Effect of orthokeratology in a case with myopic anisometropic amblyopia: A clinical case

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Introduction
Amblyopia has a particular clinical relevance due to its frequency, prognosis and treatment relatively easy. Anisometropic amblyopia is produced as a result of a clinically significant uncorrected refractive error and unequal amount in each eye. The most ametropic eye develops an amblyopia as a result of unilateral blurred image. The prevalence of amblyopia is more common in patients with hyperopic anisometropia that myopic anisometropia. It is generally an amount of 5 or 6 D or more for there to be enough blurred image for visual loss and amblyopia occurs. Eccentric fixation is present in approximately 44% of all patients with amblyopia and in 30% of patients with strabismic amblyopia. Although there is no exact relationship between eccentricity and visual acuity, generally the farther away from the fovea that fixate, the greater the decrease in visual acuity. Treatment of amblyopia:• Glasses and/or Contact Lenses. •Prisms. •Occlusion. •Vision therapy.

Purpose
To report a very successful outcome with corneal reshaping treatment in a case with myopic anisometropic amblyopia.

Case
Our patient was 12-year-old when he came to the clinic asking for information about different treatments for myopia control to gain freedom when doing sports. He started wearing aspheric RGP’s lenses 4 years ago. The ocular examination revealed that the patient presented a subjective refraction of: OD: -6.25/-0.75 x 20 (OD) BCVA: 0.50logMAR VA: 0.8 esotropia at cover test and parafocal fixation. OS: -2.75 (OS) BCVA: 0.11logMAR

The Easigraph (Oculus) was used to measure the corneal topography and keratometry readings in the patient and showed the presence of less corneal astigmatism in both eye.

Figure 1. Topography both eyes before orthokeratology treatment.

Paragon CRT contact lenses were fitted to treat myopia. The orthokeratology treatment is part of a programme for amblyopia therapy to help slow the progression of myopia (myopic control) and therefore the myopic anisometropic.

The lens parameters were determined by using the software provided by Paragon CRT Lens selection incorporated in the topographer.

Initial Lens:
#1 OD: CRT: 8.10-650-35
#1 OS: CRT DUAL AXIS: 7.7-575&625-35

Figure 4. Paragon CRT® Simulated Fluorescent Pattern (Left Eye)

#2 days after: Over – Refraction w/CL : +0.00 Rx: 0.0 D AV: -0.1 logMAR

Figure 5. Paragon CRT® Simulated Fluorescent Pattern (Right Eye)

#15 days after: Over – Refraction w/CL : -0.50 D Refraction: -2.50 D VA: 0.32logMAR

#3 days after: Over – Refraction w/CL : +0.00 Rx: 0.0 D AV: -0.11logMAR

Figure 6. Tangential map post-fitting ortho k in left eye.

Final Lens: changes were made in the initial lens parameters for optimal treatment.
#2 OD: CRT: 8.30-675-35
#2 OS: CRT DUAL AXIS: 7.7-575&625-35

In this eye the patient kept the first lens because the visual acuity was excellent and in the evaluation with slit lamp any gross adverse signs were not found.

Over – Refraction w/CL : +0.00 Rx: 0.0 D AV: 0.01logMAR

Figure 6. Tangential map post-fitting ortho k in left eye after 1 month

Uncorrected visual acuity increased up to 0.32logMAR (OD) and was maintained in left eye. At the last fitting the patient presented a satisfactory topography pattern. The treatment zone was centered in both eyes and the optical zone in the right eye was smaller than in the left eye.

Conclusion
In this case of myopic anisometropic amblyopia the results obtained with corneal reshaping treatment was better than previous treatment and can be provided to treat the amblyopia. The maximum VA expected in a patient with parafocal fixation is in the range of (20/30- 20/50) and in this case the expected values are met.

Bibliography