Hyperopic astigmatism and strabismus

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Refractive errors are the main causes of vision loss in children [1-4]. Uncorrected refractive errors often cause a decrease in visual performance, children's general development delay, neurosis etc. This requires their well-timed rational correction [5, 6].

The purpose of the study was to present a case report of the effect of spectacle correction on the binocular vision formation.

Material and methods

A patient B., 4 y/o, can serve as a confirmation of the mentioned above. The child's mother referred with complaints that, a year ago, strabismus had appeared in her child's right eye. Objective: visus OD= 0.1; visus OS= 0.3. There was inward deviation of her right eye, measuring 5° without spectacles, and 0° in spectacles. The Worth four-dot test showed that vision was of a monocular character at the distance of 5 meters. In both eyes, the eye fundus was in no acute distress and with foveal fixation. Three-day atropinization was prescribed to specify the refraction and the choice of correction. Against the background of cycloplegia, the refraction was 105°+3.5, 15°+5.5, visus OD=cc sph+3.5 cyl+2.0 ax 105°=0.1 in the right eye and 74°+4.25, 164°+6.25, visus OS=cc sph +4.25 cyl+2.0ax 74°=0.4 in the left eye. Deviation in the eye with a dilated pupil was 0°. Spectacles were prescribed. Diagnosis: concomitant convergent accommodative strabismus, hyperopic astigmatism, amblyopia.

Results

The child wore the spectacles permanently and kept the eye closed for three hours a day. The child's data in four months were as follows: visus OD=0. 3ccsph+3.0cyl+2.0ax105°=0.4; visus OS= 0.4 cc sph+3.5cyl+2.0ax74°=0.5. The Worth four-dot test showed that vision was of a binocular character at the distance of 5 meters. The cover test showed 0° in the spectacles for fixative eye movements. The patient wore the spectacles. The child's data at his age of 16 were as follows: visus OD= 0.5 cc sph+1.25cyl+1.75ax110°=1.0; visus OS=0.7cc sph+1.25cyl+1.5ax 90°=1.0.

The child's continuous wearing the spectacles had an indirect effect on the state of the motor system of the binocular vision mechanism and facilitated the recovery of normal sensory relations and lost visual functions. Foveal retinal-cortical elements of the both eyes became dominant, their co-activity was recovered. In the present case, this became possible due to the proper choice and early prescription of the spectacle correction.

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