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Case Report

Eccentric Fixation in Mixed Amblyopia: A challenge in Treating Successfully

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Abstract

In the presence of Strabismus and Anisometropic Amblyopia eccentric fixation was clinically noticed. Many studies advocated that patient responded well with treatment modalities used in the diagnosis and management of the eccentric fixation. Studies have reported that conventional occlusion are more successful than non- conventional or red filter in the treatment of amblyopia with eccentric fixation [1,2]. Initially patient were treated with the conventional occlusion but after failing to the treatment, switched on the non-conventional occlusion1 along with red filter [3], pleoptics [4] and iNet Amblyopia therapy [4].

Multiple factors and the potential are responsible for successful outcome. Patients fails to improve even with treatment efforts discussed as a limitation of the study.

The aim of the case report is to highlight that such cases can be effectively treated with the good compliance, change in treatment modalities as per required eye condition [5].

Keywords: Eccentric fixation; Amblyopia; Strabismus; Anisometropia; Non-conventional occlusion; Red filter; Visual outcome; iNet Amblyopia.

Introduction

Amblyopia is defined as the reduction of the best corrected visual acuity of one or both eyes that can't be attributed exclusively to a structural abnormality of the eye. The prevalence of amblyopia-worldwide is approximately 1%-5% [6-11].

Mixed strabismus and anisometropia is reported as the cause of amblyopia in 37% to 43% of cases [7]. "The aetiology of amblyopia may be associated with uncorrected refractive errors, strabismus, visual axis obstruction or a combination of the above. The VIP study group recently published the risk factors associated with amblyopia in their cohort of children 3-5 years of age enrolled in the head start programme. Strabismus, hyperopia of 2.0 dioptres (D) or more, astigmatism of 1.0 D

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or more, or anisometropia of 0.5 D or more was present in 91% of children with unilateral amblyopia. Bilateral hyperopia of 3.0D or more or astigmatism of 1.0 D or more was present in 76% of children with bilateral amblyopia" [6-11].

Majorly the amblyopia can be successfully treated with various means of treatment including spectacle correction, atropine penalisation, conventional occlusion therapy, active vision therapy or a combination of the above. But uncommonly the treatment of amblyopia becomes challenging if it is present with non-central fixation (eccentric fixation) [5]. In eccentric fixation the eye utilizes a portion of retina other than the fovea. There is a gross inequality found in the incidence of eccentric fixation in literature. Cuppers (1958) and von noorden(1970) reported that 35% to 44% of amblyopic cases has eccentric fixation [12].

According to Indian literature eccentric fixation prevalence is reported as high as 29.25% SRK Malik, DK Sen, VK Grover, S Choudhry (1969) and they have reported that 70.9% had unilateral eccentric fixation whereas the other had bilateral eccentric fixation. SRK Malik et all reported that the patient with unilateral eccentric fixation had 13 degrees parfoveal fixation whereas the bilateral category reported within 3 degree of either erratic fixation or parafoveal fixation in both eyes [1,12].

Practitioners use the common and invaluable direct ophthalmoscope to diagnose and classify the eccentric fixation [13,14,12]. Following to the controversies about the management of eccentric fixation in the past the rebuilding of central fixation and reversing the amblyopia is generally possible in most of the cases in present.

In such cases, a close investigation needs to be done and the correct clinical decision needs to be taken for further management. Reviewing the literature, it has been found that the treatment can be successful with nonconventional occlusion along with red filter or pleoptics, where the treatment has failed with conventional occlusion therapy alone in case of dense amblyopia with eccentric fixation, especially when the patient is uncooperative [1].

Case report

Miss A presented at the age of 3 year and 8 months at our institute, New Delhi, India with Left Exotropia present since birth. General health was normal with no history of any ocular interventions. Unaided visual acuity assessed with lea symbol chart and could not recognize at 3-meter distance in left eye with strongly resistance of right eye cover. Visual acuity in the right eye was 20/30 with Lea symbol without any refractive correction. Refraction was done under dry and dilated condition and spectacle prescription was given in Re-1.0/-1.0x180°and LE -6.0/-1.0X180°.

In Cover test patient had left exotropia with poor fixation. on modified Krimsky test revealed the measurement of 45 pd of exotropia with normal extra ocular movements. Visual acuity was same with the given prescription. Direct ophthalmoscopy revealed 7-degree eccentricity with temporal fixation (Divergent eccentric fixation) in the left eye 11.

Over the following 3 months, there was no change in the visual acuity although the compliance with the conventional occlusion [1] along with glasses was good. After completed 3 months of regular patching,

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patient didn't turn up for a year. Patient reported at 5 year of age and was continuing with the same treatment. Glasses number was increased RE-0.50/-1.50x180 with 20/20 and LE -6.50/-3.00X180, 20/400 with divergent eccentric fixation at this visit.

At this visit patient was asked to shift for full time non –conventional occlusion until no fixation develops (When no definite point is used for fixation, the star is seen to move all over the retina) [1]. After completing 6 months of non-conventional occlusion, fixation becomes unsteady, and vision dropped down up to 20/400 in amblyopic eye and switched-on conventional occlusion for full time with active near therapy along with red filter (6 weeks) in front of amblyopic eye with the combination of pleoptics (6 weeks).

Over the following 6 weeks, left eye vision has improved up to 20/150 with unsteady foveal fixation [13] (Fixation is foveal but there are very fine movements of the fovea in the central clear area of the Linkz star. It may be under the star but never goes outside it) but didn't improve further after 6 months of continuing the same treatment although patient was regular on follow-up with good compliance. Left eye iNet amblyopia therapy has been advised and vision improved up to 20/60 with central and good fixation with 6 months of duration. Regular review showed both eyes central fixation with LE exotropia of 30 prism dioptres. At this stage of the [5] treatment, Miss A's parents were advised to tapper occlusion for 4 hours and strabismus surgery was performed for the exotropia measurement done with contact lens.

Over the following 6-month, vision remained same with microtropia of 4 prism bases in with good stereo acuity of 400 sec of arc but was having LE suppression for distance and near. Anti-suppression therapy has been added along with part time conventional occlusion therapy. Upon regular review of 3-month, vision improved up 20/30 with 60 sec of arc stereo acuity with crossed diplopia for distance and near with Microtropia of 4 prism dioptre. Final outcome after 30 months of treatment (at the age of 7 year and 6 month), Patient was switched on to Fusional Vergence exercise along with 2 hours conventional occlusion as a maintenance therapy.

Discussion

A successful treatment of eccentric fixation with amblyopia depends upon multiple factors like, age of the onset and treatment started, compliance to the treatment, regular follow-up, and degree of eccentric fixation with type of amblyopia and modality of treatment. And the most important thing is patient should be highly motivated with knowing all pros and cons of the treatment to gain the cooperation from the patient for better outcome.

References

1. Malik SR, Gupta AK, Grover VK. Occlusion therapy in amblyopia with eccentric fixation. Br J Ophthalmol. 1970;54(1):41. PubMed | CrossRef
2. Scully J. Early intensive occlusion in strabismus with non-central fixation. Br Med J. 1961;2(5267):1610. PubMed | CrossRef
3. Thorleifsson H. Red filter in the treatment of eccentric fixation. Acta Ophthalmol. 1966;44(1):57-63. PubMed | CrossRef
4. Suttle CM. Active treatments for amblyopia: a review of the methods and evidence base. Clin Exp Optom. 2010;93(5):287-99. PubMed | CrossRef

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DOI: https://doi.org/10.37191/Mapsci-JOO-3(1)-017

5. Drowley CR, O'Day J. Clinical management of coats disease: A case study. Australian Orthoptic Journal. 2011 Jan;43(1):8-11.
6. Braverman RS. Introduction to amblyopia. Am Acad Ophthalmol. 2015.
7. Von Noorden GK. The etiology and pathogenesis of fixation anomalies in strabismus. Trans Am Ophthalmol Soc. 1969;67:698. PubMed
8. Fu J, Li SM, Liu LR, Li JL, Li SY, Zhu BD, et al. Prevalence of amblyopia and strabismus in a population of 7th-grade junior high school students in Central China: the Anyang Childhood Eye Study (ACES). Ophthalmic Epidemiol. 2014;21(3):197-203. PubMed | CrossRef
9. Ganekal S, Jhanji V, Liang Y, Dorairaj S. Prevalence and etiology of amblyopia in Southern India: results from screening of school children aged 5–15 years. Ophthalmic Epidemiol. 2013;20(4):228-31. PubMed | CrossRef
10. Aldebasi YH. Prevalence of amblyopia in primary school children in Qassim province, Kingdom of Saudi Arabia. Middle East Afr J Ophthalmol. 2015;22(1):86. PubMed | CrossRef
11. Oscar A, Cherninkova S, Haykin V, Aroyo A, Levi A, Marinov N, et al. Amblyopia screening in Bulgaria. J Pediatr Ophthalmol Strabismus. 2014;51(5):284-8. PubMed | CrossRef
12. Malik SR, Sen DK, Grover VK, Choudhry S. The incidence of eccentric fixation. J All India Ophthalmol Soc. 1969;17(6):245. PubMed
13. Malik SR, Gupta AK, Choudhry S. Classification of eccentric fixation. Br J Ophthalmol. 1969;53(3):188. PubMed | CrossRef
14. Cooper J, Gelfond I, Carlson PE, Campolattaro B, Wang F. Comparison of eccentric fixation measurements using the streak target of an ophthalmoscope and a traditional visuoscopy target. J Pediatr Ophthalmol Strabismus. 2005;42(2):89-96. PubMed | CrossRef