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Original article

Sensorial status in patients with pure accomodative esotropia☆

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ABSTRACT

Objective: To evaluate the sensorial status in patients with pure accommodative esotropia.
Material and methods: Ambispective study, patients with pure accommodative esotropia that were found in orthotropy when using its correction glasses were included.
Results: 67 patients were included, mean age was 3.68 ± 1.28 years, the near and far ocular deviation was 19 ± 8.8 PD and 18.71 ± 10.61 PD respectively. The visual acuity in the right eye was 0.183 ± 0.11 logMAR, in the left eye was 0.188 ± 0.12 logMAR. The average spherical equivalent was +5.50 diopters, for the right eye was $+5.46 \pm 1.61$ diopters and for the left eye $+5.71 \pm 1.6$ diopters. The average AC/A ratio was 5.19 ± 0.92 Δ/1. 90% of the patients had a grade of near stereopsis: 42% had stereopsis equal or better to 70 arc seconds and 81% had stereopsis equal or better to 400 arc seconds, having an average of 205 arc seconds.

85% of the patients had some grade of far stereopsis: 16% had stereopsis equal or better to 70 arc seconds and 66% had a stereopsis equal or better to 400 arc seconds, having an average of 334.9 arc seconds. There was not statistically significant correlation between the grade of deviation and the stereopsis when using its correction.
Conclusions: This study has detected that the sensorial status is compromised even with adequate and appropriate treatment, nevertheless, there is a low frequency of amblyopia.

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Binocularidad en pacientes con endotropía totalmente acomodativa

RESUMEN

Palabras clave:
Endotropía acomodativa
Estrabismo
Visión binocular
Estereopsis
Ambliopía

Objetivo: Evaluar la binocularidad en pacientes con endotropía totalmente acomodativa.
Material y métodos: Estudio ambispectivo de pacientes con endotropía totalmente acomodativa que se encontraron en ortotropía con el uso de su corrección óptica.
Resultados: Se incluyeron 67 pacientes, la media de la edad de inicio de la desviación fue $3,68 \pm 1,28$ años, la magnitud de desviación de lejos y cerca fue $19 \pm 8,8$ DP y $18,71 \pm 10,61$ DP respectivamente, la agudeza visual en ojo derecho fue $0,183 \pm 0,11$ logMAR, en el ojo

izquierdo fue 0,188 ± 0,12 logMAR. La media del equivalente esférico fue +5,50 dioptrías, la media de la relación CA/A fue 5,19 ± 0,92 Δ/1. El 90% de los pacientes tuvo estereopsis cercana: 42% tuvieron estereopsis igual o mejor de 70 segundos de arco y 81% tuvieron estereopsis igual o mejor a 400 segundos de arco, siendo la media 205 segundos de arco. El 85% de los pacientes tuvo estereopsis lejana: 16% tuvieron estereopsis igual a 70 segundos de arco y 66% tuvieron estereopsis igual o mejor a 400 segundos de arco siendo la media 334,9 segundos de arco. No hubo correlación estadísticamente significativa entre la magnitud de desviación y la estereopsis al usar su corrección.

Conclusiones: Este estudio ha detectado que existe un compromiso importante de la sensorialidad a pesar de un adecuado y oportuno tratamiento, y aún con una baja frecuencia de ambliopía.

Introduction

Strabismus is a frequent ophthalmological disorder that affects 2–4% of the population.[1] Pure accommodative esotropia (PAE) expresses in 2% of all strabismus cases, is quite infrequent and is the primary esotropia type that appears at a later stage. It is caused by an excess of accommodative convergence. Deviations can range between 20 prismatic diopters (PD) up to 50 PD, although the range of 30–45 DP[2] is more frequent.

In PAE with a normal accommodative convergence/recommendation (AC/A) ratio, the magnitude of the deviation is the same in near and far. In PAE with high AC/A ratio, the magnitude of the deviation is much higher in the near than far, and these patients generally exhibit significant hypermetropia.[3]

It has been described in that suppression occurs in 100% of patients, although it is very superficial. The possibility of recovering some degree of binocularity is high if treatment is initiated early, preferably before age 5.[2] Conventional treatment is optical and aims at correcting hypermetropia and blocking the accommodative effort in order to neutralize accommodative deviation.[2,4,5]

The objective of this study is to assess binocularity in patients with PAE by means of the 4 diopter test, the Worth and Randot near and far tests in order to determine the impact of this pathology on the sensoriality of the study population.

Subjects, material and method

Ambispective study comprising 67 patients with PAE diagnostic (defined as esotropia which, with the use of cyclopegic correction, is able to correct over 10 DP and have a residual <10 DP) examined at the Strabismus Department of the Ophthalmology Institute of the Conde de Valenciana Private Care Foundation during the 2009–2015 period. The study included patients with esotropia of 8 PD or above treated with spectacles with the entire cycloplegic correction during at least 8 weeks and who had orthotropia with optical correction. The strabological clinical records were registered in electronic files and the patients underwent a new examination that included survey with demographic and medical data. Complete biomicroscopy was performed, visual acuity was measured with the Snellen cards in schoolchildren and HOTV in preverbal subjects, both at a distance of 3 m, converting the visual acuity to the logMAR equivalent, visual capacity, refraction with cycloplegia (with the use of 1% cyclopentolate, administering one drop in each eye as initial dose, applying the second dose 10 min later, carrying out refraction 30 min after the second drop and, in children under 2 years or with contraindications related to cyclopentolate, 1% atropine was used in a dose of one drop every 24 h, applying on 3 consecutive nights before refraction). The ocular motility study comprised monocular and alternating screen, measurements of deviation magnitude in preverbal children utilizing the modified Krimsky method, and in the verbal children utilizing the Cover Test with prism, with and without optical correction (the entire correction range obtained with refraction under cycloplegia) at a distance of 40 cm and 6 m, as well as central fusion quantification (4 diopter test), peripheral (Worth test) and stereopsis (near and far Randot test), AC/A assessments (with the gradient method).

The SPSS Statistics 23.0 software was utilized for statistical analysis and $p < 0.05$ was taken as statistically significant.

Results

The mean age of patients at assessment was 4.95 ± 2.49 years, the most common refractive error being compound hypermetropic astigmatism (81.5%) followed by hypermetropia (18.5%). The mean far deviation magnitude without correction was 19 ± 8.8 prismatic diopters, with a range of 8–40 PD. The mean near deviation magnitude without correction was 18.71 ± 10.61 prismatic esotropia diopters, with a range of 10–45 PD. All patients were in orthotropia with the use of correction.

The mean onset age of deviation was 3.68 ± 1.28 years. The mean age for use of spectacles was 4.56 ± 1.49 years. The time elapsed between the onset age of symptoms and the use of spectacles was 12.34 ± 9.21 months. As regards the VA, in the right eye the mean was 0.183 ± 0.11 logMAR, with 66% of patients exhibiting visual acuity of 0.17 logMAR or less. In the left eye, the mean was 0.188 ± 0.12 logMAR, and likewise 66%