normal birth history (full term, normal delivery, birth weight-2.7kg) and normal developmental milestone. Ocular history was normal. On examination her distance visual acuity was 6/6 OD and 6/6 OS. Near vision was N5 on both eyes using Snellen visual acuity chart. Static retinoscopy showed +0.50D on both eyes. Cycloplegic retinoscopy was +1.25D OD and +1.25D OS. She was called for a detailed binocular vision

evaluation after 3 days (Table 1).

Tests	Findings
Visual acuity(aided)	OD: 6/6, N6 OS: 6/6, N6
Refractive status	OD: +0.50D
Static Retinoscopy	OS: +0.75D
Wet Retinoscopy (Cyclo)	OD:+1.25D OS:+1.25D
Stereopsis(stereofly)	200 seconds of an arc
Cover test	Distance: Orthophoria Near: Esophoria
Prism bar cover test	@20 feet: N/A @40 cm: 3PD esophoria
Extraocular motility test	OU: Full range of motion
Amplitude of accommodation	OD: 7.14D OS: 6.66D OU: 7.14D
Negative Relative Accommodation(NRA)	+3.00D
Positive Relative Accommodation (PRA)	-1.00D
Monocular accommodative facility(MAF) (± 2.00 DS)	OD: 1cpm; difficulty clearing minus OS: 1cpm; difficulty clearing minus
Binocular accommodative Facility(BAF) (± 2.00 DS)	2cpm; difficulty clearing minus
Monocular estimation method(MEM)	+2.25D OU
Near point of convergence(NPC)	6cm
Negative fusional vergence(NFV)	@20 feet: $\times/8/6$ @40 cm: $\times/15/12$
Positive fusional vergence (PFV)	@20 feet: $\times/15/12$ @40 cm: 12/16/14
Saccades (NSUCO)	5/5/4/5

Table 1: Diagnostic Data from the Initial Evaluation.

OD = oculus dextrus; OS = oculus sinister; NSUCO = Northeastern State University College of Optometry

Upon examination she was diagnosed with

- Moderate Hyperopia
- Accommodative Insufficiency.

Management Plan

She was prescribed plus lens of +0.75D OU at near and suggested to take frequent visual break in between while doing sustained near work and office-based vision therapy was initiated.

Vision Therapy

Each office therapy session lasted one hour. Monocular accommodative activities OD, OS were started followed by binocular activities. The patient underwent a total of 6

therapy sessions over a period of 15 days. Accommodative assessment was done at the end of therapy sessions. Post-VT, she was advised to continue her glass while doing near work and was called for follow-up after 1 month.

Follow-up

After one month's follow up visit, the improved accommodative insufficiency and other parameters were well-maintained.

Table 2 shows the diagnostic data from the follow-up evaluation. Appendix A shows the table of excepted for different tests performed and appendix B shows the sequential vision therapy program.

Tests	Follow up evaluation
Visual acuity @ distance @ near	6/6 N6
Stereopsis(Stereo-fly)	25 seconds of arc
Cover test @ distance @ near	Orthophoria 4 exophoria
NPC	Till tip of the nose
Amplitude of Accommodation	OD:10D OS:10D OU:12.5D
MEM	OD:+0.50D OS: +0.50D
NRA	+3.00D
PRA	-2.50D
Monocular accommodative facility(MAF) (± 2.00 DS)	OD:15CPM(equally clears both plus and minus) OS: 14CPM (equally clears both plus and minus)
Binocular accommodative Facility(BAF) (± 2.00 DS)	OU: 18CPM (equally clears both plus and minus)
Negative fusional vergence(NFV)	@20 feet: $\times/10/6$ @40 cm: $\times/22/16$
Positive fusional vergence (PFV)	@20 feet: $\times/19/12$ @40 cm: 15/21/14

Table2: Diagnostic Data from the Follow-Up Evaluation

Discussion

Accommodative insufficiency is one of the common causes of asthenopia and other symptoms associated with near vision [3-5]. This could impact academic performance and ultimately degrades the quality of life. In this case, the patient was 14 years old when we treated her. Therefore, a timely diagnosis can help manage the case of AI successfully with the art of optometric vision therapy.

Conclusion

Accommodative insufficiency can be successfully managed by optometric vision therapy in adjunction with added plus lens. A detailed binocular and accommodative evaluation is must before initiating therapy and prescribing added lens.

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