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A case history of strabismus-alternating esotropia

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Abstract

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A CASE HISTORY OF STRABISMUS-ALTERNATING ESOTROPIA

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The problem is that of a boy, 10 years of age, who is, at the present time, being given visual training in order to overcome his condition of alternating esotropia, which has been noted since shortly after he was born.

CHAPTER I.

CASE HISTORY

On October 17, 1952, H.C., male, 10 years of age, from Hillsboro, Oregon, was examined at the Optometry Clinic of Pacific University. Upon observation, it was noted that the boy had a strabismic problem. His mother said that this had been present from birth. He was wearing the following prescription:

O.D. ≠0.75 -0.25 x 5

O.S. ≠0.25 -0.50 x 140

This had been worn for one year, but he had been wearing glasses for four years. His mother stated that the first lenses seemed to straighten his eyes. She also said that one other child in the family is similarly affected. When asked, the boy said, "My eyes are all right."

CHAPTER IA.

PRELIMINARY EXAMINATION

Entrance acuity was 20/20- at far and 20/20 at near, O.D., O.S., O.U., without lenses; and 20/15-

at far and 20/20 at near, O.D., O.S., O.U., with lenses. He was right handed, and showed left eye dominancy with the "hole-in-card" test. The cover test showed the patient to have an alternating type of esotropia, equal at far and near. Monocular and binocular rotations were irregular and jumpy in all quadrants, and searching was noted in all fixation movements. The near point of binocularity was one inch, with no doubling noted, but the right eye deviated in a temporal direction. Donder's Amplitude was two inches, O.D., O.S., O.U.

CHAPTER IB.

OPHTHALMOSCOPIC EXAMINATION

The eyes were close together and set at medium depth, cilia were abundant, and the palpebrae free from scales. The caruncle was slightly elevated and had a very healthy color. The conjunctiva was free from injection. Lacrimal drainage was adequate. The cornea, iris, and sclera showed no indication of any pathological disturbances. The anterior chamber was of normal depth. Tension, measured by palpation, was medium hard and equal. The vitreous showed no opacities. The fundus picture was normal, with a brunette coloring. The disc margin was well defined and there was no

evidence of physiological cupping.

The pupillary reflexes were all present and very rapid. There was no stay. Pupils were equal at four millimeters in diameter.

CHAPTER IC.

ANALYTICAL FINDINGS

Not all analytical findings were taken because of the strabismic condition. (See Table I.) The net Ophthalmometer finding was -1.12 D. O.U. The phorias at both far and near were high in the esophoric direction. A vertical phoria was found at far, but ductions were not taken, due to a lack of "normal binocular vision."[1]

CHAPTER ID.

VISUAL SKILLS.

The visual skills were taken through the patient's habitual prescription. Accommodative Facility was failed, as were all of the skills with the exception of simultaneous perception, hand and eye coordination, and color vision(See Table II).

On the test for hand and eye coordination, the patient displayed a type of performance called "ambiocular vision."[2] The head of the dog, on the simultaneous perception test, was seen over the tail of

pig, indicating esophoric behavior. The circle disappeared in the pericentral suppression tests, and there was no evidence of normal binocular vision at any time.

CHAPTER IE.

ANALYSIS AND DIAGNOSIS

It was impossible to take all of the findings, due to lack of fusion. However, from the tests which were taken, there appeared to be no evidence of amblyopia.

CHAPTER IF.

STRABISMIC TESTING

The Bielchowsky After Image Test revealed that the patient was adapted to his strabismic condition. It also demonstrated an ambiocular behavior and a type of false projection.[3]

The Troposcope Test showed the objective and subjective angles of squint to be different. The objective angle was 32 degrees, and the subjective angle was 11 degrees. The subjective findings showed ample "accommodation free from convergence."[4]

All of these tests showed that the patient was a fully "adjusted squint,"[5] and that he was lacking an adequate "fovea-to-fovea correspondence."[6]

CHAPTER IG.

PRESCRIBED TREATMENT

The patient was given the far subjective lenses for full time wear, and a visual training program was recommended. The program, as outlined, was to start with foundation procedures, preliminary binocular peripheral training, peripheral binocular training, and central binocular training. These procedures were started on December 1, 1952. (See Table III).

The first eight sessions were taken up with the kaleidoscope at near, utilizing a dissociating prism over one eye, Brock Rings at far and near, Maddox Chiroscope, and the rotoscope.

The kaleidoscope was for complete dissociation. The chiroscope "to eliminate suppression and establish a better binocular pattern."[7] The Brock Rings, to "search for evidence of fusion to the limits of the binocular field, and are directed to the peripheral areas where there may have been no organismic demand for the surrender of normal binocular vision."[8] And, the rotoscope to establish fusion, because, "binocular vision begins with fusion wherever it is found and seeks to extend the area of normal binocular vision from that point."[9]

At the end of the eighth session, January 9, 1953, the case was dismissed by the graduating clinician, and was transferred to myself on January 13, 1953.

The procedures during the months of January and February were essentially the same. The kaleidoscope was dropped, and rotations and the Keystonr B.U. Series were added. There appeared to be no progress, and the patient was beginning to lose interest. On February 8, 1953, bi-nasal occluders were prescribed, along with the B.I. clip-overs prescribed at an earlier time.

The patient was quite ill for the first two weeks of March, and when he returned, only two procedures were used. They were rotations, and the B.U. Series. By the end of April, Master C's. eyes were cosmetically straight, so the occluders were removed. There was also some evidence of progress at this time, so an analytical examination was given(See Tablt I). The findings bore out the progress being shown in the training laboratory. The prism findings were definite throughout and the phorias, at near, had dropped considerably to low esophoria.

Training procedures were then changed to the "AM" Pointer Series, and the Correct-eye-scope Chiroscope. On May 9, 1953, visual skills were taken prior to dismissing Master C. for the summer(See Table II).

On October 1, 1953, Master C. returned for a progress report and to resume visual training. At this time there was noted a drop in the B.O. and a rise in the B.I. prism findings at near(See Table I). Skills were still being failed(See Table II). Training was started on October 7, 1953, with rotations and saccadic fixations only. The rotations were completely dissociated. This was done to get Master C. to use both eyes, and to help break up suppression. On the saccadic fixations, it was noted that, while moving the eyes up and to the left, the eyes would bounce. This was pointed out to the patient, and he tried to control it. At the end of seven sessions, there was marked improvement. The fixations were dropped, and the polaroid vectograph was added. Simultaneous perception was present, but there was no unification.

Rotations were then changed from completely dissociated, to B.I. prism rotations, using the Plateau Spiral. Increasing amounts of B.I. prism were added, up tp 20 prism diopters at ten feet. The distance was then changed, and as of December 16, 1953, the rotations were being done at four feet through 10 prism diopters B.I.

On the vectograph, Master C. was getting flashes of binocular vision. Less central suppression was

shown at each session. Finally, on November 18, there was complete unification, which he could hold while moving toward and away from the target. He was able to move ten feet from the target before he lost the organization. During the next session, Master C. was able to cross the training room and maintain binocular organization.

Master C. was then placed in a new situation. Prism B.I. was introduced, and he was told to recover the previous organization as soon as possible. When this was done, the prisms were removed, and the instructions were repeated, making a constant break-recover situation. Master C. was able to reach 10 prism diopters B.I., by the end of that session.

Two more progress reports were made during this time(See Table I). Progress report #4 showed both an objective and a subjective reduction in the anisometropia, a better pattern in the prism findings at both far and near, a marked reduction of esophoria at near, and a substantial rise in the minus and plus lenses to blur. From these findings, a new prescription has been given:

O.D. ≠1.00

O.S. ≠0.75

Add: ≠1.25 O.U.

The patient is to resume training on January 4, 1954, when school resumes after the Christmas Holidays. This training should continue for some time.

CHAPTER II.

COMMENT

If ever another case of this type should present itself, it would not be started as was this one. The first procedure would be restricted to the field of eye movements. It is felt that this is much more necessary and basic, than finding an area of binocularity and expanding it.[10] It seems that if the eye movements are good, under varying situations, theother procedures are easier for the patient. He is more responsive to the varying techniques used, and there appears to be a better transference to everyday situations.

In the case of Master C., an area of binocularity was found, but there was no transference until the eye movements had been enhanced. As soon as this was done, there was an immediate transfer, and Master C. reported an increase of depth in his everyday seeing. His father reported a decreased amount of clumsiness, and his report card showed improvement in school.

CHAPTER III.

SUMMARY

In December, 1952, Master C., an alternating esotrope, was started in a program of visual training. At the time he was an extremely nervous, and clumsy boy. He was given the plus lens of the original far subjective, to be worn all of the time. Training has been given for a year, and he has become less clumsy. His eyes are also cosmetically straight. He is to be given new lenses incorporating the marked reduction of anisometropia, and a bifocal for near work. He is more active in sports and school activities. His grades in school work are improving, and he is leading a more normal and healthy life in all ways.

TABLE I.

	OPTOMETRIC FINDINGS*		10/17/52	4/11/53	10/1/53
2	Ophthalmometer	O.D.	-1.12 x 90		
		O.S.	-1.12 x 90		
3	Lat ph thru hab Rx		16 eso	13 eso	8 eso
13A	Lat ph @ 16" thru hab Rx		18 eso	8½ eso	4 eso
4	"Static" retinoscopy	O.D.	pl	≠1.75	≠1.75
		O.S.	pl-.75x120	≠1.00	≠1.00
5	"Dynamic" retinoscopy at 20"	O.D.	≠1.75	≠2.50	≠2.50
		O.S.	≠1.75 w/c	≠1.75	≠1.75
6	"Dynamic"retinoscopy at 40"	O.D.			
		O.S.			
7	Subjective to 20/20	O.D.	≠1.50-25x30	≠1.50	≠1.50
		O.S.	≠.50-50x140	≠0.50	≠0.50
7A	Subjective to best visual acuity	O.D.	≠.25 w/c	≠0.25	≠0.25
		O.S.	-1.00 w/c	-0.75	-0.75
8	Lat ph thru #7			12 eso	8 eso
9	B O to blur thru #7			11	8
10	BO break& recover thru #7			24/15	13/11
11	BI break & recover thru #7			10/1	8/5
12	Vert ph thru #7		1 L.Hyper	Ortho	Unstable
13B	Lat ph @ 16" thru #7		16 eso	4 eso	3 exo
14A	Diss cross cyl @ 16"	O.D.	≠1.00 w/c	≠2.75	≠2.75
		O.S.	pl w/c	≠1.75	≠1.75
15A	Lat ph thru 14A		14 eso	7 eso	2 eso
14B	Binoc cross cyl @ 16"	O.D.	≠2.50 w/c	≠2.50	≠2.75
		O.S.	≠1.50	≠1.50	≠1.75
15B	Lat ph thru 14B			5 eso	6 eso
16A	B O blur our 16" thru #7			x	x
16B	BO break& recover 16" thru #7			34/17	19/11
17A	B I blur out 16" thru #7			x	x
17B	B I break & recover 16" thru #7			15/9	20/12
18	Vert ph 16" thru #7		ortho	ortho	ortho
19	Minus to blur 13"	O.D.		10.25	
		O.S.		10.25	
		O.U.		8.75	7.25
20	Minus to blur out 16"		O.D. -5.50	-1.75	-1.25
20	Lat ph 16" thru #20 ≠.25		O.S. -9.50	14 eso	4 eso
21	Plus to blur out 16"		O.D. ≠3.50	≠1.75	≠2.00
21	Lat ph 16" thru #21 -.25		O.S. ≠2.50	1 exo	4 exo

* The numbers shown are the numerical designations for the indicated tests as adopted by the Optometric Extension Program.

TABLE I

	OPTOMETRIC FINDINGS*		10/30/53	12/4/53
2	Ophthalmometer	O.D.		
		O.S.		
3	Lat ph thru hab Rx		1 eso	12 eso
13A	Lat ph 16" thru hab Rx		1 exo	7 eso
4	"Static" retinoscopy	O.D.	≠1.50	≠1.00
		O.S.	≠0.75	≠0.75
5	"Dynamic" retinoscopy	O.D.	≠2.50	≠3.00
	at 20"	O.S.	≠1.75	≠2.75
6	"Dynamic" retinoscopy	O.D.		≠2.25
	at 40"	O.S.		≠2.00
7	Subjective to 20/20	O.D.	≠0.87	≠1.00
		O.S.	pl	≠0.75 -.50 x 120
7A	Subjective to best	O.D.		≠1.00
	visual acuity	O.S.		≠0.75 w/c
8	Lat ph thru #7		2 eso	8 eso
9	B O to blur thru #7		x	16
10	B O break & recover thru #7		28/16	24/14
11	B I break & recover thru #7		8/2	8/3
12	Vert ph thru # 7		ortho	ortho
13B	Lat ph 16" thru # 7		ortho/5 exo	ortho
14A	Diss cross cylinder	O.D.	≠2.12	≠2.50
	at 16"	O.S.	≠1.25	≠2.25 w/c
15A	Lat ph thru 14A		8 eso	4 eso
14B	Binoc cross cylinder	O.D.	≠2.12	≠2.25
	at 16"	O.S.	≠1.25	≠2.00 w/c
15B	Lat ph thru 14B		8 eso	2 eso
16A	B O blur out 16" thru 14B		16	x
16B	B O break & recover 16" thru 14B		22/16	24/14
17A	B I blur our 16" thru 14B		x	x
17B	B I break & recover 16" thru 14B		10/8	20/8
18	Vert ph 16" thru 14B		ortho	ortho
19	Minus to blur 13"	O.D.	3.87	
		O.S.	5.00	
		O.U.	4.50	7.50
20	Minus to blur our 16"		-2.25	-3.00
20	Lat ph 16" thru #20 ≠.25		12 eso	18 eso
21	Plus to blur out 16"		≠1.50	≠1.50
21	Lat ph 16" thru #21≈.25		ortho	4 eso

* The numbers shown are the numerical designations fo the indicated tests as adopted by the Optometric Extension Program

TABLE II
SUMMARY OF VISUAL SKILLS

Techniques or Skills	Dates Given 10/17/52 Pass	Fail	5/9/53 Pass	Fail	10/1/53 Pass	Fail
Accommodative Rock			x	x	x	x
Simultaneous Percep.	x		x		x	
Far point Binocularity		x	x		x	
Far point Stereopsis		x		x		x
F P pericentral Supp.		x	x		x	
F P Central Suppression		x	x		x	
F P Visual Discrimination		x		x		x
Hand & Eye Coordination	x		x		x	
Color Vision	x		x		x	
F P Lat Phoria		x		x		x
F P Vert Phoria	x		x		x	
N P Vert Phoria	x		x		x	
N P Binocularity		x	x		x	
N P Stereopsis		x		x		x
N P Lat Phoria		x		x		x
N P Pericentral Supp.		x	x		x	
N P Central Suppression		x	x			x
N P Visual Disc.		x	x			x

TABLE III
SUMMARY OF TRAINING PROCEDURES

Techniques or Skills	Dates Given			
	Dec.52	Jan.53	Jan.53	Feb.53
Chiroscope	x	x	x	x
Kaleidoscope	x	x		
Brock Rings (F)	x	x	x	x
Rotoscope	x	x	x	x
Brock Rings (N)		x	x	x
Lange Duction Rings		x	x	x
Retinal Rivalry			x	x
Rotations			x	x
B U Series				x
B S M Series				x
Stereo Disperator				x
Vectoluminator				x

	March 53	4/11 April 53	
Rotations	x		
B U Series	x		
Brock Rings	x		
B S M Series	x		
Vectograph	x		x
A N Series			x
Chiroscope			x

A double ruling indicates a progress report was taken at this point.

See Table I.

TABLE III
SUMMARY OF TRAINING PROCEDURES

Techniques or Skills	Dates Given				
	Oct.53	10/30	Nov.53	12/4	Dec.53
Rotations	x				
Saccadic Fixations	x				
Dissoc. Rotations			x		x
Vectograph	x		x		x
Prism Flash			x		x

FOOTNOTES

[1] Frederick W. Brock, Visual Training Part I, p.1.

[2] Ibid., p.9.

[3] Harold M. Haynes, Unpublished Lecture Notes, Pacific University, (Spring, 1953).

[4] Optometric Extension Program, Near Point Optometry, VI-2 (November, 1950), p.3.

[5] Brock, op. cit., p.21.

[6] Ibid., p.21.

[7] The Keystone Correct-eye-scope Manual, (1951), p.14.

[8] Keystone Manual for Colordepth Stereo-motivator Unit, p.11.

[9] Ibid., p.11.

[10] Haynes, op. cit.