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The Effect of Occlusion Therapy in Management of Amblyopia

Surgery

KEYWORDS : Amblyopia, , occlusion therapy, part-time occlusion

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ABSTRACT

Introduction: *Amblyopia is defined as a decrease of visual acuity caused by pattern vision deprivation or abnormal binocular interaction for which no cause can be detected by the physical examination of the eye and in appropriate cases is reversible by therapeutic measures.*

Aim: *Aim of this study to compare vision improvement in Log MAR scale before and after occlusion therapy in Amblyopic patients*

Methods: Prospective Observational study, 67 children were included in the age group 1 to 15 years. Children's visions were checked before and after occlusion therapy.

Results: *67 children were analyzed; age group 6 to 10 years (54%) was affected with amblyopia. In our study out of 67 subjects, 42 patients (63%) were female and 25 patients (63%) were male. 18 subjects were using eye patch for 2 to 3 hours. And 6 subjects were using for 3 to 4 hours. 43 subjects were using it for 4 to 6 hours. Mean log MAR value at pre treatment was 0.64 (0.29 SD) and post treatment was 0.25 (0.23SD).*

Conclusion: *Occlusion therapy plays a significant role in amblyopia. Though occlusion therapy has long been the accepted standard for treatment of amblyopia*

Introduction

The human eye has been called the most complex organ in our body. The most common vision problems are refractive errors, more commonly known as nearsightedness, farsightedness, astigmatism and presbyopia. Refractive errors occur when the shape of the eye prevents light from focusing directly on the retina. The length of the eyeball (either longer or shorter), changes in the shape of the cornea, or aging of the lens can cause refractive errors. Most people have one or more of these conditions. Amblyopia is an important public health problem as the visual impairment is lifelong. Prevalence of amblyopia varies from country to country and within the population under study. It is a fairly common disease affecting one to five percent of the population of most developed countries. In India, amblyopia affects approximately one to four percent of children. Although there are no well controlled studied from India, a study by Goel et al found an incidence was higher in rural schools (0.7%) that urban schools (0.5%) at the primary level, probably because of the lack of awareness about regular eye check up and the use of spectacles amongst the rural population. Lazy eye (amblyopia) is decreased vision that results from abnormal visual development in infancy and early childhood. Although lazy eye usually affects only one eye, it can affect both eyes. Lazy eye is the leading cause of decreased vision among children. Left untreated, vision loss may range from mild to severe. With lazy eye, there may not be an obvious abnormality of the eye. Lazy eye develops when nerve pathways between the brain and the eye aren't properly stimulated. As a result, the brain favors one eye, usually due to poor vision in the other eye. The weaker eye tends to wander. Eventually, the brain may ignore the signals received from the weaker or lazy eye. The risk of developing amblyopia is associated with strabismus, significant refractive error, and conditions that may cause form vision deprivation by physically blocking or occluding the visual axis of one or both eyes during the sensitive period from birth to 6-8 years of age.

Aim

Aim of this study to compare vision improvement in Log MAR scale before and after occlusion therapy in Amblyopic patients

Materials and Methods

This is a Prospective Observational study, 67 children were included in the age group 1 to 15 years. Prepare questionnaire with medical history and demographic details were asked to the children parents. Children's visions were checked before and after occlusion therapy.

Results

67 children were analyzed; age group 6 to 10 years (54%) was affected with amblyopia, followed by 11 to 15 years. Less than 5 years were lower 9%. In our study out of 67 subjects, 42 children (63%) were female and 25 children (63%) were male. In 67 children, 43% of children were using spectacles. In our study out of 67 patients 23 patients (34%) had congenital problem and siblings of 46% of the patients had also the same problem. In our study 18 children were using eye patch for 2 to 3 hours, 6 children were using for 3 to 4 hours and 43 children were using it for 4 to 6 hours. In our study out of 126 eyes, 115 eyes had good progression of vision after occlusion therapy. Improvement in vision after occlusion therapy was quantified using log MAR scale. Mean log MAR value at pre treatment was 0.64 (0.29 SD) and post treatment was 0.25 (0.23SD). P value was less than 0.001 and showed significant difference between pre treatment and post treatment observation.

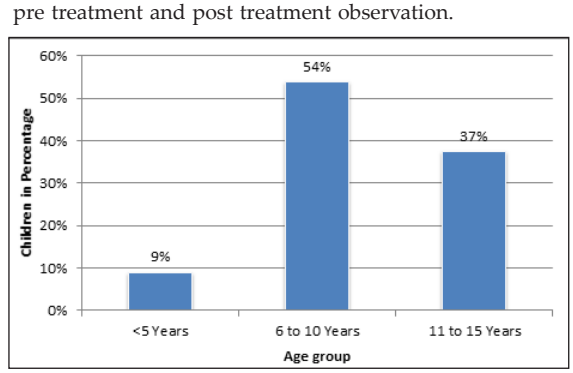


Figure 1 Distribution of children age

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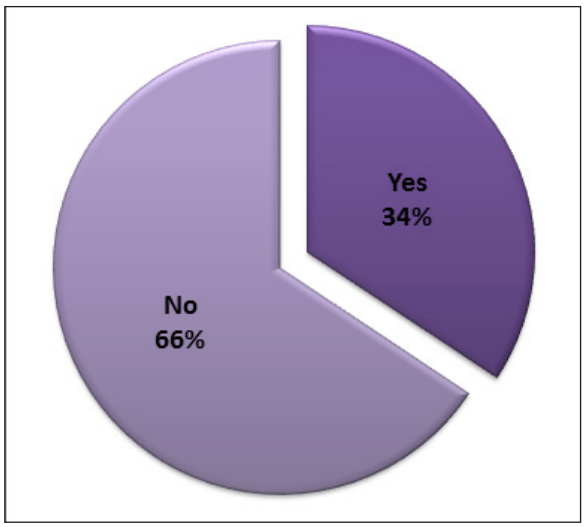


Figure 2 Distribution on Congenital problem in Children

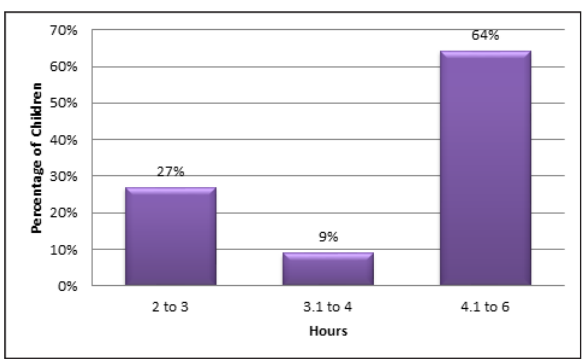


Figure 3 Distribution of eye patch daily usage

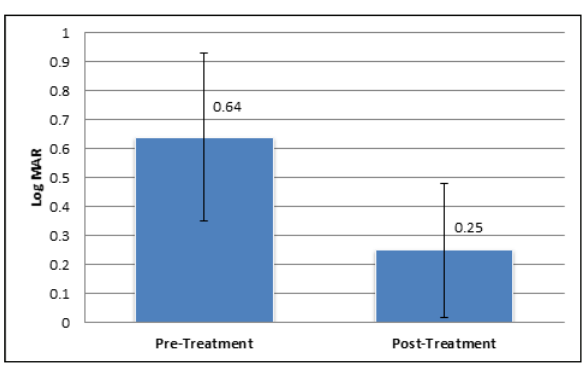


Figure 4 Vision in Log MAR pre and post treatment

Discussion

in recent years a large number of studies have shown a comparable beneficial effect of occlusion therapy in older children too.[5,6,7] Brar et al.,[7] have reported a substantial improvement in visual acuity with full-time occlusion in nearly 90% of the children. They showed that visual acuity could be improved uniformly for strabismic, anisometropic or a combination of strabismic and anisometropic amblyopia in older children. A very important factor determining the outcome of occlusion therapy in these older children could be the patching compliance. It is obvious that lesser the hours of patching in a day better the compliance with the treatment.[8] A multicentric study by PEDIG.[5] The study found that augmenting the optical correction with part-time patching therapy and atropine penalization doubled the responder rate (53% vs. 25%) and the response to treatment was seen regardless of the severity of amblyopia. Hence this study established the role of part-time occlusion in older children. A significant difference from our study is that none of the children in the present study were prescribed atropine in the dominant eye in addition to the occlusion therapy. Lee et al.,[9] have also studied the effect of part-time occlusion in older children (29 eyes) aged 8-12 years. They reported a beneficial effect of part-time occlusion therapy in nearly 96% of the eyes. Visual improvement and occlusion time showed a significantly positive correlation. The limitations of the study include its smaller sample size and shorter follow-up. Moreover, it does not address the issue of maintenance therapy and the recurrence of treated amblyopia in this age group. Still, the present study suggests a beneficial effect of part-time occlusion therapy.

Conclusion

Occlusion therapy plays a significant role in amblyopia. Though occlusion therapy has long been the accepted standard for treatment of amblyopia. Compliance of occlusion therapy plays important role in outcome. Patching may be full-time or part-time. Standard teaching has been that children need to be observed at intervals of 1 week per year of age, if undergoing full-time occlusion to avoid occlusion amblyopia in the sound eye.

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