

## Case report

# Accommodative spasm with bilateral vision loss due to untreated intermittent exotropia in an adult

Shanker V<sup>1</sup>, Ganesh S<sup>1</sup>, Sethi S<sup>2</sup>

<sup>1</sup>Paediatric Ophthalmology and Strabismus

Dr Shroff's Charity Eye Hospital, Daryaganj, New Delhi, India

<sup>2</sup>Department of Ophthalmology,

BPS Government Medical College for Women, Sonapat, Haryana, India

---

### Abstract

**Background:** Intermittent exotropia (IXT) is an exodeviation intermittently controlled by fusional mechanisms. Patients with IXT may present with asthenopic symptoms, blurred vision, headaches, diplopia or visual confusion and reading difficulties; especially after prolonged periods of near work. **Objective:** To report the presentation and management of a young adult with intractable accommodative spasm secondary to long standing intermittent exotropia. **Case:** The patient was found to have bilateral accommodative spasm with high pseudomyopia and severe impairment of vision. There was a tendency for recurrence with discontinuation of cycloplegics. **Conclusion:** A total relief of symptoms was noticed after strabismus surgery was undertaken for the exotropia. A detailed orthoptic evaluation with emphasis on recognizing accommodative spasm as an unusual presentation of IXT, could aid in appropriate diagnosis and treatment of such cases.

**Key-words:** Pseudomyopia, intermittent exotropia, accommodative spasm, vision therapy

---

### Introduction

The near response triad consists of a normal synkinesis between accommodation, convergence and miosis (Faucher et al, 2004). When one or more of these components exceeds the demand required by the stimulus, a 'spasm of near reflex' is said to occur. While some patients may have isolated accommodative spasm (AS) without involving convergence and pupils, others may show spasm of convergence without abnormal accommodation (Rutstein and Marsh-Tootle, 2001; Rutstein, 2010; Goldstein and Schneekloth, 1996). A varied etiology has been proposed for spasm of near reflex, including uncorrected hypermetropia, psychological

disorders (Goldstein and Schneekloth, 1996), intermittent exotropia (Rutstein and Marsh-Tootle, 2001; Rutstein, 2010) and certain organic disorders like meningitis, pituitary tumour, head trauma and certain ocular/systemic drugs (Goldstein and Schneekloth, 1996).

Here, we describe an unusual case of a young myopic male with intractable accommodative spasm secondary to untreated IXT with no neurological abnormalities. Clues for diagnosis and the role of vision therapy exercises as an important adjunctive management are discussed.

### Case report

A 22-year old male presented to the strabismology services of Shroff's Charitable Eye Hospital with complaint of a headache associated with blurred

---

Received on: 13.03.2012 Accepted on: 03.05.2012  
**Address for correspondence:** Dr Suma Ganesh, MS  
Dr Shroff's Charity Eye Hospital, Daryaganj, New Delhi,  
India. Pin code 110002  
Tel: 91-9810688559, Fax No: 011-43528816  
Email: drsumaganesh@yahoo.com



and fluctuating vision for the past 4 years which severely affected his daily activities. His past ocular history was relevant that he wore glasses with a myopic correction of -2.00 dioptre sphere (DS) in the right eye and -1.50 DS in the left eye. The patient was of a neurotic disposition but denied any history of head trauma, physical or psychological ill health and was not taking any medications.

The presenting Snellen's visual acuity was 2/60 in each eye. Ocular movements were full and pupillary reactions were normal to light and accommodation. There was no pupillary miosis. Dynamic retinoscopy (Monocular Estimation Method, MEM) was unstable and revealed a lead of accommodation of -5.00DS in both eyes.

The refractive error by retinoscopy was -10.00 DS in both eyes, present under both unioocular and binocular conditions. Cycloplegic refraction (1% Cyclopentolate eye drops instilled half an hour before examination) was -2.25 DS in the right eye and -1.50 DS in the left eye. Under cycloplegia, with the above refractive correction the visual acuities improved to 6/6 in each eye. Biomicroscopy, intraocular pressures and dilated ophthalmoscopy were all normal. A cover test and assessment of the accommodative facility could not be performed in the undilated state due to visual impairment and poor fixation.

Based on the clinical picture, the case was diagnosed as that of accommodative spasm with pseudomyopia and was advised to use homatropine (2%) eye drops twice a day for ten days. After discontinuing cycloplegic therapy, the patient was advised to perform vision therapy exercises to improve accommodative facility.

On review, it was observed that the patient had very poor accommodative amplitudes with binocular and monocular accommodative facility being 0 cycles per minute with  $\pm 2.00$  DS flipper with difficulty in relaxation of accommodation. However, positive fusional convergence ability was normal. Table 1 shows the accommodative facility measured on the

first and last visit of vision therapy exercises after discontinuing the homatropine eye drops.

After two weeks, the patient complained of persistent blurred vision. His visual acuity was 6/36 in the right eye and 6/24 in the left eye. When checked unioocularly, the BCSVA was 6/6 in each eye. A lead of accommodation was present on dynamic retinoscopy. Prism alternate cover test revealed intermittent exotropia of the basic type measuring 25 prism dioptres (PD) base-in and 16 prism dioptres base-in for distance (6 m) and near (33 cm) respectively; poorly controlled at both distance and near. Stereopsis, as measured with the Titmus fly test was 3000 arc/sec. Prism adaptation test (PAT) was done for 1 hour and Fresnel prism of 20 PD base-in was prescribed, with which the BCSVA was 6/9 binocularly. The patient was instructed to return in one month for adjustment of prisms.

At the follow up visit, his visual acuity was 6/6 in the right eye and 6/9 in the left eye. Orthoptic evaluation showed 40 PD base-in of manifest exotropia for distance and 25 PD base-in for near after PAT. He underwent bilateral lateral rectus recession of 8.5 mm under general anesthesia. Post surgery, retinoscopy revealed a refractive error of -2.50 DS in the right eye and -1.50 DS in the left eye with BCSVA 6/6. There was no lead or lag of accommodation on dynamic retinoscopy. Cover test showed exophoria of 14 prism dioptres for both distance and near. Stereopsis was 40 sec of arc at near. He was advised to continue vision therapy exercises at home. At the last follow up, undertaken 3 months back, the patient was asymptomatic and an exophoria measuring 5 prism dioptres was present for both distance and near with a stereo acuity of 40 sec of arc.

## Discussion

Large exophoria or intermittent exotropia has been described as a cause of accommodative spasm (Burian & Hermann, 1945; Seaber, 1966; Rutstein et al, 1988; Goldstein and Schneekloth, 1996). As

compared to an orthophoric person, a patient with IXT requires a greater convergence to fixate at a near target, especially if there is a large angle and a rigid connection between convergence and accommodation in the central nervous system.

In our patient, although the etiology was intermittent exotropia, he presented in a state of chronic bilateral spasm of accommodation, with high pseudomyopia, bilateral decrease of vision, severe asthenopic symptoms and variable angle of deviation. Whenever an attempt was made to wean the cycloplegic, the pseudomyopia recurred. Cycloplegia along with guided vision therapy exercises over a period of time helped normalize the accommodative amplitude. This enabled us to neutralize the exodeviation with Fresnel prisms to promote sensory fusion and relax accommodative convergence, following which strabismus surgery was done for the full deviation uncovered after prolonged prism adaptation, which led to complete resolution of symptoms.

It has been observed that when intermittent exotropia is the etiology, the accommodative spasm is usually intermittent, present under binocular conditions and absent with cycloplegia (Rutstein & Marsh-Tootle, 2001; Shimojyo et al, 2009)

In our case, the accommodative spasm was initially present under both monocular and binocular conditions. We theorize that the chronic state of accommodative spasm occurred as a result of a sustained over-accommodative response in an attempt to overcome a large angle exodeviation and maintain fusion. Age related worsening of the phoria-myopia, as suggested by Shomojyo et al, could have been a contributing factor. Another unusual feature in our case was the absence of pupillary miosis or convergence spasm despite a severe accommodative spasm.

The etiology of accommodative spasm is most often functional or idiopathic although a number of organic causes have been reported (Rutstein et al, 1988; Goldstein & Schneekloth, 1996). A neurological

evaluation was not done in our patient as the etiology was evident, the condition had been present for four years and he had no associated symptoms.

A variety of methods have been used for the treatment of accommodative spasm including cycloplegics, miotics, plus lenses, minus lenses and occlusion of nasal section of spectacle lenses with equally variable results (Goldstein & Schneekloth, 1996). As in our case, Shimojyo et al (2009) noted that reducing the exodeviation by surgery not only improves binocular vision but also reduces the associated myopic shift and pupillary constrictions.

In our case, though the etiology was IXT, the presentation was that of spasm of accommodation; the accommodative dysfunction was immediately corrected once the etiology and the IXT were corrected by surgery. Initially, the etiology for accommodative spasm was not clear and became obvious only once the accommodative spasm was relaxed by cycloplegia.

### Conclusion

A detailed orthoptic evaluation should be performed in all cases of accommodative spasm before assuming that it is idiopathic.

### References

- Burian, Herman M (1945). Intermittent (facultative) divergent strabismus: its influence on visual acuity and the binocular visual act. *Am J Ophthalmol*; 28 (1): 525-527.
- Faucher C d, Guise D (2004). Spasm of the near reflex triggered by disruption of normal binocular vision. *Optometry and Vision Science*; 81 (3):178-181.
- Goldstein JH, Schneekloth BB (1996). Spasm of the near reflex: a spectrum of anomalies. *Surv Ophthalmol*; 40 (4): 269-278.
- Rustein RP (2010). Accommodative spasm in siblings: A unique finding. *Indian Journal of Ophthalmology*; 58 (1), 326-327.



Rutstein RP, Daum KM and Amos JF. (1988). Accommodative spasm: a study of 17 cases. *J American Optometric Association*; 59 (7): 527-538.

Rutstein RP, Marsh-Tootle W (2001). Acquired unilateral visual loss attributed to an accommodative spasm. *Optometry and Vision Science*; 78 (7): 492-495.

Seaber JH. (1966). Pseudomyopia in exodeviations. *American Orthoptic Journal*; 16 (1), 67-72.

Shimojyo H, Kitaguchi Y, Asonuma S, Matsushita K, Fujikado T (2009). Age related changes of phoria-myopia in patients with intermittent exotropia. *Japanese Journal of Ophthalmology*; 53 (1):12-17.

**Source of support: nil. Conflict of interest: none**