

Amblyopia Therapy in Older Children

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الخلاصة

العين الكسولة أو الخاملة هي مشكلة شائعة تصيب 1-5% من الأطفال، أنها ضعف البصر بالرغم من تصحيح الأخطاء الانكسارية في عين واحدة أو في كلتا العينين الذي لا يمكن نسبه بصوره مباشره الى أي مشكله عضويه في العين أو المسار البصري الخلفي. دراسه مستقبلية أجريت على ثلاثون طفل يعانون من مشكلة العين الكسولة أعمارهم تتراوح بين السبعة والعشرة سنوات، أجري لهم الفحص المجهرى وفحص قاع العينين والذي نتج عنه عدم وجود أي خطأ عضوي يذكر، في حين نتج عن قياس الأخطاء الانكسارية فوجد أنهم يعانون من بعد البصر، قصر البصر مع أو بدون حول؛ بعد العلاج بتصحيح الخطأ الانكساري بالعينات مع غلق كامل، غلق جزئي، أو تشويش الرؤيا في العين السائدة مع المتابعة لسنتين فوجد أن معظم الأطفال تحسنت درجة رؤياهم. بالتوافق مع نتائج معظم البحوث المجراة على العين الكسولة تبين أنه يمكن علاج الأطفال الأكبر عمراً، عكس الرأي القديم؛ أن نهاية الفترة الحرجة هي 6-7 سنوات. لذلك لا بد من محاولة علاج الأطفال الأكبر سنا بعد التوضيح لذويهم عن ضعف النتائج وذلك للأغراض الطبية الشرعية.

Abstract

Amblyopia (lazy eye) is a common problem affecting 1-5% of children, it is a unilateral or bilateral reduction of best corrected visual acuity that cannot be attributed directly to any structural abnormality of the eye or the posterior visual pathway.

A prospective study of tow years done on thirty child all of them older than seven years age presented with uni or bilateral amlyopia; visual acuity, ocular motility, Hurshberg taste, slit lump biomicroscopy, fundoscopy, and cycloplegic refraction, treatment with correction of the refractive error, full time occlusion, part time occlusion, and penalization according to the severity.

Most of children gets an improvement in there visual acuity

Most of new studies in amblyopia in agreement with our results, while the old opinion limiting the critical period at 6-7 years old.

So we should try for treatment of amblyopia in older children while giving a full explanation to the child's family about the poorer results of treatment, for medico legal purposes.

Key words: Amblyopia, critical period, anisometric amblyopia.

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Introduction

Amblyopia (lazy eye) is a unilateral or bilateral reduction of best corrected visual acuity that cannot be attributed directly to the effect of any structural abnormality of the eye or the posterior visual pathway. It is caused by abnormal visual experience early in life.[1],[2]

Otherwise; it is known as dimness or blurring of the of the eyesight due to a fault in transmission of signals to the brain from an otherwise healthy eye.[3],[4]. Now it is the most common visual problem in children has been estimated in 1-5% of them.[5]

Causes of amblyopia; may be ocular misalignment, uncorrected refractive and any other disorders that degrade the quality of images transmitted to the brain from the eye. In anisometropic; relatively mild degrees of hyperopic or astigmatic anisometropia (1-2D) can induce amblyopia, while myopia (-3D) usually does not induce amblyopia.[1]

Treatment of amblyopia is by; correction of the error plus full time, part time occlusion or penalization of the dominant eye according to the severity.[2]

The sensitive period during which acuity of an amblyopic eye can be improved is usually up to 7-8 years in strabismic amblyopia, and may be longer (into teens) in anisometropic amblyopia.[2]

The opinion that amblyopia treatment is ineffective in older children arisen because the age of 6-7 years is thought to be the end of the critical period for the visual development in humans.[6]

Materials and methods

A prospective study; started at February 2009 for two years duration done on thirty child all of them older than seven years old age, most of them noticed to have a visual disorder by their teachers, presented with unilateral or bilateral amblyopia; visual acuity, ocular motility, Hurshberg taste, slit lamp biomicroscopy, funduscopy, and cycloplegic refraction done for all of them.

Fourteen of them had hypermetropic anisometropic amblyopia, three myopic anisometropic, , six strabismic , and seven strabismic anisometopic amblyopia.

Full explanation was given to their families about the poorer results of treatment in older children, treatment was by correction of the refractive error, full time occlusion, part time occlusion, and penalization of the dominant eye according to the severity of amblyopia.

A monthly assessment for the 1st six months and three months later on for the next one and half a year including; visual acuity, and cycloplegic refraction.

Results

Thirty child included in this study; there ages ranging between seven and thirteen years, eighteen of them where male(60%) while twelve female, most of them(20=66.6%) from urban areas.

Fourteen of them had hypermetropic anisometropic amblyopia (46.6%), three myopic anisometropic (10%) , six strabismic hypermetropic(20%) , and seven strabismic anisometropic amblyopia (23.3%).

Table(1): Distribution of age groups in relation to the type of amblyopia

		type of amblyopia				Total
		anisometropia hypermetropia	myopia	hypermetropia with sequent	anisometropic hypermetropia with sequent	
age (Binned)	7-8.5	11	2	4	4	21
	8.6-10	3	1	0	1	5
	10.1-11.5	0	0	0	1	1
	11.6-13	0	0	0	1	1
	13-	0	0	2	0	2
Total		14	3	6	7	30

Improvement in visual acuity (6/9-6/6) after two years of treatment and fallow up noticed in most of children; nineteen out of thirty child (63.3%); the best results noticed in anisometropic hypermetropia with strabismus (85.7%) improved, while no improvement noticed in myopic patients.

Table(2): statistical analysis of visual improvement in amblyopic eyes

		Paired Samples Test					t	Df	Sig. (2-tailed)
		Paired Differences			95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	visual acuity riht1 - visual acuity riht2	.53333	.57135	.10431	.31999	.74668	5.113	29	.000
Pair 2	visual acuity left1 - visual acuityleft2	.83333	.94989	.17343	.47864	1.18803	4.805	29	.000

Discussion

The success of amblyopia therapy mainly depends on the age at initiation of amblyopia therapy on the affected eye, it have been found to be better in younger children [6], while another studies; suggesting the benefit of amblyopia therapy in older children.[8],[9],[10],[11],[12],[13].

Improvement in visual acuity (6/9-6/6 by) after two years of treatment and fallow up noticed in most of children; nineteen out of thirty child (63.3%), this result is in agreement with other studies done in other areas like; Braer GS..... et al did a retrospective study in India on a 88 children their ages ranged from 6 to 20 years, of different types of amblyopia; 80 of them had a succesful results.[14]

Mints-Hinter HA..... et al found that 36 amblyopic children (84% of them with anisometric amblyopia) treated by; full time, part time occlusion, and penalization according to the severity of amblyopia, older than 7 years, treatment started with visual acuities(worst) of 20/50 and 20/400 ended with a final (best) visual acuities between 20/20 and 20/30 for all the 36 patients.[8]

Wallace DK. Studied 113 children of 3-10 years old with bilateral previously untreated refractive amblyopia and found that

binocular visual acuity of 20/25 or better achieved in 73% of them, so the improvement exceeded any expected age effects [15], this results in agreement with other studies. [16], [17].

We found that increasing the dose of occlusion hours of the sound eye, or conversion from part time to full time occlusion did not improve the outcome but hasten, this result ensured by a study done by Stewart... et al in London. [18]

Conclusions

There are high success rates in treatment of amblyopia in older children inverting the old opinion that the critical period till the age of 6-7 years old.

Recommendations

1. Older children with amblyopia must get a trial of treatment while instructing their family of poorer results.
2. All the parents must be aware of amblyopia as a potential problem; this will encourage them to take young children for vision exam early in life.
3. Screening programs should be in place to identify the children with amblyopia in a preschool age groups.
4. Further studies to determine the upper age limits for treatment of amblyopia, and the regression rate of amblyopia therapy in older children.

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