

Frequency of Esotropia Among The Patients Presented With Ocular Misalignments Between The Age Group Of 2-18 Years In Ophthalmology Outdoor Department At Islam Teaching Hospital.

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ABSTRACT

Background: among all types of deviated or misaligned eyes the most prevalent form of strabismus is inward deviation called esotropia which constitutes ½ to 2/3 of total misalignment/the existence of inward misalignment varies in different regions of world. Almost 3% to 5% children are affected by esotropia throughout the world. In Pakistan about 45% of population is under the age of 15 years.

Aims: To find out incidence of esotropia in patients presented to eye OPD of Islam teaching hospital Sialkot.

Methods: Total 50 patients with deviation presented in period of six months to eye OPD. Patients were examined to eye OPD with detailed history taken from parents followed by vision assessment with Snellen chart and lea symbols. After evaluation of vision detailed examination was done with extra ocular motility assessment, cover test, deviation was recorded by prism cover test and Krimsky, Hirshberg's reflex test in last cycloplegic refraction with cyclopentolate eye drops.

Results: Patients presented with esodeviation had mean age and S.D of 0.4/2.99. There were 56% females and 44% males which were less in frequency than females. Almost 40% patients had same deviation for distance and near both during PCT while 18% had greater deviation in near and 42% presented with greater deviation for distance. 52% subjects of esotropia had hypermetropia . the most common form of esotropia among all types are accommodative esotropia and constant esotropia about 56.6% and 43.3%.

Conclusion: non paralytic strabismus is more common than paralytic squint. During study there was not even a single patient of paralytic squint was reported. Among all types the most prevalent form of esotropia is accommodative esotropia which is often associated with refractive errors that may leads to amblyopia.

Keywords: Estropia, ocular misalignment, ocular motility assessment

INTRODUCTION

Strabismus or squint also called as heterotropia is a condition in which there is misalignment of one or both eyes¹. Strabismus typically involves a resistance in co-ordination between the muscles attached outside of eyeball to control movement and prevents focusing of each eye to the same point in space and thus prevents proper development of binocular vision, which may also affects depth perception adversely². It can be either a disorder of the CNS to prevent coordination between the eyes, or of one or more of the relevant extraocular muscles' inability to act in direction of motion³. Strabismus can also be classified into latent (heterophorias) or manifest (heterotropia's)⁴. In severe cases when the heterophoria is not compensated by fusional vergence, signs & symptoms appear & this decompensated heterophoria leads to manifest strabismus¹. Esotropia is a type of strabismus in which there is inward deviation or misalignment of one or both eyes. The onset of esotropia can occur at any age group but when it begins in normal neurological developed children in first six months, termed as "infantile"⁴ when inward deviation occurs after six months of child's birth it is termed as early acquired. After the age of infantile

esotropia, existence of deviation at any age classified as acquired esotropia.³ Binocular single vision and accommodation develops prior to the onset of acquired esotropia. Partly or totally uncorrected hyperopic refractive error and/or a high accommodative convergence/ accommodation (AC/A) ratio are the most prominent reasons to develop esotropia (inward deviation)⁵. By fixing the hyperopic refractive error with glasses and/or prescribing a near glasses only can cure esotropia developed due to ametropia.⁶ An acquired strabismus that develops after 6 months of age, does not correlate with accommodation power of children.³ In non accommodative esotropia there is no effect or minimal effect of prescription of plus lenses or glasses to hyperopes in controlling their size of misalignments⁴. An inward deviation that may results from a surgical intervention or due to any deficit in primary sensory pathway is referred as a secondary esotropia.⁷ An esotropia resulting from trauma or any deprivation in sensory pathway of vision may classified as sensory esotropia occurs before the age of plasticity usually 6 years^{8,9}. Microtropia is a term in which esodeviations are less than 10 prism diopters.⁷ when exotropia is over corrected by surgery it results in esotropia which is termed as consecutive esotropia that is associated with third nerve anomalies e.g. vertical and cyclodeviations.

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MATERIAL & METHODOLOGY

It is Cross-sectional hospital based study that was conducted in outdoor patient department of Islam medical and dental college, Sialkot. Time duration of the study was specified for 6 months i.e. from 01/04/2019 to 30/09/2019. Out of 148 patients lying within the age range of 2 to 25 years, attending out-patient department in the specified time period. 50 patients were selected on the basis of the specified inclusion and exclusion criteria. Convenience sampling technique was used to collect the data. Patients having complaints of inward deviation lying within the age range of 2 to 18 years of both gender were included. Patients presenting with any anterior segment or posterior segment ocular pathology, mentally handicapped patients, having any history of ocular surgery or Patients with systemic illnesses e.g. diabetes mellitus, hypertension etc, Traumatic eyes were excluded. Data was collected by an especially designed Performea. Visual acuity was checked by charts (Snellen chart & Lea symbols). Pen torch was used for Hirschberg reflex and External Eye Examination. Direct ophthalmoscope was performed for visualization of Bruckner reflex. Extra ocular motility was performed to differentiate between paralytic and non paralytic squint. Cover tests, Prism cover test and Krimsky test was performed for evaluation of squint. Loose prisms and prism bars was used for the measurement of deviations. 0.5% cyclopentolate eye drops and 1% atropine eye ointment was used for cycloplegic refraction. Retinoscope and Auto refractometer for objective measurement of refractive errors. Trial Box and Trial Frame was used for subjective refraction. Full optical correction of hypermetropia was prescribed in children with accommodative esotropia. Refractive status of the patients was categorized as Astigmatic, Simple Hypermetropic, Simple Myopic and Emmetropic including physiological hypermetropes and those who had no need of any prescription. Data was analyzed by SD and cross tabulation using excel.

RESULTS

Age and SD of the patients was 0.4±2.99. The Median age was found to be 8 years, strongly indicating that strabismus is predominantly an anomaly of childhood.

Gender distribution: Occurrence of strabismus was greater in females (56%) than in males (44%).

Age frequency distribution: The highest frequency of the patients was in the age group of 2-3 years i.e. 19%, followed by 5-7 years age group i.e. 17.2%. 79.3% of the patients were children (1-15 years). Remaining 20.7% were adults.

PCT at near: Prism Cover Test performed at near without correction in most of the measureable patients (100%) had the range of prism diopters within 30-40pd.

Prism Cover Test at distance In PCT performed at distance without correction, 14% patients had deviations greater and 36% had less than those measured at near.

Refractive error: Most prevalent type of refractive error was simple hypermetropia (46.6%), followed by hypermetropia with astigmatism (10.3%) and simple myopia only in 1 patient (2.9%). Other 30(41.4%) were either emmetropic, does not need any correction.

Comitant Esotropia: Among 50 patients there were 20 exotropes and 30 esotropes and among 30 esotropes the most common types were Accommodative ET (56.6%) and Constant ET (43.3%).

Table 1: Means age sd of sample

Patient's age deviation	2-18 years
N	50
Minimum	3
Maximum	18
Mean	0.4
Standard	2.99

Table 2: Frequency among males and females (n=50)

	Male	Female
Frequency	22	28
Percentage	44%	56%
Cumulative percent	44%	56%

Frequency among males and females

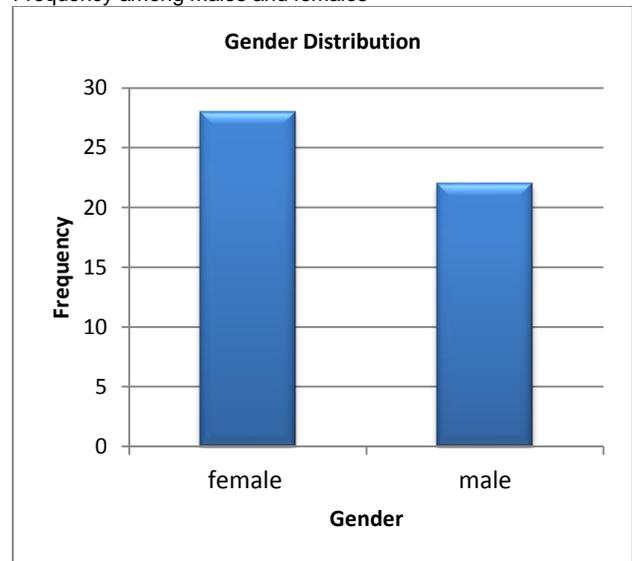


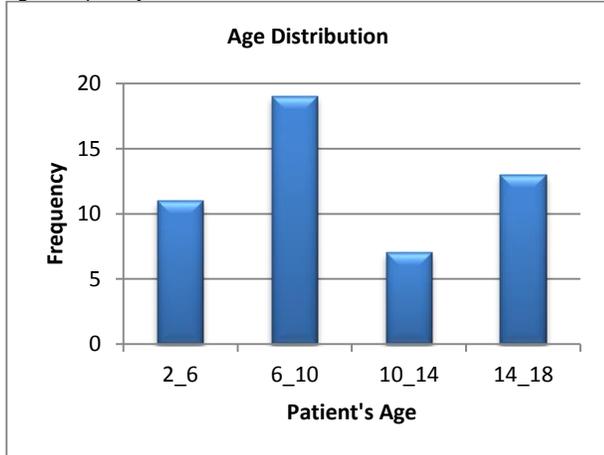
Table 3. Frequency distribution age wise.

Age in years	Frequency	%age	Valid%	Cumulative%
2-6	11	22%	22%	22%
6-10	19	38%	38%	38%
10-14	7	14%	14%	14%
14-18	13	26%	26%	26%

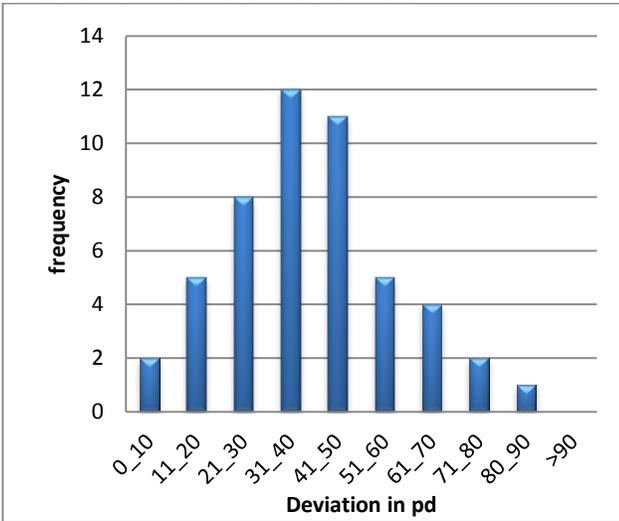
Table: 4 Prism Cover Test at near without correction.

Age in years	Frequency	%age	Valid%	Cumulative%
0-10	2	4	4	4
11-20	5	10	10	10
21-30	8	16	16	16
31-40	12	24	24	24
41-50	11	22	22	22
51-60	5	10	10	10
61-70	4	8	8	8
71-80	2	4	4	4
81-90	1	2	2	2
>90	0	0	0	0

Age Frequency Distribution.



Prism Cover Test at near without correction.



Prism Cover Test at distance without correction.

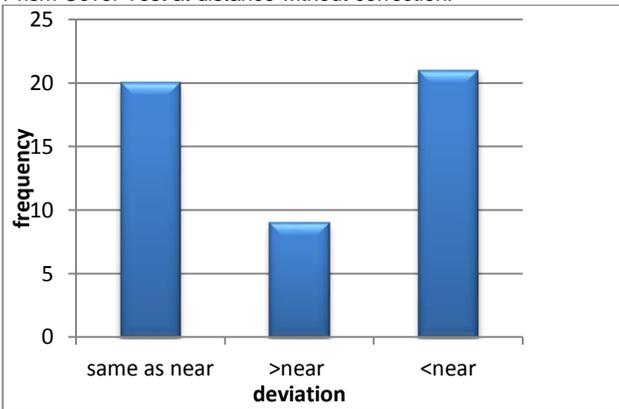


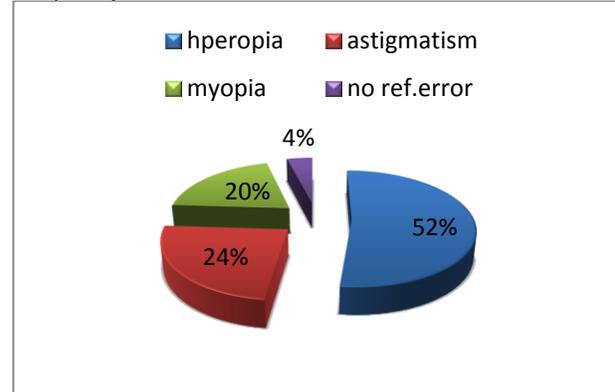
Table: 5. Prism Cover Test at distance without correction.

Deviation	Frequency	%age	Valid%	Cummu-lative%
Smear as near	20	40	40	40
Near	9	18	18	18
Near	21	42	42	42

Table 7 Frequency of refractive errors.

Ref errors	Frequency	Valid %
Hypermetropia	26	52
Astigmatism	10	20
Myopia	12	24
No ref.error	2	4
Total	50	100

Frequency of refractive error



Frequency of refractive errors.

	Frequency	%age	Valid%
Constant ET	13	43.3	43.3
Accomodative ET	17	56.6	56.6
Total	30	60	69

DISCUSSION

It was reported in a study that the onset of esotropia was 2% to 6% in western population with consequences of stereoacuity loss and poor hand eye coordination.¹⁰it was stated that strabismus also causes psychological effects in children with decreased visual acuity that may cause amblyopia.²in this study it was concluded that onset of esotropia is similar in both genders (males and females).it was also found that most common cause of esotropia is simple hypermetropia 46.6%, followed by astigmatism 10.3% and myopia was only 2.9%.it was reported in a cohort study that esotropia and exotropia are associated with CNS diseases.it was studied that infantile esotropia was the most common cause of esotropia for almost decades.^{11,12}in our study there were many cases reported of childhood esotropia.it was concluded that many cases reported had similar deviation for both distance and near almost in 40% while 18% of patients had greater deviation in near and 42% had greater deviation in distance.it was reported that onset of consecutive esotropia was found almost 2% to 20% in surgical corrections of strabismus.¹³ .^{14, 15}it was reported in our study that most prevalent deviation was 30 to 40 prism diopters found in 24% while 40 to 50 prism diopters was found in 22% however most least upto 90 prism diopters was found only in 2% subjects.

CONCLUSION

Strabismus is more common in children with 79.3% patients within the age of 1-15 years & 20.7% patients within the age of 16-25 years, supporting that strabismus is predominantly an anomaly of childhood. Comitant

strabismus is more common than paralytic strabismus. Accommodative ET (alternating) is more dominant type regarding children & Constant XT (alternating) is dominant type in XT. Most prevalent type of refractive error is Astigmatism, followed by simple spherical Hypermetropia & simple spherical Myopia.

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