

How to Prevent and Treat Anisometropic-Amblyopic Child by Contact Lenses

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ABSTRACT

Anisometropia as a first step on a way forward future amblyopic child, can be prevented and treated if this condition is recognized on time. Second step is wisdom, right contact lens fit on both eyes. As follows, some orthoptic-pleoptic procedures depending on (objective, subjective squinting angle, state of fusion, vision on both eyes and separately each eye and condition of nervus opticus (VEP), normal or absent retinal correspondence, are recommended. There is no limit how old a child is, but best choice and best compliance is age between five and twelve. Contact lens materials, different fit procedures, right diagnosis and tips all about are discussed.

Key words: amblyopia, anisometropia, child, contact lenses, prevention, treatment

Introduction

Amblyopia is defined as poor vision caused by abnormal visual development secondary to abnormal visual stimulation¹. Anisometropia is the most common cause of amblyopia and is the result of unequal refractive errors, with one eye worse than the other eye. A refractive error means the optical parts of the eye (such as the lens) are not properly focusing the image and are causing a blurred image in the brain. The term anisometropia means there is a difference in refractive errors between the eyes. If one eye is out of focus compared to the other eye, the better-seeing eye will become dominant, and the child will turn off, or suppress, areas of the brain. The area of the brain that receives the blurred image will mature only to the level that it is stimulated, so stimulation with a blurred image will damage visual development. The greater the image blur and the longer the blur exists, the worse the amblyopia connected to the blurred eye. The purpose of this study was to investigate the role of anisometropia and how to prevent/treat amblyopia. Contact lenses are the preferred optical approach to the correction of anisometropia as young as possible². Also the purpose of this study was to investigate the role of anisometropia and how to prevent/treat amblyopia. Early treatment is critical to improving poor vision caused by amblyopia in older children. The first aspect of treat-

ment is to provide a clear image using optical correction, better with the contact lenses. Optical correction must be worn full-time during all wakened hours. If the correction is removed, the vision in the amblyopic eye becomes blurred and interferes with visual development. In some cases, providing a constant clear image alone will improve vision. Some children will also require patching of the »better eye«, also with the appropriated C.L. Patching of the good eye stimulates visual development of the weaker, amblyopic eye. Another way to promote stimulation of the amblyopic eye is to blur the vision of the good eye. This can be done by placing an overcorr/hypocorrection C.L. over the good eye or by administering drops to blur the good eye. In most cases, patching with an adhesive patch over the good eye is not necessary. It is very important for the quality of life and sport activities and of extremely importance for normal social activities. Optical correction is often required for long-term and in the vast majority of children, vision can be improved if the parents and child are compliant with the prescribed treatment and in a good compliance with the ophthalmologist. Objective correction of the refractive error is an essential component of the treatment in any anisometropic case. That, as a first step include cycloplegic examination and as a second step the right

objective correction and after that the wisdom, right contact lens fitting procedure. The best individual contact lens correction is recommended. Also red/green monocular test evaluation and full vertex distance regarding recommended tables must be incorporated in.

Quality of the fit include maximum comfort, silicon-hydrogel contact lenses C.L. material, possible astigmatic full correction and disposable on the daily wear bases C.L.

Also take care about C.L. cleaning system based on how well the system provides a deposit free contact lens and safeness. Store branded solutions only included. Scientific pillars of comfort means optimized contact lens experience through disinfection, cleaning and wetting components together. Uptake and release of preservatives as a key concepts for break in the epithelium is the first step for bacteria to get a foothold into the cornea⁶. Therefore extremely important is to educate parents and the child properly and regular control checking is necessary.

We should try to prevent and /or treat affected eye by C.L. because images from each eye need to be very similar to avoid aniseikonia as result of monocular aberration. Contact lenses are the preferred optical approach to the correction of anisometropia both eyes on the first step and improvement of binocular function through good fusion³ as a second step is our goal^{4,5,7}.

Patient and Methods

Retrospective ten years follow up (1998–2008) contact lens carriers, children and teens aged six to seventeen evaluated through clinical dates orthoptic-pleoptic /contact lens cabinet in the Clinical Hospital Dubrava – Eye department. Sixty patients were fitted with contact lenses. At least one eye must be recognized as anisometropic and/or amblyopic through evaluation objective refractive examination and certain period of the first best achieved spectacles correction⁸. Evaluation was based on: comparative visual acuity, best corrected visual acuity with the spectacles and contact lenses on the Snellen chart, biomicroscopy signs, squinting angle and entirely compliance⁹.

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Results

From the total sixty anisometropic patients with contact lens correction, fifty three (88%) corrected and treated patients (at least one anisometropic eye) achieved the best visual acuity on the same eye between 0.8–1.0 on the last visit through clinical dates in retrospect. These dates are individual and connected to degree of penalization processes and visual acuity on the second eye. Biomicroscopic signs in total sixty patients have no pathology regarding infection, keratopathy or dry eyes risk. Squinting angle, aesthetic and functionally satisfaction, that means entirely compliance are good. All of these patients continued with the correction and prefer contact lenses over to spectacles correction. (Table 1).

TABLE 1
CHANGE IN BEST ACHIEVED VISUAL ACUITY

best achieved VA	baseline	control
0,8–1,0	0	53
0,5–0,7	54	7
0,1–0,4	6	0

Conclusion

The purpose of this study was to investigate the role of anisometropia and how to prevent or treat amblyopia in childhood. Contact lenses are the preferred optical approach to the correction of anisometropia because images from each eye need to be very similar to avoid aniseikonia as result of monocular aberration. Equal images from both eyes on the first step and improvement of binocular function through good fusion as a second step is our goal.

In our retrospective ten years follow up based on clinical dates and anisometropic/amblyopic patients treated as above with contact lenses entirely compliance were achieved. Extremely important suggestion is to educate parents and the child properly and regular control checking necessary. Also, that include quality of the fit with maximum comfort, silicon-hydrogel contact lens materials, on a daily wear bases C.L. and store branded solutions only as a part of all included measures for safeness.

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KAKO KONTAKTNIM LEĆAMA PREVENIRATI I LIJEČITI AMBLIOPIJU KOD ANIZOMETROPIJE U DJECE

S A Ž E T A K

Anizotropija je prvi korak na putu prema razvoju ambliopije u djece. Može se prevenirati i liječiti ukoliko se prepozna na vrijeme. Preporučeni su određeni ortoptičko-pleoptički postupci ovisno o objektivnom i subjektivnom kutu škiljenja, stanju fuzije, vidnoj oštrini oba oka i pojedinačno, stanju očnog živca, vidni evocirani potencijali, (VEP), te retinalnoj korespondenc Dob djeteta nije ograničavajući faktor, ali se najbolja suradnja i rezultati očekuju u dobi od pet pa do dvanaest godina. Pristup, te rana i točna dijagnoza omogućuju i adekvatne postupke aplikacije/fita kontaktnih leća koristeći i prednosti novih materijala.