

A rare presentation of esotropia in high myopia in a young adult: a case report

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Abstract

Esotropia in myopia is an uncommon occurrence. Most common cause of esotropia in high myopic elderly is Heavy Eye Syndrome. An uncommon cause in young adults is Acute Acquired Comitant Esotropia often associated with excessive indulgence in near work. A 21 year old male patient presented with diplopia for one year, more for distance than near and spent more than 8-10 hours for near tasks. Unaided visual acuity in BE was 2/60 and was 6/9 in RE and 6/6 in LE with correction. Prism base cover test revealed 25 BO PD for distance and 20 BO PD for near. Diplopia was seen in all position of gaze. Right Eye Lateral rectus resection 8 mm was done and HPE report revealed features of Lateral rectus Muscle atrophy. It is important to understand the pathogenesis of this entity and consider other possible causes of esotropia in myopia. Key words: Myopia, Esotropia, Comitant, Diplopia.

INTRODUCTION

Esotropia in myopia is a rare entity with varied presentation in different age groups. The examination and management of such patients can be very challenging [1].

The most common etiology of progressive esotropia in high myopia in an elderly is the 'Heavy Eye Syndrome', which presents with diplopia secondary to progressive esotropia and hypotropia with limitation of abduction and elevation [1].

Another uncommon form of esotropia in young adults is Acute Acquired Comitant Esotropia (ACCE) [2]. Prolonged adduction of the medial rectus muscle due to near-target convergence may cause shortening of the medial rectus muscle and reduced ability to maintain orthotropia at a distance as proposed by Guyton [3]. This paper reports a similar case of a young adult with high myopia with diplopia.

CASE REPORT

A 21-year-old myopic patient presented with diplopia for 1 year. It was more for distance than during near work. He did ~8–10 hours of near work without using glasses as it reduced his diplopia.

The patient had no history of head trauma, use of systemic medication or systemic illnesses. Ophthalmic examination revealed unaided visual acuity (VA) of 2/60 in both eyes and used -5.75 DS in the right eye (RE), giving VA of 6/36 and -5.75 DS/ -0.50 DC @180 in the left eye (LE), giving VA of 6/24. Cyclo-refraction revealed wet retinoscopic values of -8.00 DS/ -1.50 DC @180 and -7.75 DS/ -2.00 DC @180 in RE and LE, respectively.



Figure 1. RE esotropia without glasses.

On orthoptics examination, the Hirschberg test revealed 2 mm (30 diopters) eso-deviation in RE. (Fig. 1). Extra ocular movement was full. The worth four dot test revealed diplopia for distance and near, with maximum separation of images in levoersion. The Prism Base Cover Test with correction revealed 25 Base Out (BO) Prism Diopter (PD) for distance and 20 BO PD for near (Fig. 2); and without correction, it was 16 BO PD and 8 BO PD for distance and near, respectively. Accommodative convergence to accommodation ratio was 4:1 and was done by the gradient method [4]. The axial length measurement of RE was 26.91 mm and 26.99 mm of LE. His corneal topography scan and magnetic resonance imaging of brain and orbit were normal.

He was prescribed glasses after a post-mydratic test. A prism trial of 6 BO PD in RE and 6 BO PD in LE was started, which removed diplopia for near and decreased for distance.

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Figure 2. RE esotropia increased with glasses.



Figure 3. Histopathology section using special stain of LR muscle section.



Figure 4. RE orthotropic 1 week after surgery.

Definite management was done after 3 months with RE 8 mm lateral rectus (LR) resection. During surgery, thinning of LR muscle was seen, and its histo-pathological examination revealed features of chronic myopathy with primarily collagenous tissue with a single area of scattered muscle fibers and marked endomysial fibrosis, suggestive of LR Muscle atrophy (Fig. 3).

After 1 month, the patient was orthotropic with BCVA 6/6 in both eyes with glasses and no diplopia (Fig. 4).

DISCUSSION

AACE is a special subtype of esotropia that is characterized by the acute onset of comitant esotropia with diplopia and is more common in older children and adults. Ocular motility is generally normal without the evidence of paralysis of the extraocular muscle [5]. AACE is classified into three clinical types by Lee et al. [6]: (i) Swan-type esotropia that occurs in eyes with fusion disruption, (ii) Burian-Franceschetti type of esotropia characterized by minimal hypermetropia and diplopia, often associated with physical and

psychological stress and (iii) Beilchowsky-type esotropia that occurs in adolescents and adults with varying degree of myopia. The mechanism of Beilchowsky-type AACE is thought to be uncorrected myopia with excessive near work, resulting in the inability to maintain the balance between the converging and diverging forces of the eye, and the subsequent development of increased tonus of the medial rectus muscle, leading to esotropia [6]. In a study of acquired distance esotropia associated with myopia in young adults by Zheng K et al. [2], 11 adult myopic patients with distance esotropia were studied, who were engaged in near work for an average of 12 hours per day. Among them, seven underwent a pathological examination of their LR muscles, which showed no muscle fibers but rather collagenous fibers [5]. In another study by Zhu M et al., it was found that ACCE was more common in young adults who performed excessive close visual activities and used digital devices late night [7].

Since most of our daily activities are performed over smart phones, smartphone use is the majority of 'near work'. Decreasing near work activities can help decrease the progression of esotropia in myopia in young adults.

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CONFLICT OF INTEREST

None declared.

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ETHICAL APPROVAL

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PATIENT'S CONSENT

A written consent was obtained from the patient for the publication.

GUARANTOR

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