

Accommodative esotropia combined type (A case report)

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ABSTRAK

Dilaporkan seorang anak perempuan berumur 10 tahun yang menderita esotropia akomodatif tipe kombinasi mendapat penanganan dengan kacamata bifokal menghasilkan orthophoria jauh dan dekat. Esotropia akomodatif adalah tipe esotropia dengan faktor akomodatif. Apabila hanya disebabkan oleh hipermetrop saja, disebut esotropia refraktif. Kacamata untuk hipermetropnya sudah dapat mengatasi esotropianya. Apabila esotropia timbul bukan karena ada hipermetrop tetapi timbul karena akomodasi saja, misalnya sewaktu melihat dekat terjadi esotropia dan melihat jauh orthophoria maka disebut esotropia akomodatif non refraktif. Esotropia ini disebabkan karena tingginya nisbi akomodasi konvergensi/akomodasi. Esotropia akomodatif tipe kombinasi adalah suatu kombinasi dari kedua tipe esotropia yang disebutkan di atas. Pada tipe ini esotropia masih terjadi pada saat melihat dekat walaupun hipermetrop sudah dikoreksi, esotropia dekat ini dapat hilang setelah ditambah koreksi kacamata untuk mengatasi akomodasi saat melihat dekat. Penderita ini memerlukan kacamata sferis positif bifokal, walaupun masih anak.

Kata kunci : esotropia akomodatif – esotropia akomodatif tipe kombinasi – nisbi akomodasi konvergensi/akomodasi – kaca mata bifokal

ABSTRACT

Wasidhi Gunawan – *Accommodative esotropia combined type. A case report*

A 10 year old girl suffering from esotropia for distant vision since she was 4 years old has been reported. Distant correction of S+3 to S+4 dioptries resulted in orthophoric eye whereas esotropia still developed during the close work. By adding S+3 dioptries for close work this esotropia disappeared. Until now the patient has been using bifocals with comfort. Accommodative esotropia is a type of esotropia accommodative factor. This condition can be caused by hypermetropic refractive anomaly alone so that it is called refractive accommodative esotropia. Consequently corrective measure of underlying refractive errors will correct the eye deviation. Meanwhile esotropia that manifests during the accommodation alone, such as in close work and not due to refractive error is called non refractive accommodative esotropia. This type of esotropia is due to a higher AC/A ratio. Accommodative esotropia combined type is a combination of these two types of esotropia mentioned above. In this type, esotropia still occurs in close work (accommodation) although its refractive anomaly has been corrected. In this case, addition of positive lens 2-3 dioptries for close work (near vision) will cure this accommodative esotropia. The patient needs a bifocals.

Key words : accommodative esotropia – non accommodative esotropia – AC/A ratio – distant correction – addition for close work.

(B.I.Ked, Vol. 28, No. 3:135-138, September 1996)

INTRODUCTION

In western countries the esotype deviation is more dominant while in eastern countries, many papers show dominancy in the exotype deviation¹. Chew *et al.*² in his research on infants in USA, found esotropia 3% and exotropia 1,2%.

This condition might be found in Indonesia. One type of esotypes which can be treated by wearing glasses is accommodative esotropia. In young children who need bifocals, the upper segment is aimed to correct hypermetropia, whereas the lower segment is aimed to correct the high AC/A ratio. Because this condition could be

relieved by bifocals, the diagnosis was accommodative esotropia combined type.

This case was reported to recognize that there was an esotropia which could be treated by glasses.

CASE REPORT

In November 1988 a 4-year-old girl was accompanied by her mother to my practice. The mother said that the position of both eyes of her daughter was deviated inward since she was 1 year old. No treatment has been sought to another ophthalmologist. The history of pregnancy and delivery were inremarkable. Her birth weight was 2900 grams. No strabismus was noted by her parents, her grandparents and all her other family members.

Eye examination showed that her visual acuity of the RE were 20/40 and the LE was 20/100 but these figures were still in doubt. Hirschberg's test showed inward deviation of 15° in her left eye, D & V were good, but WFDT could not yet be done and her fundi were in normal limit.

One week afterwards, an examination by streak retinoscopy with cycloplegia was done and the RE showed S+4, whereas the LE showed S+5. Two weeks later the visual acuity of the RE with corrective glasses of S+3 was 20/30 and those of the LE with corrective glasses of S+4 was 20/100. No esodeviation for distant fixation was found while wearing glasses, nor was an apparent deviation for near fixation. This girl was diagnosed as having esotropic refractive accommodative type with amblyopia in the left eye.

The treatment given was by providing corrective glasses together with the occlusion of the right eye.

To encourage the occlusion a blur glass was given to her RE whereas S+3.50 was for her LE. The patient was asked to wear her glasses while out of school and pilocarpine 1% eye drop was instilled twice a day.

The patient showed good compliance and she was regularly examined with stable results.

In July 1990 her visual acuity of the RE was 20/40 (with S+3 become 20/30) and her LE was 20/60 (with S+3, 5 become 20/50). Without wearing glasses the esodeviation of 25 dp ET was found for distant fixation but no esodeviation was

noted while wearing corrective glasses. Nevertheless there was still an esotropic deviation of 10dp-15dp for near fixation but this deviation disappeared after S+3 was added. Furthermore the patient felt comfortable by wearing this near addition. Diagnosis: Accommodative esotropia combined type and bifocal glasses were given.

In December 1993, VOD with S+3.50 was 20/20 and VOS with S+4.25 was 20/30. No esodeviation was noted for distant fixation while wearing the corrective glasses. A correction of S+3 was added for near vision and no esodeviation after this S+3 addition.

In July 1994 esodeviation of 15 ET for near fixation was still noted while wearing distant corrections (S+3.25 for OD and S+3.50 for OS) and this deviation disappeared after S+2 was added. Only the first degree of fusion was found, while the second and third degree of fusion were absent.

Duction and version were good and neither AV syndrome nor dissociated vertical deviation were noted. This girl could accept this bifocals without difficulty for her daily activities.

DISCUSSION

Accommodative esotropia is acquired esotropia in which its manifestation is induced by an accommodative factor. When the accommodation is only caused by refractive error, i.e. hypermetropia, this esotropia is called refractive accommodative esotropia. This condition can be treated by wearing corrective glasses for hypermetropia.

Non refractive accommodation esotropia is esotropia which only manifest during near fixation when accommodation is needed and there is no esotropia during distant fixation where there is no accommodation needed.

Individuals who suffer from refractive accommodative esotropia develop esotropia during near fixation and if this esotropia disappears, they must be suffering from accommodative esotropia combined type, although wearing additional positive glasses.

The girl was noted by her parents suffering from esodeviation since she was 1 year old. Her parents thought that this condition would disappear spontaneously so that no help was sought.

Esodeviation which occurs before 1 year old is often thought of as congenital or infantile esotropia.

It must be noted that congenital or infantile esotropia usually shows a large deviation, namely about 50 prism diopters or greater. In this patient the distant deviation was about 15°-20° pD and 30pD-35pD for near. Refractive anomaly (hypermetropia) in congenital esotropia is usually mild, but in this case her hypermetropia was 3-4 diopters³.

According to Kanski⁴ congenital esotropia is often associated with central disturbance, but this patient was perfectly healthy with good physiological performance. Esotropia may also be caused by paralysis of N VI or fundus anomaly which is called secondary acquired esotropia. Again, there was no fundus anomaly nor paralysis found in this patient.

Bucci *et al.*⁵ reported accommodative esotropia in monozygotic twins. Worth (*cit. Bucci et al.*,⁵) believed that an inherited defect in the fusional facility was the essential cause of strabismus. This patient was not a member of twin and no other family members were affected.

There was difficulty to examine the occurrence of deviation of this very little girl because she lacked of cooperation and was afraid of. For this reason a pair of glasses was given for hypermetropia for distant vision for 1½ years. Many strabismus experts have difficulty in measuring the deviation angle in small children so that strabismus operation is often postponed, until the deviation angle of children can be exactly measured. During 1½ years this patient was considered suffering from refractive accommodative esotropia. At that time there was no suppression or diplopia noted by WFDT and an examination by synoptophore was still difficult.

The glasses given had slightly lower power compared to the finding by cycloplegia because full correction could not be accepted by the patient. Hampton suggested that the use of glasses for refractive esotropia in children less than 4 year old was a full correction³. On the other hand for children of more than 4 years old, subtraction of 1-1.50 D was recommended. This patient was more than 4 year old and because she could accept glasses of almost the same power found by cycloplegia. We gave her only ½-1 D

less than her full correction. By wearing the glasses no deviation was found for distant fixation whereas the occurrence of deviation for near was difficult to detect. The visual acuity of the right eye with corrective glasses was 20/30 and those of the left eye was 20/60. This finding showed the occurrence of amblyopia.

The effective management of amblyopia is still an old method, i.e.: occlusion^{3,4}. A simple guide is to occlude the healthy eye for 1 week every 1 year of age increase of patient. For a 4 year-old patient the occlusion must be 4 weeks long. A complete occlusion could not be done. She refused the total glass occlusion and only accepted this occlusion in a very short time.

Beside glass occlusion, we gave her a blurred glass for her right eye and a corrective glass for her left eye. She accepted this procedure about 4 hours per day. The visual acuity improvement might be due to her compliance to wear glasses.

In 1990 she was more cooperative to be examined, so that a more detailed examination could be done. After wearing distant glasses no deviation was noted, whereas esodeviation of 10-15 for near fixation was still occurred. This near deviation could be overcome by adding S+3 diopters. The diagnosis was accommodative esotropia combined type.

The improvement of her vision was as follows. Initially her VOD with corrective glasses was 20/25 and her VOS with corrective glasses was 20/100. After 6 years of management her visual acuity with corrective glasses were 20/20 for the right eye and 20/60 for the left eye.

For her hypermetropia there was a tendency to increase until 9 years of age and decreased again in 10 years of age. Her reading addition still varied between 2.50 and 3 D which could eliminate her esodeviation for near vision.

The wearing of bifocals might disturb her daily activities and her appearance, so progressive glasses had to be tried so that all visual distant could be corrected. The difficulty was that progressive glasses were prepared for adult only. The use of executive bifocal glasses for this patient was properly accepted without trouble.

Miotics pilocarpine 2% was instilled twice a day to enhance accommodation by peripheral stimulation. This was due to the occurrence of non-refractive accommodative esotropia factor

developed by abnormal synkinesis between accommodation and accommodative convergence⁶.

The improvement of her fusion was as follows. From her first until the last visits to my private practice no improvement of her fusion was noted. By WFDT she could detect the 4 lights but the fusion test only showed grade I fusion and no ARC. To improve the fusion, to eliminate the suppression, and to improve divergence fusion, an orthoptic training should be done. But this training was very difficult to practice because she lived very far away, about 110 km from the clinic.

According to Burian & Noorden⁶ the treatment for these patients is by giving bifocal glasses and miotics as well as supportive orthoptic therapy. These cases usually show good response to therapy and my patient did too. In a small number of patients the esodeviation is still in progress and annual cycloplegic refraction is needed. The degree of their hypermetropia may increase so that it needs some adjustment of the glasses. For these patients the glasses must always be adjusted with the degree of which is still able to control esodeviation.

Recess operation of 1 or 2 medial rectus muscles is sometimes needed if the esodeviation is still persistent although maximum glasses have been given.

Operative therapy will be carried out when bifocal glasses have been given but there is still residual esodeviation. This residual esodeviation is considered as non accommodative factor which needs correction by operation. In this patient there was no residual esodeviation after wearing the bifocals.

CONCLUSION

Accommodative esotropia combined type is a combination of those two types of esotropia mentioned above. In this type, esotropia still occur in close work (accommodation) although its refractive anomaly has been corrected. In this case, addition of positive lens 2-3 dioptries for close work (near vision) will cure this accommodative esotropia. This patient needs bifocals.

Abbreviation used in this article:

dp	=	dioptr prism
WFDT	=	Worth Four Dots Test
D & V	=	Duction & Version
AC/A	=	Acommodation Convergence/ Acommodation
VOD	=	Visual Aquity Oculi Dexter

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