

Original Article

Pattern of Squint (Strabismus) in Children with Cerebral Palsy – A Study Conducted in the Ophthalmology Out-Patient Department in a Tertiary Level Teaching Hospital in Bangladesh**Kazi Nilufar Moly¹, Md. Iqbal Mahmud Choudhury², S.M. Abu Ahsan³, Tazin Ahsan⁴, Sabiha Sanjida Ananna⁵, Nilufar Shabnam⁶, Sumaya Tasneem⁷**¹ Assistant Professor, Department of Ophthalmology, Bangabandhu Sheikh Mujib Medical University, Shahbagh, Dhaka, Bangladesh² Assistant Professor, Department of Plastic Surgery, Bangabandhu Sheikh Mujib Medical University, Shahbagh, Dhaka, Bangladesh³ Associate Professor, Department of Surgery, Ad-din Sakina Medical College, Jessore, Bangladesh⁴ Honorary Medical Officer, Department of Surgery, Bangabandhu Sheikh Mujib Medical University, Shahbagh, Dhaka, Bangladesh⁵ Intern Doctor, Anwar Khan Modern Medical College and Hospital, Dhaka, Bangladesh⁶ Assistant Professor, Department of Surgery, BIRDERM and Ibrahim Medical College, Shahbagh, Dhaka, Bangladesh⁷ Honorary Medical Officer, Department of Medicine, Bangabandhu Sheikh Mujib Medical University, Shahbagh, Dhaka, Bangladesh

ABSTRACT: This retrospective study was conducted to determine the pattern of squint and its clinical characteristics in children of Cerebral Palsy (CP), attending in the ophthalmology out-patient department (OPD) of Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh. This study was conducted from January 2017 to December 2017. Study population was the diagnosed case of CP patients (children). Age range of the patients varied between 6 months to 9 years. The total number of patients was 404. Among the 404 patients having CP, squint was associated with 212 patients. Male and female patients were 128 (60.4%) and 84 (39.6%) respectively. The types of squint diagnosed were right esotropia (RET), right exotropia (RXT), left esotropia (LET) and Left exotropia (LXT). The frequency of RET, LET, RXT and LXT were found to be 94 (44.3%), 93 (43.9%), 18 (8.5%) and 7 (3.3%) respectively. The aim of this study was to assess the clinical characteristics of squint in CP children.

Keywords: *Cerebral Palsy (CP), Squint, Ophthalmological Evaluation, Out-patient Department (OPD)*

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Corresponding author

Dr. Md. Iqbal Mahmud Choudhury
Assistant Professor, Department of Plastic Surgery,
Bangabandhu Sheikh Mujib Medical University, Shahbagh, Dhaka.
Email – drimcrony@gmail.com
Contact- +8801713011283

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INTRODUCTION

Hospital data can be a valuable tool for assessing the epidemiology of diseases within the population¹. CP is considered a neurological disorder caused by a non-progressive brain injury or malformation. Current research suggests that the majority of CP cases result from abnormal brain development or brain injury prior to birth, during birth or immediately after birth². Accidents, infections and injury are known risk factors that may lead to CP. CP affects body movements, muscle control, muscle co-ordination, muscle tone, reflex, posture and balance³. It also has an impact on the fine motor skills, gross motor skills and oral motor functioning. Other conditions, such as intellectual impairment, seizures and vision or hearing impairment also commonly accompany CP⁴. Every case of CP is unique to the individual. This is due to the type of injury and timing of the injury to the developing brain. CP is non-life threatening condition. Most children with CP are expected to live well into adulthood if managed early in life⁵. Ocular abnormalities are frequent manifestations in cerebral palsy patients. Therefore, the evaluation of all CP cases emphasizes the need for full ophthalmological examination in order to detect all ocular problems⁶. Strabismus (squint) is fairly common in children who have CP. Squint is a vision threatening condition affecting the eye muscles, when the eye's relationship changes with the gaze⁷. Types of strabismus in CP are : esotropia (one eye turning inwards), exotropia (one eye turning outwards), hypertropia (one eye turning upwards), hypotropia (one eye turning downwards). Esodeviations can result from innervational, anatomical, mechanical, refractive, genetic and accommodative causes⁸. An exodeviation is divergent strabismus. The exact etiology of most exodeviations is unknown. Proposed causes include anatomical and mechanical factors within the orbit as well as abnormalities of innervations. Some families show a hereditary basis for exodeviation⁹. Treatment includes cycloplegic refraction and application of correct lens and visual stimulation by developmental therapy¹⁰. Some children may require surgical correction that will help in actual alignment of the eyes where correction is not achieved by the use of glasses.

MATERIALS AND METHODS

This retrospective study was carried out in ophthalmology out-patient department (OPD) of BSMMU which is a tertiary care multidisciplinary teaching hospital having 1500 beds. Records of all CP patients in OPD from 1st January 2017 to 31st December 2017 were meticulously reviewed and analyzed. During the study period, total 404 diagnosed case of CP patients came to the eye OPD, aging between 6months to 9 years. Most of them were referred from Paediatric Neurology OPD of BSMMU for their eye evaluation. Some were referred from

other (upazilla and district) hospitals. Diagnosis was made on the basis of clinical, radiological and laboratory findings⁷.

All the case records from the referring departments were reviewed to collect the information of the patients which include – name, age, sex, address, birth weight, mode of delivery (vaginal or, CS), H/O birth asphyxia, any trauma, milestone of development and appearance of squint at what age. Residents of the ophthalmology department collected these information by face to face interview of the parents of CP patients using structured questionnaire. Fundoscopic examination was done to study the posterior segment as well as the anterior segment.

The study was done following the declaration of Helsinki. Data analysis was performed by statistical package for social science (SPSS) version 16.

RESULTS

The patients were distributed as follows according to age category: category 1 = 06 month to 12 month old, category 2= 13 month to 36 month old, category 3= 37 month to 60 month old, category 4= 61 month to 108 month old.

Figure 1 depicts distribution of squint positive in different categories.

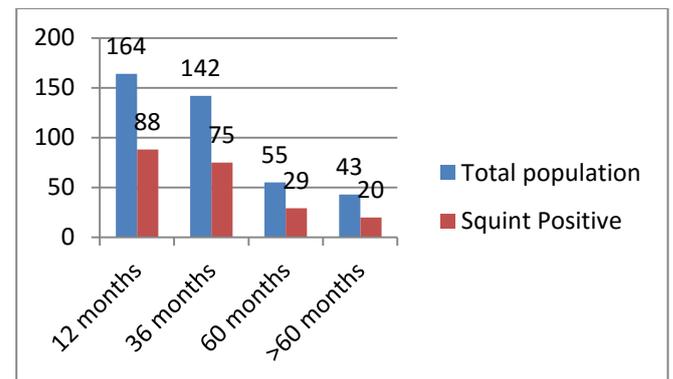


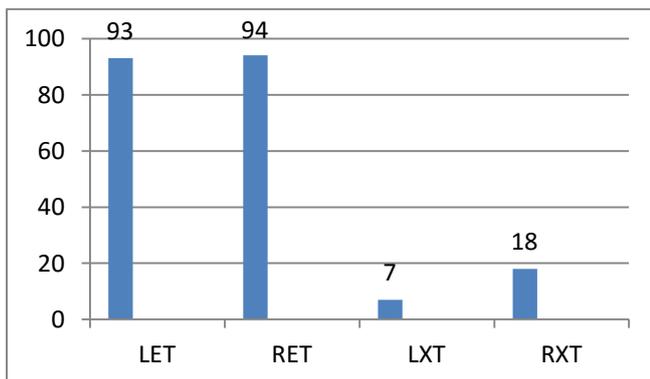
Figure1. Squint cases according to age category

Sex and distribution of squint types are shown in table1.

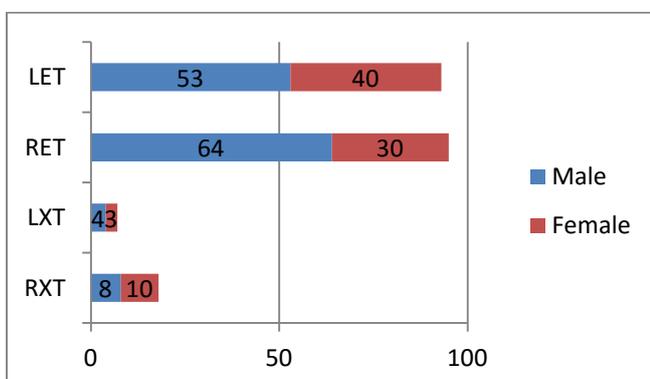
Table 1. Diagnosis- sex Cross Tabulation

Diagnosis		Sex		Total
		Male	Female	
LET	Count	53	40	93
	% within diagnosis	57.0%	43.0%	100.0%
RET	Count	63	31	94
	% within diagnosis	67.0%	33.0%	100.0%
LXT	Count	4	3	7
	% within diagnosis	57.1%	42.9%	100.0%
RXT	Count	8	10	18
	% within diagnosis	44.4%	55.6%	100.0%
No squint	Count	123	69	192
	% within diagnosis	64.1%	35.9%	100.0%
Total	Count	251	153	404
	% within diagnosis	62.1%	37.9%	100.0%

The number distribution of squint types are shown in Figure 2.

**Figure 2.** Number of squint diagnosed cases

Gender distribution among squint cases are shown in figure 3.

**Figure 3.** Gender distribution among total population of squint cases

DISCUSSION

The result revealed most of the patients were between 06 months to 12 months old.

Ocular abnormalities are frequent manifestations in CP patients. Therefore, evaluation of all CP cases emphasizes the need for a full ophthalmological examination in order to detect ocular problems and to institute necessary therapy of the abnormalities for better livelihood of these physically challenged patients¹¹.

In children with cerebral palsy the characteristics of the squint were analyzed, squint of congenital esotropia type was found to be common. Spontaneous alteration or an accommodative component of the squint was present only in a few cases. Male patients were predominant. CP is the most common physical disability in children¹². The incidence of squint in patients with CP, especially in patients with spastic diplegia, is much higher than in neurologically normal children¹³. Esotropia is the most common ocular misalignment found in this study.

Lagunu IA and Oluleye in their study, stated that, an increased risk of ocular abnormalities was associated with spastic quadriplegic type of cerebral palsy⁵, which is almost similar to the findings of our study. Katoch S, Devi A, Kulkarni P. also had similar findings in Indian patients. They further added that, 39% of CP patients have squint¹, but in our study, the percentage is 52.5%. They have also recommended complete cycloplegic examination for proper evaluation of the patients, which is as same as the recommendation of this study.

CP patients with strabismus benefit from non-surgical treatment and should be treated promptly. Strabismus surgery, if needed, should be considered in CP patients or psycho-social reasons as well as for potential successful ocular realignment and restoration of binocular vision¹⁴.

CONCLUSION

A significant number of CP children remain handicapped due to their visual impairment, so understanding the pattern of squint in CP patient and its treatment is necessary. The finding of this study could be used by the professionals to design the treatment protocol of CP patient with manifest squint and achieve the goal to raise the quality of life in the CP children. Counseling of the parents is a great factor for the long term follow-up of their children.

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