Case Report — Noncomitant Ocular Deviation

Rodger Pace*

Abstract

The optometrist is often called upon to diagnose and manage the patient with noncomitant ocular deviations. A case of noncomitant phoria is described with emphasis on the Parks 3-step method for identifying the involved muscle. Patient management is discussed.

Abrégé

Il est souvent du sort de l'optométriste et de gérer des cas de strabisme non concomitant. Ce travail décrit une phorie non concomitant et met l'emphase sur le test diagnostique "Parks 3-Step" pour déceler le muscle affecté.

C.N. is a 33 year old high school teacher who requested visual assessment due to asthenopia and blurring of vision while doing near work. Although he had been troubled by this for several years he had never had a professional vision examination prior to this visit. General health history was unremarkable. He reported a brother who had had strabismus surgery when in his late twenties.

Clinical findings

Unaided visual acuity
OD 20/20; OS 20/20; OU 20/20
Amplitude of accommodation
O.D. 8 dioptres, O.S. 8 dioptres
Keratometry O.D. 44.25 @ 180
45.25; O.S. 43.50 @ 180 45.25
Refraction O.D. plano, 20/20;
O.S. +0.50 −1.00 × 180, 20/20

Tests of binocularity

Near point of convergence 6cm
Stereoacuity 40 seconds
(Wirt rings)
Distance phoria (von Graefe):
2 exophoria
Negative fusional vergence 7/0
Positive fusional vergence X/8/6
Distance vertical phoria 1.5 right
hyperphoria
Positive vertical vergence 4/2
Negative vertical vergence 3/1
Nearpoint phoria (von Graefe)
5 exophoria
Negative fusional vergence X/6/3
Positive fusional vergence X/8/0
Near vertical phoria 2 right
hyperphoria
Positive vertical vergence 6/4
Negative vertical vergence 1/−3
Binocular plus acceptance +2.00
Binocular minus
acceptance −2.00

Distance vertical fixation disparity was neutralized by 2 prism dioptres base down before the right eye (Mallet). Near vertical fixation disparity required 6 prism dioptres base down before the right eye.

Cover tests in different positions of gaze revealed a noncomitant deviation so the Park 3-step procedure[1] was done. The following results were elicited:

primary position:	right hyperdeviation
gaze left:	right hyper increased
gaze right:	right hyper eliminated
head tilt left:	right hyper decreased
head tilt right:	right hyper increased

The patient was noticed to have a torticollis toward the left shoulder under normal viewing situations.

Diagnosis

Analysis of the 3-step method isolates the right superior oblique as the muscle of primary involvement. Since the patient's symptoms were long-standing and there was a family history of strabismus it was felt that the deviation was not of recent onset. This is reinforced by the presence of the torticollis.

Management

The following prescription was supplied to C.N.: O.D. plano, 1.5 prism dioptres base down; O.S. +0.50 −1.00 × 180, 1.5 prism dioptres base up. A programme of ocular calisthenics was prescribed to enhance ocular motility and orthoptic training was undertaken to improve fusional ranges. This programme consisted of three office visits at weekly intervals. Each visit consisted of exercises with the rotoscope, major amblyoscope using grade III targets, vectographic materials (such as the Quoit slides), and loose prisms. These sessions averaged forty-five minutes in length. Concurrently, fifteen minutes of home training was prescribed on a daily basis. This included rotations using a penlight with a red lens before one eye to monitor suppression, free fusion using the eccentric circle card, and fusion through loose prisms.

Followup

A reassessment of C.N.'s status was made one month following initiation of therapy. He was wearing his glasses on a full-time basis and reported complete relief from symptoms. Diplopia was not reported and the original asthenopia was relieved. Motor fusion ranges satisfied both Sheard's[2a] and Percival's[2b] criteria for ocular comfort. A programme of home training was advised to maintain fusional amplitudes and ocular motility.

Discussion

Noncomitant ocular deviations often present difficult management problems because of the varying degree of the deviation. The patient often experiences diplopia when the eyes are directed into the field of action of the involved muscle or muscles. The patient will often compensate by turning the head rather than the eyes when looking in the involved direction. An ocular torticollis may also develop to minimize

*O.D. School of Optometry
University of Waterloo
Waterloo, Ont. N2L 3G1

the deviation while looking straight ahead. The Parks 3-step method is useful for determining which of the vertically acting muscles is primarily involved, however if a combination of muscles is involved, the Hess-Lancaster screen may be more informative.

The optometrist must first determine whether the deviation is of recent origin as this could indicate a pathology. This can be done by history, patient observation, clinical findings or medical consultation. Therapy can involve occluders, either partial or total, to eliminate diplopia, ocular calisthenics to increase muscle actions, and prisms to allow fusion. Prisms will probably be tolerated best if the deviation in primary gaze is compensated. Fusional reserves can be trained to allow better comfort in other positions of gaze.

C.N.'s case demonstrates that a relatively simple therapeutic regimen utilizing compensating prisms and vision training effectively relieved symptoms of blurring and asthenopia in a patient with a noncomitant ocular deviation.

References

1. Griffin, J. R. "Binocular Anomalies — Procedures for Vision Therapy" Professional Press, Chicago, 1976, pp. 11-12.
2. Long, W.S. "The Optometric Examination — A Clinical Manual" University of Waterloo, Ed. 3, 1979, (a) pp. 101-108, (b) pp. 109-110.

Erratum

In our supplement to Volume 43, No. 4, devoted to the Canadian Optometric Contact Lens Society, we omitted the following from the list of Supporting Members. We apologize for the error:

Dr. B.S. Beaton
Dr. J-L Blanchard
Dr. H. Drexler
Dr. E. Howe
Dr. D.J. Kerr
Dr. L.B. Kolbenson
Dr. R.B. Leake
Dr. O.E. Panchuk
Dr. L.V. Selvig

In addition, our apology to Dr. G.J. Pearce, whose name was spelled incorrectly in the issue.