

ORIGINAL

PROF-780

AMBLYOPIA; MANAGEMENT BY SUPERVISED INTENSIVE OCCLUSION THERAPY IN OLDER CHILDREN



SQN LDR SOHAIL SHAHZAD
MBBS, FCPS
Child Specialist
P.A.F Hospital, Rafiqui,
Shorkot Cantt.

SQN LDR SAYED ABID HASSAN NAQVI
MBBS, FCPS
Eye Specialist
P.A.F Hospital, Rafiqui,
Shorkot Cantt.

ABSTRACT... sohailshahzad_595@hotmail.com. **Objective:** To study the effects of supervised occlusion treatment for amblyopia in children aged 5-9 years. **Design:** Descriptive Study. **Place & Duration:** Military Hospital, Rawalpindi (Aug, 2001 to June, 2002). **Materials and Methods:** Fifty children who failed to respond occlusion therapy previously, were given two weeks of supervised intensive occlusion therapy for 09 hours daily during waking hours directly under staff supervision. Visual acuity of amblyopic and fellow eye was recorded at each clinic visit before admission, daily during admission and at each outpatient visit after discharge. Appropriate spectacles have been prescribed. Visual acuity was recorded using Snellen chart. After discharge visual acuity was checked at 1 week, 2 weeks, 1 month and at most recent clinic visit if still receiving treatment or at final clinic visit if discharged. **Results:** Depending upon the age and improvement of the visual acuity after two weeks of occlusion therapy we have divided the patients into two groups. Group-1 between 5-7 years of age included 37 patients showed an improvement of 3-4 lines of the visual acuity. Group – 2 between 7-9 years of age included 13 patients showed an improvement of 1-2 lines. **Conclusion:** The acuity of amblyopic eyes did not improve without effective treatment. Subsequent supervised occlusion therapy was effective in majority of children.

Key words: Amblyopia, Refractive error, Occlusion, Snellen chart, Visual acuity.

INTRODUCTION

Amblyopia is defined as the unilateral or bilateral decrease of vision caused by form vision deprivation and or abnormal binocular interaction for which there is no obvious cause found on physical examination of eye¹. It is caused by abnormal visual experience during a sensitive period of visual development in early childhood, most commonly from a squint or from visual deprivation

caused by unequal refractive errors. It effects upto 3.5% of children and is the most common cause of unocular visual impairment in children and young adults². It has been treated by correction of refractive error followed by occlusion therapy for many years³. Occlusion of the non-amblyopic eye remains the mainstay of treatment, but the efficacy of occlusion treatment is poorly quantified, and the validity of this form of treatment has recently been questioned because of a lack of randomized

controlled trials⁴. The visual system is thought to be sensitive to the effects of abnormal experience only during a limited period of time early in life, when it is immature and plastic, and thus it is believed that occlusion therapy must be implemented between 6 months and 9 years of age in order to be effective. Improvement in visual acuity in young children is often dramatic after initiation of occlusion therapy of the non-amblyopic eye. However, there is conflicting evidence overall on the effectiveness of occlusion therapy for amblyopia. Standard clinical teaching is that occlusion therapy is ineffective on older children and adults.⁵

MATERIALS & METHODS

Fifty children aged, 5-9 years admitted to a paediatric ophthalmic ward, Military Hospital Rawalpindi, were included in the study. Intensive occlusion therapy was done for 9 hours daily during waking hours directly under staff supervision for 2 weeks. These patients had previously failed to respond to outpatient occlusion therapy. The study was carried out from August, 2001 to June, 2002. Visual acuity (VA) of amblyopic and fellow eyes was recorded at each clinic visit before admission, daily during admission and at each outpatient visit after discharge. In all cases there was documented evidence of failure to respond adequately to outpatient occlusion. Appropriate spectacles had been prescribed. In 85% of cases the parents admitted the problems of compliance with occlusion treatment and often also with spectacle wear. Ten children were also admitted who had failed to improve as outpatients, although their compliance had been good. Visual acuity was recorded using Snellen chart for assessment. During admission they were seen daily and visual acuity was measured by the same method. After discharge, vision was checked at 1 week, 2 weeks, and 1 month, and at the most recent clinic visit if still receiving treatment, or at the final clinic visit if discharged. Complete ocular examination of every child was done to rule out any organic pathology or media opacity. Every child was thoroughly examined by Child Specialist to rule out any systemic pathology.

Inclusion Criteria

1. Age 5-9 years.
2. All those children who failed to respond home supervised occlusion for a period of 6 months.
3. Children in whom the cause of amblyopia was strabismus, anisometropia and ametropia but other wise healthy children.

Exclusion Criteria

1. Children with media opacity.
2. Children with any organic pathology of eye.
3. Children with any systemic pathology.
4. Children with meridional refractive errors.

RESULTS

The study carried out on the children between 5-9 years of age. The home-supervised occlusion was attempted for a mean of 6 months before admission. 95% of children were also prescribed glasses to be worn full time. The causes of amblyopia was convergent squint in isolation (10%), convergent squint associated with anisometropia (50%), a divergent squint (16%), anisometropia alone (14%) and ametropia (10%).

Table-I Improvement of visual acuity in Group - 1 (5 - 7 YEARS)			
Visual Activity at admission		Vision after 02 weeks of supervised occlusion	
No. of Children	VA	No. Of Children	VA
18	6/60	2	6/60
9	6/36	2	6/36
2	6/24	4	6/24
5	6/18	5	6/18
3	6/12	9	6/12
0	6/9	5	6/9
0	6/6	10	6/6

Between the first visit, when home supervised occlusion was started and the time of admission, there was no significant improvement in the mean visual acuity of the amblyopic eye. In 65% patients, there was documented proof of no improvement or even worsening of acuity. In a few children the vision was so poor that there was no cooperation for acuity assessment in the amblyopic eye.

Table-II Improvement in visual acuity in Group 2 (7-9 years)

Vision at Admission		Vision after 02 weeks of supervised occlusion	
No. Of Children	VA	No. Of Children	VA
4	6/60	2	6/60
3	6/36	2	6/36
4	6/24	4	6/24
2	6/18	3	6/18
0	6/12	2	6/12
0	6/9	0	6/9
0	6/6	0	6/6

Depending upon the age and improvement of the visual acuity after two weeks of occlusion therapy we have divided the patients into two groups.

Group-1 between 5-7 years of age included 37 (74%) patients showed an improvement of 3-4 lines of the visual acuity. (Table-I)

Group-2 between 7-9 years of age included 13 (26%) patients showed an improvement of 1-2 lines. (Table-II)

There was no significant change in the acuity of the fellow eye during admission. After discharge the acuity in the amblyopic eye continued to improve with outpatient occlusion. Follow up was for an average of 2 weeks. 65% of the patients gained one or more lines of acuity after discharge, 25% were

stable, and 10% lost one or more lines of vision, probably because of poor compliance.

DISCUSSION

This study has demonstrated that the acuity of the amblyopic eye did not improve on home occlusion therapy. In most of them, compliance was very poor. When they did comply with treatment their acuity improved rapidly. The fact that there was no improvement in the acuity of the amblyopic eye over a number of clinic visits during the pre-admission phase and that no improvement occurred in the fellow eye during the period of admission makes it very unlikely that a learning effect accounts for this improvement. Both the amblyopic and fellow eyes improved with continuing part time patching after admission making a detrimental effect of patching on acuity of the fellow eye also very unlikely.

The mean improvement of the amblyopic eye during admission was one Snellen line of acuity, which may seem modest. Once compliance with patching had been established, the majority of parents reported continuing compliance and it seems likely that the response to patching was simply slower in some of these children. Out of 37 children in Group-1, most have gained at least two line of acuity, and out of 13 children in Group-2, most have gained at least one line of acuity. These results are consistent with those of Dorey².

Five children who had improved during admission subsequently lost one or two lines of acuity. Few children were known to have missed follow up appointments and to have continuing problems with compliance. By the final assessment, the acuity improved by at least three lines in 65% of the children in Group-1, who had failed to respond to outpatient occlusion and finished with an acuity of 6/12 or better in their amblyopic eye. In 75% of the children in Group-2, the acuity improved by at least two lines and finished with an acuity of 6/18 or better. The clinical experience is that occlusion therapy is effective in most children provided that they comply with treatment. The present study has

provided evidence both that amblyopia does not, in general, improve spontaneously and that patching is an effective treatment even in the majority of those children who are most resistant to therapy.

CONCLUSION

The acuity of amblyopic eyes did not improve without effective treatment. Subsequent supervised occlusion therapy was effective in majority of children.

REFERENCES

1. Strabismus: Jack J. Kanski(eds). **Clinical Ophthalmology**. A systemic approach 4th ed: Buter Worth Heinmann. 1999. 518-19.
2. Dorey, SE., Adams, GGW., Sloper, JJ: **Intensive occlusion therapy for amblyopia**. Br J Ophthalmol 2001; 310-1.
3. Lithander J, Sjostrand J. **Anisometropic and strabismic amblyopia in the age group 2 years and above**: a prospective study of the results of treatment. Br J ophthalmol 1991; 111-16.
4. Marie C. **Efficacy of occlusion for strabismic**

amblyopia: can an optimal duration be identified? Br J Ophthalmol 2000,84(6):572-78.

5. Mai K E M, Usha C, **Patricia M H. Amblyopid: is visual loss permanent?** Br J Ophthalmol 2000; 84(9): 952-56.
6. Friendly DS.Amblyopia. Paediat Clin N Am 1987; 34; 1391.
7. Cashell GTW, Durran IM. **Handbook of orthoptic principles**. Fourth edition. Churchill Livingstone, Edinburgh. 1980;p 66
8. Abrahamsson M, Fabian G,Sjostrand J. **A longirudinal srudy of a population based sample of astigmaric children.II**. The changeability of anisom.tropia. Acta Ophrahalmol, 1999; 68435-40.
9. Wald G and Burian HM. **The dissociation of vision and light perception in strabismic amblyopia**. Am J Ophthal 1944; 27:950?
10. Feinberg I. **Critical flicker frequency in amblyopia exanopsia**. Am J Ophth 1956; 42:473? A
11. Alpern M, Flitman DB and Joseph RH. **Centrally fixed flicker thresholds in amblyopia**. Am J Ophthal 1960; 49:1194?