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A CASE STUDY — BROWN'S SYNDROME ASSOCIATED WITH ACCOMMODATIVE ESOTROPIA

ALISON PITT, MEd (Melb.), DBO(T)
Division of Orthoptics, La Trobe University

ZORAN GEORGIEVSKI
Division of Orthoptics, La Trobe University

Abstract

Mechanical limitation of eye movement is a relatively common occurrence in orthoptic practice. Less common is an associated concomitant type squint. This paper reviews the literature reporting Brown's Syndrome in association with accommodative squint and illustrates the clinical features of a case of Brown's Syndrome with a fully accommodative esotropia.

Key words: *Mechanical limitation, fully accommodative esotropia.*

INTRODUCTION

It is well known that Brown's Syndrome is mostly associated with normal binocular single vision and that it remains well compensated without treatment. However there are some patients who demonstrate an associated horizontal strabismus, usually esotropia. Sandford-Smith 1975[1] observed that six out of a series of nineteen patients with Brown's Syndrome developed a secondary esotropia and concluded that Brown's Syndrome can pose a threat to binocular vision. Eustis and co-workers 1987 (cited in Wilson et al 1989[2]) reported a 15% incidence of co-existing strabismus.

In this paper, a case of Brown's Syndrome in association with a fully accommodative esotropia is presented. Such a co-incidence was first reported by Nutt 1955[3] not long after Brown first described the condition in 1950. Crosswell and Haldi 1967[4] described a case of bilateral Brown's Syndrome with an accommodative esotropia. Other cases have also been reported by Roper-Hall and Roper-Hall 1972[5] and Raab 1976.[6] Raab in fact described three cases — one with a fully accommodative esotropia, one with a convergence excess esotropia, and one with a partially accommodative esotropia.

CASE STUDY

L.M. aged eight years first presented with Brown's Syndrome at the age of twenty two months. At the age of four years, L.M. began to show an intermittent esotropia mainly when looking above the mid-line. At this time visual acuity was equal, and normal binocular single vision demonstrable. On refraction she was found to be moderately hypermetropic and was prescribed a +3.00 DS with a +0.50 cylinder in either eye. Following the wearing of glasses and an improved ability to carry out test procedures, a small difference in visual acuity was noted. A small esotropia with apparent diplopia was

Address for correspondence: A. Pitt, Division of Orthoptics, La Trobe University, Health Sciences Building 1A, Bundoora, VIC 3083.

present without glasses but could be controlled. However, over time L.M.'s ability to control the deviation deteriorated and although she preferred and still prefers to wear her glasses most of the time, it was decided to carry out some anti-suppression treatment to prevent a further deterioration and to regain the earlier control. Following a month of part time total occlusion, L.M.'s control of the accommodative deviation improved — simply by eliminating the suppression as evidenced by the presence of diplopia. At this stage she was unable to carry out any more active treatment. It is interesting to note that the child has subsequently requested a resumption in occlusion treatment as the suppression returns and diplopia disappears in the presence of a manifest deviation. Further evidence of the return of suppression was found on tests for stereopsis the results of which became negative.

The current findings show equal visual acuity of 6/4.5, N5, a small esophoria with and without glasses except on accommodation without glasses for both near and distance fixation, with a Binocular Visual Acuity of only 6/60 without her glasses in the primary position. This improves to 6/9 with the chin slightly elevated. It is very important to observe the exact position of the fixation target in relation to the mid-line as a fraction above the mid-line immediately results in a right esotropia. L.M. demonstrates a small suppression scotoma on Bagolini glasses and with the Four Dioptre Prism Test. The ocular movements show the typical picture of a Brown's Syndrome with downgaze unaffected, although the patient is finding it increasingly difficult and uncomfortable to look into the elevated positions. The Hess chart is typical for Brown's Syndrome. One of the most interesting features of L.M.'s condition is the fact that she has only ever noticed vertical diplopia — never horizontal. This is the case even after anti-suppression treatment — both active (cheiroscope) and passive (occlusion) and subsequent improvement in control.

DISCUSSION

The association between Brown's Syndrome and accommodative esotropia has been regarded as uncommon and unusual (Raab, 1982[7]; Raab, 1976[6]). Raab reported in the cases that he described, there was no obvious aetiological relationship in the simultaneous occurrence of the two conditions. Although Brown's Syndrome is most commonly a congenital condition and accommodative esotropia a developmental condition it could be postulated that there is a causal relationship between the two. According to Gowan and Levy 1968,[8] and Wilson et al. 1989,[2] the binocular single vision in Brown's Syndrome whilst present is somewhat tenuous. It could be suggested therefore that the presence of hypermetropia (in this case) together with weak motor fusion caused by the mechanical eye movement defect may potentiate the accommodative esotropia. This supports a view that the presence of sensorial abnormalities is far more significant in the aetiology of squint than the motor factors. In other words, it is not so much the Brown's Syndrome per se that induces an accommodative squint, but the effects that the ocular-motor anomaly has on the binocular visual system which is weakened by such an anomaly, and therefore vulnerable to decompensation. In this case the hypermetropia that may have been compensated for with negative fusional vergence, has lead to an inability to maintain full control due to the added deficit of a Brown's Syndrome.

The interesting features in this case include the nature of the suppression, the possible causal relationship between both defects, and the pragmatics of testing. In this case it is vital to be precise about the position of the fixation target so that it is quite clear which part of the deviation is being measured or assessed. As L.M. advances in age, then more detailed investigation of the suppression can be undertaken. This report adds to the very small number of reports of mechanical defects of eye movements in association with concomitant accommodative squint. The importance of reporting on relatively rare clinical problems is stressed in order to build up a 'case-law' of conditions which will gradually add to our knowledge of the mysteries of binocular vision and its decompensation.

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