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Results of Amblyopia Therapy in Unilateral Organic Ocular Abnormalities

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Abstract

***Purpose*:** To evaluate the visual results of amblyopic therapy in pediatric patients with monocular abnormalities.

***Methods*:** The hospital records of visually immature patients with unilateral organic ocular abnormalities and decreased visual acuity, who presented to the pediatric ophthalmology clinic over a one year period, were reviewed. Those who had 8 years old of age or less and underwent amblyopic treatment included in the study. Amblyopia was defined as visual acuity difference of more than 2 lines between the two eyes, absence of central fixation or fixation with inability to maintenance. Amblyopic treatment had been performed using full time occlusion method for one month and then reevaluation of the patient.

***Results*:** Twenty patients (8 males and 12 females) with the mean age of 4±3.12 years (range: 1 to 8 years) were included in the study and were followed for a mean of 6 years (range: 2 to 8 years). No patient was excluded from the study due to loss of follow-up. Among those who were able to read the chart (16 patients), the visual acuity increased from 3 meters counting fingers (range: 1 to 5 meters counting fingers) before treatment to $^{4}/_{10}$ (range: $^{2}/_{10}$ to $^{6}/_{10}$) in last visit (P<0.01). In 4 remaining eyes visual acuity increased from central to steady or steady and maintenance.

***Conclusion*:** A trial of full-time occlusion for visually immature patients with decreased visual acuity associated with unilateral organic ocular abnormalities specially traumatic or surgical injuries is recommended.

***Keywords*:** Amblyopia, Ocular Abnormality, Trauma

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Introduction

Diagnosis of amblyopia in children with organic lesions is not easy.[1] The fact that a visual acuity of $^{20}/_{20}$ may not be attainable even with successful amblyopia therapy makes it difficult to assess such patients.[1,2] In addition to amblyopia, various factors such as media opacities, macular lesions and optic nerve anomalies can cause further decrease of visual acuity.[1-4] With advanced surgical techniques, an increasing number of patients regain useful vision after treatment of their chief ocular problems (such as corneal lacerations, traumatic retinal injuries, etc.). Vision will deteriorate even further if effects of amblyopia are added to the harmful effects resulting from an organic lesion. The purpose of this study wass to report the visual results of amblyopia therapy in pediatric patients with monocular organic abnormalities.

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Methods

Hospital records of pediatric patients who underwent amblyopia therapy at the ophthalmology clinic of Rassoul Akram Hospital were studied retrospectively. Since March 1994 to March 1995, patients with organic lesions or those having undergone ocular surgery were included in the study. Criteria for exclusion were: bilateral lesions, being over 8 years of age at their first visit and not completing amblyopia therapy for at least 2 years and according to schedule. A complete ophthalmologic examination including dilated funduscopy, cyclopegic and non-cycloplegic retinoscopy, visual acuity measurement and ocular motility examinations was performed. Fixation preference was noted in order to estimate visual acuity for children unable to respond to visual acuity charts. Refractive error differences of more than 3 diopters of myopia, more than 2 diopters of hyperopia and more than one diopter of astigmatism between the two eyes had been corrected. Amblyopia was defined as a difference of more than two snellen lines of acuity between the two eyes, absence of fixation, or the presence of fixation without the ability to follow objects.

Amblyopia therapy consisted of full time patching of the healthy eye, apart from for 2 hours of waking hours, for one month, after which a reassessment was done. In case of visual improvement, part time patching was done for 6 to 8 hours during waking hours for two more months, after which the patient was reassessed. Patching was reduced or was maintained at the original level thereafter, depending on the extent of visual improvement. In case of lack of visual improvement after the initial patching period of one month, total patching was repeated for two more monthly periods and the patient was reassessed. For patients who were able to cooperate in snellen acuity measurements, paired T-test was used to compare visual acuity before and after amblyopia therapy.

Results

Twenty patients (8 boys and 12 girls) with the mean age of 4±3.12 years (range: 1 to 8 years) were included in the study. Thirteen patients (65%) had corneal scars due to repaired corneal lacerations, 3 patients (15%) had persistent hyperplastic primary vitreous (PHPV) having undergone lensectomy and vitrectomy, two patients (10%) had traumatic macular lesions and two patients (10%) had hyphema due to blunt trauma and subsequent corneal staining. Of 13 children with corneal scars, three had lensectomy and vitrectomy due to concomitant lens opacity. The mean time of the first examination following the last surgery or trauma (in cases not having undergone surgery) was 3 months (range 3 to 7 months). Patients were followed for an average of 6 years (range 2 to 8 years). It was possible to record visual acuity using visual charts for 16 patients. The mean visual acuity changed from finger counting at 3 meters to $^{4}/_{10}$ ($^{2}/_{10}$ to $^{6}/_{10}$) at the end of the follow-up period (P<0.01 paired T-test). Fixation preference was used to record visual acuity in 4 patients. Visual acuity changed from Central to Steady or Steady with maintenance. All patients had experienced an improvement of visual acuity by the end of the study. Preliminary assessment revealed a mean exotropia of 30 prism diopters (20 to 40) in 3 patients with corneal scars, which was corrected by the end of the study in 2 cases, and in one case the original exotropia remained unchanged.

Case report 1

Figure 1 is a fundus photograph of a 4-year-old child with retinitis Scalopetaria due to a BB entered in his right orbit 3 months earlier. Visual acuity was $^{1}/_{10}$ when first examined and reached $^{7}/_{10}$ after amblyopia therapy at his final examination at age of 7 years.

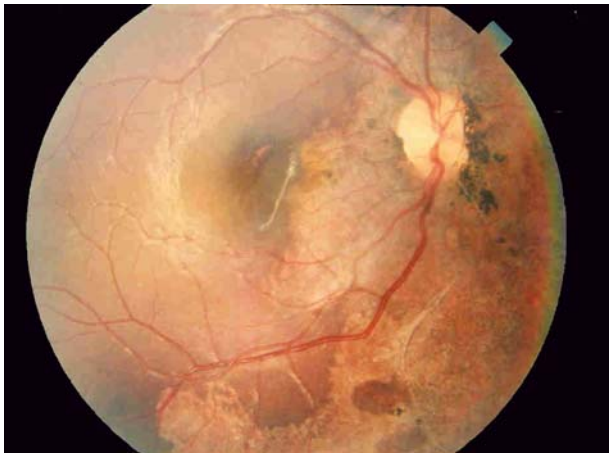

Figure 1. Color fundus photography of a 4-year-old child with retinitis scalopetaria due to BB gun. After amblyopia therapy visual acuity of this patient improved from $^{1}/_{10}$ to $^{7}/_{10}$.

Case report 2

Figure 2 is a slit photograph of a 5 year old child with a repaired corneal laceration due to a sharp object causing traumatic cataract. After primary corneal repair, the patient had undergone lensectomy and vitrectomy. After surgery contact lens was prescribed and 6 months after surgery (at the time the photograph was taken) visual acuity was $^{1}/_{10}$. It reached $^{6}/_{10}$ at his last examination 2 years after commencement of amblyopia therapy.

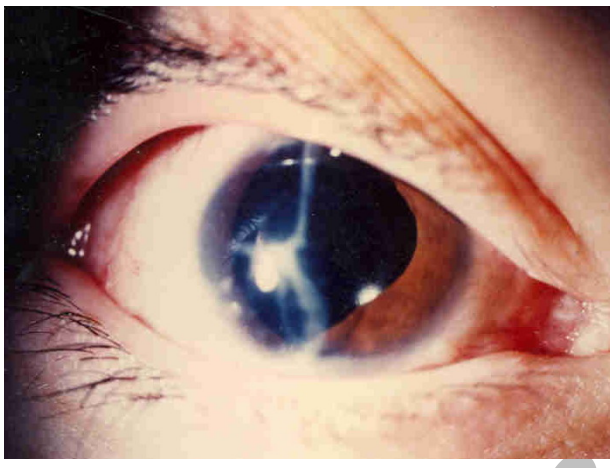

Figure 2. Slit photography of a 5-year-old patient who underwent corneal laceration repair, lensectomy and vitrectomy, 6 months ago. After amblyopia therapy visual acuity of this patient improved from $^{1}/_{10}$ to $^{6}/_{10}$.

Discussion

Treatment of children with organic ocular lesions is difficult and complicated.[4] Accurate diagnosis and timely treatment of the primary lesion is particularly important and with modern techniques and equipments considerable advances have been made in treating organic lesions. Appropriate attention must be paid to amblyopia therapy at the same time to obtain the best possible results.

Amblyopia is defined as a unilateral, or to a lesser extent, bilateral decrease of best corrected vision, which cannot be attributed to structural or pathway status of the eye.[5] The presence of organic lesions in addition to amblyopia adds to the complication of an accurate diagnosis and estimation of reduction in acuity due to organic lesions and leads to erroneous results in some cases.

Kushner[1-3] reported results of amblyopia therapy in patients with media opacities, retinal, choroidal and optic nerve lesions and concluded that in some patients not only the severity of the lesion but also even the presence or absence of Marcus Gunn pupil or pupillary response did not help in the prediction of the attainable visual acuity, and that only a period of total patching can indicate the extent of the additional effect of amblyopia in reduction of visual acuity. Kushner found improved visual acuity with total patching in 59% of treated patients. He reported improvement of vision in 56% of patients with macular lesions, 40% in optic nerve lesions and 71% in media opacities.

In another report, Bradford et al[4] reported a success rate of 42% for macular lesions, 72% for media opacities and 21% for optic nerve lesions and reaffirmed Kushner's view that a period of amblyopia therapy is necessary for children with organic ocular lesions. Both authors showed that the presence of strabismus or anisometropia has little prognostic value and that for patients with media opacities, the lower the age of the patient at the commencement of amblyopia therapy, the better the therapeutic results. Their study showed that the presence of Marcus Gunn pupil does not prevent good results. They recommend extended follow-up of such patients and indicated that amblyopia recurred in 31% of cases and was correctable with renewed amblyopia therapy.

Summers et al[6] reported favorable results for amblyopia therapy of 2 patients with myelination around the optic nerve head and high myopia. The authors stress the need for amblyopia therapy in such patients that does not usually yield favorable results. Lengyel et al[7] reported considerable improvement in visual acuity after amblyopia therapy for 3 patients with treated retinoblastoma, optic nerve atrophy secondary to orbital hemangioma, and coloboma of the optic nerve. Watts et al[8] reported improvement of vision after amblyopia therapy for 80% of the patients with treated retinoblastoma.

It must be noted that amblyopia therapy can result in amblyopia in the healthy eye.[5] Therefore particular attention must be paid to the visual acuity of the healthy eye at every examination and appropriate changes made in the treatment regimen in case of unwarranted decrease in it's visual acuity.

All 20 patients included in this study showed improvement of visual acuity with amblyopia therapy. The success rate depended on the potential of the eye to regain better acuity, a correct therapeutic regimen, and adequate instructions given by the ophthalmologist, as well as patient and parental compliance.

The mean referral time to the pediatric ophthalmologic clinic after the final surgery, or after the trauma in cases when surgery was not performed, was 3 months but in some cases it was as long as 7 months. As reported by Bradford et al[4] it is better to begin amblyopia therapy as soon as possible since better results are to be expected. The younger age of the patient and early referral are important in obtaining more successful results.[4]

The retrospective nature of our study and small number of patients are the limitations of this study. For more definitive results it is necessary to have a control group which poses ethical problems considering the importance of amblyopia therapy.

Conclusion

It is strongly recommended to perform amblyopia therapy in all pediatric patients in the amblyopic age range, with reduced vision due to organic and especially due to traumatic lesions or surgery. Treatment must be initiated as soon as possible.

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References

1. Kushner BJ. Functional amblyopia associated with organic ocular disease. Am J Ophthalmol 1981;91:39–45.
2. Kushner BJ. Functional amblyopia associated with abnormalities of the optic nerve. Arch Ophthalmol 1984;102:683-5.
3. Kushner BJ. Functional amblyopia: a purely practical pediatric patching protocol. Ophthalmol Annu 1988:173-98.
4. Bradford GM, Kutschke PJ, Scott WE. Results of amblyopia therapy in eyes with unilateral structural abnormalities. Ophthalmology 1992;99:1616-21.
5. American Academy of Ophthalmology. Basic and Clinical Sciences Course, section 6, Pediatric ophthalmology and strabismus. San Francisco: American Academy of Ophthalmology 2004-2005;63-70.
6. Summers CG, Romig L, Lavoie JD. Unexpected good results after therapy for anisometropic amblyopia associated with unilateral peripapillary myelinated nerve fibers. J Pediatr Ophthalmol Strabismus 1991;28:134-6.
7. Lengyel D, Klainguti G, Mojon DS. Does amblyopia therapy make sense in eyes with severe organic defects? Klin Monatsbl Augenheilkd 2004;221:386-9.
8. Watts P, Westall C, Colpa L, et al. Visual results in children treated for macular retinoblastoma. Eye 2002;16:75-80.

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