



CONCOMITANT STRABISMUSs: A STUDY IN A RURAL SETUP

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Abstract

Introduction: Strabismus is a generic term applied to all those conditions in which the visual axes assume position relative to each other different from that conforming to physiological conditions. It may lead to the development of amblyopia, impaired reading performance, absent or reduced binocular single vision as well as reduced self-esteem.

Aims and objectives: To describe the clinical profile of concomitant strabismus seen at Tertiary care hospital with the aim to determine the most common type of concomitant strabismus.

Materials and methods: A descriptive cross-sectional study of all new patients between the age of 2- 25 years who were diagnosed to have concomitant strabismus. It included 86 children. Routine ocular examination and visual acuity was tested using Snellen's chart where possible. Ocular movements were checked in all directions of gaze. Cycloplegic refraction, detailed fundus examination and orthoptic assessment was performed.

Results: It was found that around 48% of the presenting cases were females and 51% were males. Esotropia was more common in females while exotropia was more common in males. 48% of the patients had alternating squint, while 51% of the patients had unilateral squint with amblyopia.

Key-words: Deviation, concomitant strabismus, amblyopia, exotropia, esotropia

Introduction

Strabismus is a generic term applied to all those conditions in which the visual axes assume position relative to each other different from that conforming to physiological conditions. In simple terms, it is the condition where the visual axes of the two eyes do not meet at the point or object of regard.¹ Even in the most modern times, we come across children with squint who have to pay dearly with their sight. Ignorance, illiteracy are the main factors for delay and higher incidence of squint in our country. One of the most frequent ophthalmic disorder encountered in the ophthalmology OPD is concomitant heterotropia. The two types of horizontal squint are exotropia and esotropia. The convergent is more common, and hence better documented, while divergent maybe less frequent, but is equally troublesome².

A type of manifest squint in which the angle of squint remains constant (unaltered) in all directions of gaze with either eye fixating is called as concomitant strabismus. In general terms, development of a non-paralytic strabismus is the result of an abnormality of one or more of the many factors which are responsible in the establishment of normal binocular vision. Normal binocular vision process starts after birth and is, by and large, completed by 5-6 years of age, largely motivated by the intention of getting a visual reward³. Therefore, any obstacle to the development of these processes may result in concomitant strabismus. Strabismus is quite common in our society causing both visual and cosmetic problems. Hence a need arises to know the common causes and various methods to diagnose and classify them and proceed with different modes of management. Aims of our study were to study the clinical profile of comitant strabismus & to study the association of amblyopia in cases of comitant strabismus.

Subjects and Methods:

This study was carried out at Department of Ophthalmology at Tertiary care hospital in Western Maharashtra over a period from October 2018 to October 2020.

- **Type of study:** This is a descriptive cross-sectional study of a sample size of 86 patients who underwent clinical evaluation in the Ophthalmology OPD. Before the start of the study ethical clearance and informed consent was obtained respectively from the institute and subjects.
- **Inclusion criteria:** Patients with concomitant squint, Patients with either gender aged between 2-25 years of age were included in the study
- **Exclusion criteria:** Patients with paralytic squint, restrictive squint or pseudosquint were not included. Patients already treated for strabismus and those with residual strabismus after strabismus surgery were excluded from the study.
- **Results:**

86 patients having concomitant strabismus, who were ideal candidates for the inclusion criteria mentioned above, underwent clinical examination in our institution from October 2018 to October 2020. 37.20% of patients were in the age group of 2-6 years. It was found that around 48% of the presenting cases were females and 51% were males.

AGE	NO.	PERCENTAGE
2-6yrs	32	37.20
7-11yrs	18	20.93
12-16yrs	11	12.80

17-21yrs	17	19.76
22-25yrs	8	9.30

Table 1: Age wise distribution

Esotropia was more common in females while exotropia was more common in males. 48% of the patients had alternating squint, while 51% of the patients had unilateral squint with amblyopia. In this study, the incidence of esotropia was 55.81% whereas it was 44.18% for exotropia.

Cycloplegic refraction showed 61.62% cases had hypermetropia, 26.74% cases had myopia

CONVERGENT		DIVERGENT	
NO.	PERCENTAGE	NO.	PERCENTAGE
48	55.81	38	44.18

and

Table 2: Type of deviation

11.62% cases were emmetropes. 38.37% of patients were found to be amblyopic in this study.

TYPE OF ERROR	NO. OF CASES	PERCENTAGE
Hypermetropia	53	61.62
Myopia	23	26.74
Emmetropia	10	11.62

Table 3: Type of refractive error

Discussion:

In this study, it was found that around 51.16% of males were affected and around 48.83% females were affected, in accordance with Sarita Behera, Bijaya Kumar Dutta et al (2014)⁴ and Azonobi et al⁵ and Attada et al⁶ where males dominated over females. On the contrary, female predominance were reported in previous studies in Nigeria, Ethiopia and United States⁷ It was noted that maximum incidence of concomitant strabismus was seen in the age group of 2-6years of age as opposed to the maximum incidence in 0-5yrs of age as observed by Musa KO, Ikuomenisan SJet al and by Awoyesuku et al (2016)⁸.

In this study, the incidence of esotropia was 55.81% whereas it was 44.18% for exotropia. It is similar to the greater incidence of Esotropia (57%) than Exotropia (43%) noted by Vijay Chopra, Pramila Balasubramanian et al (2017)⁹. In the study, Strabismus in paediatric age (3-16 year): a clinical study Tarakeswara Rao Attada et al¹⁰, exotropia accounted for 57.6% and esotropia for 40.60% of cases. In another study of 100 patient (upto 12 years of age) with concomitant strabismus in Kolkata, by Datta D¹¹ found that esotropia (74%) was more common than exotropia (26%)

Also, in this study, the patients with esotropia showed a male preponderance (56.25%) whereas patients with exotropia showed a female preponderance (55.26%). Datta D et al¹¹, in a study in Kolkata found that esotropia was more common in males and exotropia was more common in females which was in stark contrast to The Study of Concomitant Strabismus amongst the Ethnic Population of Manipur by Dr. Kipa Tubing, Dr. Thungpamo patton et al¹² in which it was found that more esotropes were females and exotropes were males.

Maximum incidence of hypermetropia (61.62%) was noted, followed by myopia (23%) and 10% patients were emmetropic. In a study of 100 patient (upto 12 years of age) with concomitant strabismus in Kolkata, by Datta D et al¹¹, they found that there were 50% hypermetropes, 18% myopes and 32% emmetropes. A similar pattern was observed by Rimsha Sarosh, Afroz et al¹³ where hypertropia was found to be the more common refractive error in their study population along with a low incidence of myopia.

38.37% of patients were found to be amblyopic in this study. Amblyopia was seen in 54% of the patients by the clinical study of concomitant squint by Vijay Chopra, Pramila Balasubramanian et al (2017)⁹. Amblyopia was present in 15.25% of children with strabismus in the study 'Strabismus in paediatric age (3-16 year): a clinical study' by Tarakeswara Rao Attada et al¹⁰ when compared to 53% of all cases of manifest strabismus as reported by Abrahamsson A et al¹⁴

Conclusion:

Eighty six patients with concomitant strabismus were evaluated in this study and the following conclusions were drawn from the same. Highest incidence was noted in the 2-6 years age group. Esotropia showed greater incidence than exotropia. Incidence of esotropia was more in males and that of exotropia was more in females. Alternating squint showed higher incidence than unilateral squint. Hypermetropia was the more commonly associated refractive error than myopia. Amblyopia was noted in a significant number of patients.

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