

## ANISOMETROPIC AMBLYOPIA: SEEING IS BELIEVING

### AMBLIOPÍA POR ANISOMETROPÍA: VER PARA CREER

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In recent years some relevant points (a few of which contradict habits which have been long accepted in clinical practice) related to the treatment of amblyopia have been clarified. Now is the turn of anisometric amblyopia, confirming the clinical suspicions of many experts and introducing some surprising data as well.

Traditionally, it was believed that a child diagnosed for the first time with anisometry and a VA difference between both eyes with optical correction had to be prescribed for optical correction and allow some time (around 2 months) before deciding on additional occlusive treatment or by means of penalization for residual amblyopia. This involved admitting implicitly that the optical correction would have a therapeutic effect on the hypothetical amblyopia, as suggested by some retrospective and pilot studies.

Recently a prospective study has demonstrated an improvement of 3 VA lines in 18 patients with anisometric amblyopia after using lenses for correcting the refractive error (1). This effect, defined by the authors as refractive adaptation, is considered by others as an optical treatment for amblyopia.

One unknown factor was how much and for how long the prescription of eyeglasses can improve anisometric amblyopia. In said study, the improvement averaged 15.6 weeks. In another study with the participation of 84 children between 3 and 7 most of them (83%) did not improve their VA before 15 weeks (2). An important proportion of those whose VA stabilized, with at least 2 lines of difference between both eyes (62%) exhibited VA improvement in the amblyopic eye after 5-10 additional weeks of optical correction. In this study, the mean VA improvement was of 2.9 lines in the amblyopic eye.

The VA improvement in the amblyopic eye was of at least 2 lines in 77% of patients, and of at least 3 lines in 60% of these. The resolution of amblyopia, defined as a VA difference not exceeding one line between both eyes, was achieved in 27% of the children. The possibility of resolution depended mainly on a better initial VA in the amblyopic eye and on a better anisometric magnitude.

Practical conclusions can be drawn from the data supplied by said studies and similar ones carried out in recent years. Although the continued improvement of VA following an apparent stabilization of the situation can be attributed in part to the variability in determining said VA or to the inability to detect changes under 1 log MAR unit, apparently the age or the learning effect have no influence in said results. There may be a temporary plateau phase; accordingly, the main conclusion is that it may be necessary to wait 15 weeks before deciding on additional treatments against amblyopia. In this way, the treatment dosages and duration are shortened because the initial amblyopia is of lower intensity and the treatment will have better compliance (it is known that higher compliance rates are associated to lower intensity amblyopia). Overall, this involves lower requirements and burden for the patient when considering occlusive or penalizing treatments. On the other hand, when planning a study for anisometry amblyopia an initial optic correction stage of adequate duration will be necessary, after which it can be proved that the effect is due only (or predominantly) to another form of treatment.

The aforementioned conclusions are applicable mainly to anisohypermetropia, i.e., anisometropia due to hypermetropia. However, they are hardly applicable to myopic anisometropia (above all of a

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certain magnitude) wherein the response to optical correction and to other therapeutic measures is much worse and compliance is more difficult due to the possibility of diplopia and aniseiconia caused by optical correction. In these cases, the utilization of refractive surgery in the more myopic eye has been suggested. The concerns around this treatment stem from the possibility of damaging the cornea, inducing corneal ectasia, decentering the treatment due to the need to use general anesthesia and lack of knowledge about its long term effects. In this regard, a recent study reports the results obtained three years after performing a photo refractive keratectomy in the amblyopic eye (3). The study comprised only 11 patients aged 2-11 with poor visual acuity who did not respond to their amblyopia treatment or did not comply with the indications. Mean preop refractive errors of -13,70 D in myopic eyes and +4,75 D in hypermetropic eyes became postop mean refractive errors of -3,55 D and +1,41 D, respectively. Anisometry fell below 3 D in 50% of myopic patients and below 1 D in two out of three hypermetropes, that is, values with hardly any amblyoping power. Of the 9 patients whose VA could be determined, 7 (78%) exhibited non-corrected VA improvements of at least 2 Snellen lines and in three patients (33%) a final improvement of corrected VA of at least 2 lines logMAR.

These results must be assessed with caution but give rise to hope for some cases.

Even though in anisometry amblyopia (4) it is frequent to find microtropia (which, according to some experts, could be a causal factor of anisometry), the majority of studies do not discard its presence. The efficacy of the optical treatment leads to believe that microtropia is not important as an amblyopia factor. If additional treatment is required, it is not clear as yet whether or not occlusive or penalizing treatment is also appropriate.

## REFERENCES

1. Stewart CE, Moseley MJ, Fielder AR, Stephens DA; MOTAS Cooperative. Refractive adaptation in amblyopia: quantification of effect and implications for practice. *Br J Ophthalmol* 2004; 88: 1552-1556.
2. Cotter SA; Pediatric Eye Disease Investigator Group; Edwards AR, Wallace DK, Beck RW, Arnold RW, et al. Treatment of anisometropic amblyopia in children with refractive correction. *Ophthalmology* 2006; 113: 895-903.
3. Paysse EA, Coats DK, Hussein MA, Hamill MB, Koch DD. Long-term outcomes of photorefractive keratectomy for anisometropic amblyopia in children. *Ophthalmology* 2006; 113: 169-176.
4. Von Noorden GK, Campos EC. *Binocular Vision and Ocular Motility: Theory and Management of Strabismus*. 6th ed. St. Louis: Mosby; 2002: 340-344.