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PREVALENCE OF STRABISMUS IN CHILDREN(0-18 YEARS) WITH REFRACTIVE ERRORS

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ABSTRACT

INTRODUCTION: Visual impairment due to refractive errors is one of the most common childhood problems and the second leading cause of treatable blindness (1)

Strabismus is misalignment of one eye in relation to other and affects2-4% of population. (2) Presence of strabismus can cause loss of binocular function and amblyopia . (3)

AIM-To study the prevalence of strabismus in patients(0-18 years) with refractive error at a tertiary care center.

MATERIALS AND METHODS: In study of 250 patients visual acuity was determined. Both subjective and objective refraction was done. Eye alignment was measured by prism bar cover tests. If disturbed sensory and motor evaluation of strabismus was done. Best corrected visual acuity (BCVA) was determined and management of strabismus was done accordingly.

RESULT: In this study of 250 patients prevalence of strabismus was 10.4% (n=26). Amongst 26 patients,14 (53.85%) had esodeviations,10 (38.46%) had exodeviations and 2(7.69%) had vertical deviations. Refractive error correction was done in 7patients, amblyopia management in 12 and squint surgery was done in 7 patients.

CONCLUSION: Prevalence of strabismus in patients with refractive error (0-18 years) in a tertiary care hospital in the outpatient department was 10.4%. Proper counselling and motivation of parents and children and awareness in society in general, about REVERSIBILITY of childhood blindness is necessary. This will help in reducing the devastating economic and psychosocial burden to the society.

KEYWORDS : Strabismus, amblyopia, refractive error, esodeviation, exodeviation.

INTRODUCTION

Visual impairment due to refractive errors is one of the most common childhood problems and the second leading cause of treatable blindness.[1]

Strabismus is a misalignment of the eyes, such that the visual axis of each eye are not simultaneously directed at the object of regard and thus impairment of binocular vision. Squint is a common condition among children, it is said to occur in 1 in 50 children. [4]Young children with strabismus often develop amblyopia and impaired stereopsis. [5] Strabismus may lead to failure to develop binocular vision and the associated cosmetic disorder may interfere with social and psychological development.[3]

AIM

To study the prevalence of strabismus in children (upto 18 years) with refractive error at a tertiary care center and to manage them accordingly.

MATERIALS AND METHODS

It was a prospective hospital based study of 250 patients conducted at a tertiary care center over a period of 2 years.

INCLUSION CRITERIA

Patients (upto 18years) with refractive error(myopia SE>=-0.75DS,Hypermetropia> SE>2DS,Astigmatism SE>=0.75DC)

EXCLUSION CRITERIA

Patients with the following features :

- Congenital anomalies of eye.
- Media opacities.
- Ocular trauma
- Nystagmus
- Posterior segment diseases
- Ptosis
- Ocular surgery
- Global developmental delay

Ethical committee approval was taken and written consent was obtained from patients.

Detail history was taken from form the patients and complete systemic and ocular examination was done .

Visual acuity assessment in preverbal age group was done by CSM method(C-position of corneal light reflex ,S-steadiness of fixation ,M-ability of the patient to maintain the reflex) [7]In the verbal age group visual acuity measurement was done by Snellen's chart in a well lighted room at a distance of 6m. Cyclopleglic retinoscopy was done in all the patients in a dark room at a distance of 1 m from the patient.

With the help of these recordings, BCVA of the patients were determined. Hirscheberg corneal reflex test and prism bar cover tests were done to know the measurements of strabismus.

Squint correction(surgery)was done after improvement in visual acuity in patients with strabismus. All the relevant data was recorded in a pre designed proforma. Single muscle recession and resection was done for eso and exodeviation accordingly. All the collected data was analysed in a SPSS version 20.0.

OBSERVATION AND RESULTS:

Total 250 patients were included in the study with age group from 0-18 years .

The prevalence of strabismus in a tertiary eye care center, in patients up to 18 years of age with refractive error was 10.4%. The mean age of patients with strabismus was 7.41 ± 4.59 years. In males the mean age was 7.21 ± 3.48 years while in females it was 7.62 ± 5.703 years. Among the 26 patients with strabismus 14 (53.85%) were females and 12 (46.15%) were males. Out of these 26 patients of strabismus,14(53.85%) had esodeviations,10 (38.46%) had exodeviations and 2(7.69%) had vertical deviations.

Mean age of patients with esotropia was 5 ± 2.24 years, exotropia was 10.81 ± 2.48 years The age of patients with exotropia is significantly higher as compared to esotropia (Unpaired T test. p<0.0001)

Table 1. Types of esodeviation:

Esophoria	Infantile Esotropia	Accommodative Esotropia	Non accommodative Esotropia	Total
1(7.14%)	2(14.29%)	5(35.71%)	6(42.86%)	14

Table 2. Types of exodeviation

Phorias	Intermittent exotropia	Manifest exotropia	Total
2(20%)	2(20%)	6(60%)	10

Table 3.Type of refractive error in patients with strabismus(n=26)

Type of refractive error	Myopia (Percentage %)	Hypermetropia (Percentage %)
Esotropia	2(22.22)	11(64.71)
Exotropia	6(66.67)	2(22.22)
Others	1(11.11)	4(23.53)
Total	9(34.62%)	17(65.38%)

In patients with strabismus, hypermetropia was present in 17 patients (65.38%)and was the most common refractive error. Myopia was present in9 patients (34.62%). The prevalence of hypermetropia in patients with esotropia was significantly higher as compared to that with exotropia (Fisher's exact test. p=0.017).The prevalence of myopia was higher in patients with exotropia but was not statistically significant (Fisher's exact test. p=0.32).

Out of these 26 patients,16 (61.54%) had amblyopia (9 patients with strabismic amblyopia and 7 patients with combined amblyopia).Amongst these 16 patients, 10 patients (62.5%) were given amblyopia management in the form of full time occlusion, 6 (37.5%) were given spectacle correction. Of these ,4 patients (25%) who improved(2 with amblyopia and 2 with spectacle correction) underwent surgery for residual squint correction.

7 patients (26.92%; 2 with exophoria, 2 with intermittent exotrpia, 1 with exophoria, 1 with esophoria and 2 with vertical deviations) were given spectacle correction and orthoptic exercises and were followed up regularly.

Remaining 3 patients(11.54%) with strabismus only who did not have significant refractive error underwent surgical treatment for squint. Amongst the 7 patients who underwent surgical treatment, all (100%) had satisfactory post operative results, were orthophoric and had good cosmesis.

DISCUSSION-

The prevalence of strabismus in a tertiary eye care center, in patients up to 18 years of age with refractive error was 10.4%.The mean age of patients with strabismus was 7.41 ± 4.59 years In a study by Salman MS[8] (2010) in Tikrit(Iraq) in pediatric ophthalmic outpatient department squint was noted in 12% patients, in which males were predominant (57%). Higher incidence was noted in less than 5 years age (36%).In study by Chaturvedi S et al [9] in rural Delhi in primary school children the prevalence of squint was 7.4%.

Out of the 26 patients of strabismus,14 (53.85%) had esodeviations;1 0 (38.46%) had exodeviations and 2 (7.69%) had vertical deviations. In patients with esotropia accommodative and non accommodative esotropia were common(n=5,n=6 respectively) In patients with exotropia manifest exotropia were common The age of patients with exotropia is significantly higher as compared to esotropia (Unpaired T test. p<0.0001). In patients with strabismus, hypermetropia was present in 17 patients (65.38%)and was the most common refractive error. Myopia was present in9 patients (34.62%). The prevalence of hypermetropia in patients with esotropia was significantly higher as compared to that with exotropia (Fisher's exact test. p=0.017).

Abuimara Amer[10] in his study found that most prevalent type of squint is esotropia (n=125;55.3%), exotropia comes second (n=67; 29.6%) followed by paralytic (n=14; 6.2%) and restrictive strabismus (n=18; 8%) and other types (n=2;0.9%) respectively .This sequence keeps true regardless of gender. The most prevalent refractiveerror in esotropia patients is hyperopia regardless of eye, especially moderateand high degrees of hyperopia, while in exotropia low hyperopia is the most prevalent refractive error irrespective of eye .Amongst the patients with esotropia, accommodative esotropia was the commonest (40%) and intermittent exotropia (62.7%) was the commonest types in patients with exotropia Brian G. Mohney[11] examined patients younger than 19 years and found that out of 627 patients, 380 (60.6%) were diagnosed with esotropia, 205 (32.7%) with exotropia, and 42 (6.7%) with hypertropia. Accommodative esotropia, intermittent exotropia, and acquired non-accommodative esotropia were the predominant forms of strabismus in this Western population

Conclusion

The prevalence of strabismus in a tertiary eye care center, in patients up to 18 years of age with refractive error was 10.4%. In all these patients adequate management in the form of spectacle correction, amblyopia management and surgical correction lead to improvement. Thus the need for early diagnosis and management.

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