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Effect of Convex Lens on the Magnitude of Esotropia among Patients Visiting Ophthalmology Department of Holy Family Hospital Rawalpindi Pakistan

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Abstract

Objectives: To find out the effectiveness of convex lens on the magnitude of esotropia among patients who visited Hospital OPD.
Subjects & Methods: A cross-sectional descriptive study was carried out among strabismus patients presenting in the OPD of Holy Family Hospital Rawalpindi from 15th June 2021 to 15th January 2022. Patient's upto 30 years of age free from mental illness or retardation were enrolled in the study by consecutive non-probability sampling. Self-structured orthoptic proforma was used to gather the information regarding biodata, history of presenting illness, past history of wearing glasses, family history of the squint, previous squint surgery, orthoptic assessment, patching technique and refractive status. Orthoptic assessment as well as visual acuity assessment was done by means of Hirschberg's test reflex, Cover test, prism cover test, extraocular eye movements, abnormal head posture checkup and cycloplegic refraction. Data was analyzed by means of SPSS version 25.0 and Microsoft Excel 2016. Descriptive statistics were computed.
Results: Full hyperopic prescription proved successful among cases of accommodative esotropia to improve ocular alignment in 82.5% cases. Esotropia was more common among children upto 15 years of age with 67.5% of females suffering from it.
Conclusion: Esotropia is mostly related to hypermetropia. Using hyperopic glasses with full correction improves ocular alignment.

Keywords: *Convex lens; Accommodative esotropia; Amblyopia*

Introduction

Esotropia is a common clinical problem reported among the patients visiting outpatient department of hospitals [1]. A meta-analysis pertinent to esotropia revealed its prevalence to be about 0.77% [2]. It is the commonest type of strabismus that has considerably been reported among children [3]. The prevalence of strabismus across the globe is 0.5-5% [4]. While associated convergent squint in Pakistan is delineated to be 2.5-2.75% [5]. However, this eye problem is prevalent among 2-6% of the children [6]. Essential infantile esotropia has significantly been proclaimed as childhood strabismus [7]. Comprehensive demographic, medical and family history concomitant with detailed clinical assessment can help a great deal in managing such cases [8]. Although idiopathic, but children with positive family history of esotropia have increased likelihood to present with this visual defect [9]. Infantile esotropia is to be treated surgically during infancy. Furthermore, children with constant infantile esotropia should now preferably be subjected to surgery at or before 10 months of age [10]. On the other hand, esotropia

detected among children in connection with amblyopia can sufficiently be rectified by using glasses and other conservative measures [11]. A study carried out in a public sector hospital of Karachi revealed that esotropia constituted relatively the most frequently diagnosed type (58%) of strabismus among 6-15 years old children5. Likewise, a study done among children of al-Ibrahim eye hospital Karachi reflected relatively higher frequency of esotropia (66.7%) among strabismic children with mainstream having this problem congenitally [12]. Although strabismus has sufficiently been researched out but studies specifically on esotropia are quite meagre. The present study is therefore intended to determine the effect of convex lens on the magnitude of esotropia among patients visiting Ophthalmology department of Holy Family Hospital, Rawalpindi. This research on detecting the usefulness of convex lens on the magnitude of esotropia would surely prove helpful to our ophthalmologists and optometrists in managing and guiding the esotropic cases in true spirit for improving their visual defects and refractive errors [13].

Subjects and Methods

A cross-sectional descriptive study was carried out among esotropic cases presenting in Out Patient Department (OPD) of Holy Family Hospital Rawalpindi from 15th June 2021 to 15th January 2022. Patient's upto 30 years of age not suffering from any mental illness or retardation were enrolled in the study by consecutive non-probability sampling. Self-designed structured orthoptic proforma was used to collect the data pertinent to demographics, history of presenting illness, past history of wearing glasses, family history, and surgical treatment of squint, orthoptic assessment, patching technique and refractive status. Orthoptic assessment as well as visual acuity assessment was carried out by means of Hirschberg's test reflex, Cover test, prism cover test, extraocular eye movements, abnormal head posture checkup and cycloplegic refraction. This article is based on thesis that was composed in partial fulfillment of BSc (Hons) Optometry & Orthoptics requirement. Data analysis was done by using SPSS version 25.0 and Microsoft Excel 2016. Descriptive statistics were applied.

Results

Of the total 40 esotropic patients participating in the study, 67.5% and 32.5% were females and males respectively. Mean age of the patients was 19.6 ± 7.4 years. Most (45%) of our study subjects were upto 20 years of age as depicted below in (Figure 1). Majority (52.5%) had unilateral squint. There were 32.5% patients who developed strabismus due to amblyopia and 67.5% patients were non-amblyopic. Use of convex lens was found to be considerably effective in squint improvement among 82.5% of the cases as revealed below in (Figure 2).

Discussion

Esotropia has been acknowledged with extreme racial differences. Obvious ocular deviations are determined to be about 3.3% and 2.1% among white and black American races respectively. In current study, about 67.5% of the patients presenting with esotropia were females with highest propensity of up to 20 years old patients. Likewise a hospital based study carried out in Nigeria revealed predominance (55.2%) of strabismus among females and majority of them was up to 9 years old [14].

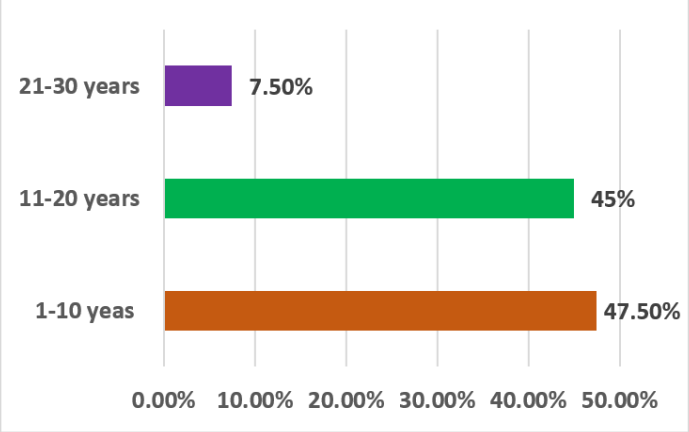

Figure 1: *Age of study participants.*

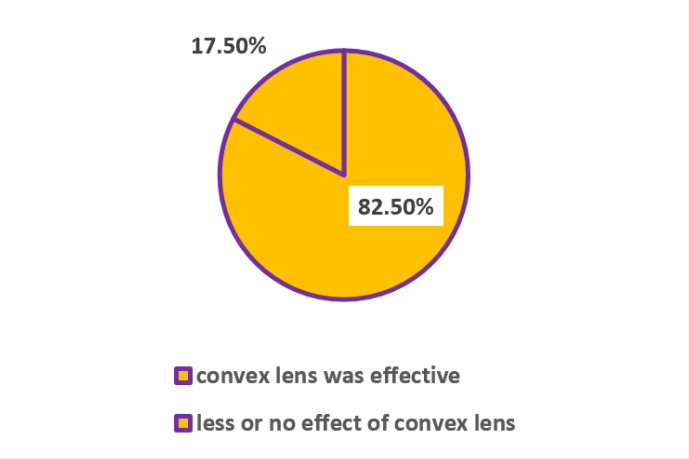

Figure 2: *Use of convex lens.*

This age-based difference among strabismic cases might be due to the fact that Nigerian study was specifically on pediatric patients while our study was encompassing the cases who presented in Ophthalmology department of a tertiary care hospital. Another study done by Qanat AS et al among pediatric population to scrutinize the types of strabismus revealed esotropia as the maximally prevailing type in equal magnitude among both genders [15]. Likewise, another study by among pediatric population in a tertiary care hospital of Karachi discovered esotropia as the most commonly prevailing ophthalmic disorder

[16]. However, , exotropia was determined to 7 times more prevalent than that of esotropia among Singaporean Chinese children up to 6 years of age with no gender discrimination [17]. Reserch on gender based variations in the propensity of esotropia can serve as a guide to concerned health authorities for planning the relevant healthcare preventive measures. Amblyopia and squint in the light of recent studies are known as predominant visual defects despite the correction of visual acuity with glasses rather in absence of any other ocular or neuronal flaws [18]. In our study, 32.5% of the patients developed strabismus due to amblyopia. A study carried out by Shafique MM et al among patients visting Ophthalmology department of Sir Ganga Ram Hospital Lahore concluded that early management of strabismic amblyopia during initial stage of life can protect a child from long term visual disability [19]. Numerous studies have also shown amblyopia as the commonest cause of strabismus among people; however, these both visual defects have probability to occur simultaneously. Therefore, prompt treatment of either disorders is deemed necessary in order to get rid of resultant complications [20]. About 82.5% of our esotropic cases showed improvement in strabismus with use of convex lens. On reviewing the conservative management of concomitant strabismus by Joe Smith, use of convex lens by estropic cases was recommended to improve their visual acuity and binocular single vision [21]. There is scarce supporting evidence pertinent to effectiveness of orthoptic exercises among estoropic relative to exotropic cases [22]. Use of hypermetropic spectacles also led to correction of convergent squint after constant use of 3 months among children who were subjected to long-term follow up after thorough diagnosis of this visual error [23]. Treatment by an ophthalmologist or optometrist is proven to be substantially beneficial at intitial stage with maximal recovery [24]. In addition to prompt diagnosis and intervention, consistency in treatement is of paramount significance in complete cure of the ophthalmic disorders. Further studies on correction of amblyopia with use of hyeropic glasses can also be useful in proving the efficacy of corrective lenses.

Conclusion and Recommendations

Females in our community are more likely to present with esotropia and use of hyperopic glasses by esotropic patients assisted to improve their ocular alignment. Early presentation to healthcare and proper management helps to restore vision and minimize the risk of developing amblyopia.

Limitations of Study

Short study period, small sample size and less follow up of the cases were the shortcomings of this study.

Conflict of Interest

None to declare

References

1. Kaur K, Gurnani B. Esotropia. 2022.
2. Hashemi H, Pakzad R, Heydarian S, Yekta A, Aghamirsalim M, Shokrollahzadeh F, et al. Global and regional prevalence of strabismus: a comprehensive systematic review and meta-analysis. Strabismus. 2019; 27: 54-65.
3. Greenberg AE, Mohney BG, Diehl NN, Burke JP. Incidence and types of childhood esotropia: a population-based study. Ophthalmology. 2007; 114: 170-174.
4. Hashemi H, Yekta A, Jafarzadehpur E, Ostadimoghaddam H, Eshrati B, Mohazzab-Torabi S, et al. The prevalence of strabismus in 7 year old school children in Iran. Strabismus 2015; 23: 1-7.
5. Junejo AY, Hassan MU. Strabismus and its types in children of age 6 to 15 years presenting at a public sector hospital of Karachi. J Dow Univ Health Sci. 2019; 13: 24-29.
6. Torp-Pedersen T, Boyd HA, Skotte L, Haargaard B, Wohlfahrt J, Holmes JM, et al. Strabismus Incidence in a Danish Population-Based Cohort of Children. JAMA Ophthalmol. 2017; 135: 1047-1053.
7. Pansiero S, Diplotti R, Presotto M, Ronfani L, Barbi E. Essential infantile esotropia: A course of treatment from our experience. Front Pediatr. 2021; 9: 695841.
8. Sawers N, Jewsbury H, Ali N. Diagnosis and management of childhood squints: investigation and examination with reference to red flags and referral letters. Br J Gen Pract. 2017; 67: 42-43.
9. Children's National. Pediatric esotropia and exotropia.
10. Wong AMF. Timing of surgery for infantile esotropia: sensory and motor outcomes. Can J Ophthalmol. 2008; 43: 643-651.
11. Wong AMF. Eye movement disorders. New York (NY): Oxford University Press. 2008.
12. Waseem M, Nazir M, Huda N, Hameed A, Bukhari S, Nisar MA, et al. Causes and Type of Strabismus in Peadiatric Department of Al-Ibrahim Eye Hospital, Malir, Karachi. Acta Scientific Surgical Research. 2022; 1: 2628.
13. Friedman DS, Repka MX, Katz J, Giordano L, Ibironke J, Hawse P, et al. Prevalence of amblyopia and strabismus in white and African American children aged 6 through 71 months the Baltimore Pediatric Eye Disease Study. Ophthalmology. 2009; 116: 2128-2134.
14. Nwachukwu H, Onua AA, Adio AO. Risk factors of strabismus in children in a southern Nigerian tertiary hospital. WJOVR. 2019; 2: 1-4.
15. Qanat AS, Alsuheili A, Qanat AS, Alsuheili A, Alzahrani AM, Faydhi AA, et al. Assessment of Different Types of Strabismus Among Pediatric Patients in a Tertiary Hospital in Jeddah. Cureus 2020; 12: e11978.
16. Azam P, Nausheen N, Fahim MF. Prevalence of Strabismus and its type in Pediatric age group 6-15 years in a tertiary eye care hospital, Karachi. Biom Biostat Int J. 2019; 8: 24-28.
17. Chia A, Dirani M, Chan YH, Gazzard G, Eong KGA, Selvaraj P et al. Prevalence of amblyopia and strabismus in young Singaporean

Chinese children. Investigative Ophthalmology & Vis Sci 2010; 51: 3411-3417.

18. Carlton J, Karnon J, Czoski-Murray C, Smith KJ, Marr J. The clinical effective and cost-effectiveness of screening programs for amblyopia and strabismus in children up to the age of 4–5 years; a systemic review and economic evaluation. Health Technol Assess 2008; 12: 1-194.
19. Shafique MM, Ullah N, Butt NH, Khalil M, Gul T. Incidence of amblyopia in strabismic population. Pak J Ophthalmol 2007; 23: 1-6.
20. Smith J. Conservative management of concomitant strabismus. 2019.
21. Pediatric Eye Disease investigator group. The clinical profile of moderate amblyopia in children younger than 7 years Arch Ophthalmol. 2002; 120: 281-287.
22. Aziz S, Cleary M, Stewart HK, Weir CR. Are orthoptic exercises an effective treatment for convergence and fusion deficiencies? Strabismus 2006; 14: 183-189.
23. Krishnamoorthy SR. Accomodative esotropia – A clinical study. IJCEO. 2019; 5: 382-385.
24. Optomteric Clinical Practice Guideline. Care of the patient with strabismus: Esotropia and Exotrpia. American Optometric Association 2011.