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Pattern of Ocular Morbidity among Children in the Inpatient Department of North Bengal Medical College & Hospital, Siliguri, West Bengal

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Abstract: ***Background:*** *Vision is the most important special sense in human being. Ocular morbidities in children can have a serious impact on development, education and quality of life. Early detection and treatment of ocular morbidity is a best way to improve child health and development.* ***Objectives:*** *This study was conducted with an objective to determine the pattern of ocular morbidity in children less than 15 years of age in the Inpatient Department of North Bengal Medical College.* ***Methods****: A hospital based cross-sectional study was carried out from January 2018 to December 2018 among 136 children. Data was collected by using a semi structured questionnaire after taking informed consent and analyzed.* ***Results:*** *Majority were male (61.8%) and in the age group of 6 -10 years (42.6%). The common ocular morbidities reported were ocular injury (57.4%), ocular infection (10.4%), retinoblastoma (7.4%), chronic dacryocystitis (7.4%), traumatic and congenital cataract (5.8%).* ***Conclusion:*** *Majority of ocular morbidities found were preventable and treatable. Ocular injuries are one of the causes of avoidable blindness and these can be avoided by proper indoor care & using appropriate safety measures.*

Key words: *Ocular morbidity, Inpatient department, Children, Ocular injury*

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I. Introduction

Childhood blindness is the second largest cause of blind person years, following cataract. Globally, approximately 70 million blind person years are caused by childhood blindness.[1] There are an estimated 1.4 million blind children worldwide, 73% of whom live in low-income countries.[2] Estimated National Prevalence of Childhood Blindness/Low Vision is 0.80/1000 in India.[3] In children of age range 5–15 years, the visual impairment is 6.4%, with refractive errors as the major cause.[4] Vision-2020 aims to reduce global prevalence of childhood blindness from 0.75/1,000 to 0.4/1,000 children by 2020.[5]

Considering the fact that 30% of India's blind lose their sight before the age of 20 years, the importance of early detection and treatment of ocular morbidity and visual impairment in young children is obvious.[6] Very few hospital-based studies are available on Inpatient childhood ocular morbidity.

Ours is the only tertiary health care hospital in the North Bengal providing paediatric eye health care services for self reporting patients as well as referred patients from peripheral hospitals. With this background, the present study was designed to study the pattern of ocular morbidities among children in the Inpatient Department of NBMCH, also to find out demographic factors related to ocular injury, if any.

II. Material And Methods

The present cross-sectional study was conducted in the Inpatient Department of Ophthalmology in NBMCH, West Bengal, for duration of one year from January 2018 to December 2018. Ethical clearance to conduct the study was obtained from Ethics Committee of the college. All the patients less than 15 years of age admitted in the IPD during the study period constituted our study population. Thus complete enumeration method was applied. Informed verbal consent was taken from guardians of all children admitted for inclusion in the study. A total of 136 children were included in the study. Data was collected by using a semi structured questionnaire and also from the clinical records which included following things:

1) Detailed history from guardians regarding the time of onset of symptoms, duration and progress, mode of injury if any.

2) Comprehensive ophthalmic evaluation was done. Visual acuity using different methods according to the age and intellect was checked. Snellen's chart was used for children more than 5 years.
3) Slit lamp bio-microscopy was used to examine anterior segment of eye.
4) Visual Evoke potential was used to detect macular optic nerve function.
5) USG B-Scan, CT-Scan and MRI were used to evaluate the posterior segment.

Data Analysis

Collected data was checked for consistency and entered in Microsoft-Excel 2007 data sheet and it was analyzed by IBM Statistical Package for Social Sciences (SPSS) version 20. It was organized and presented using the principles of descriptive statistics. Analysis was done with the test of significance (P value, chi-square test).

III. Result

A total of 136 children were admitted during the study period in the Ophthalmology Department of North Bengal Medical College. The age range was from 1 to 13 years. Mean age of the study participants was 7.308 ± 3.7008 years. High frequency group was 6 - 10 years which constituted 42.6%. There were 84 males (61.8%) and 52 females (38.2%). Male preponderance was noted. 28 (41.2%) of respondents' mother were illiterate and maximum 34 (50%) of participants' mother were Home maker [Table 1].

Ocular injuries (57.4%) were the most common childhood ocular morbidity during the study period, followed by ocular infection (10.4%), retinoblastoma (7.4%), chronic dacryocystitis (7.4%), congenital cataract, traumatic cataract and others constituted 5.8% [Table 2] & [Figure 1].

Ocular injuries were more common in the age group 6 – 10 years (26.5%), followed by 0 – 5 years age group (19.1%) and in 10 years and above (11.8%). However, it was found to be not significantly different ($\chi 2$= 1.248, df = 2, p-value=0.536). Similarly, ocular injuries were more among male children (39.7%) compared to female children (17.6%) and it was found to be statistically significant ($\chi 2$=4.317, df = 1, p-value=0.038), [Table 3].

Out of all ocular injuries, 36 (46.2%) were open globe injuries, 34 (43.6%) were closed globe injuries and 8 (10.2%) was due to chemical injury [Table 4]. Out of total patients with open globe injuries, 26 were caused by sharps like pen, pencil, iron particles, knife, 6 were due to stone pelting, 2 was due to trauma with wood stick, 2 was because of injury with fall from height. Among the patients with closed globe injuries, 20 were due to fire crackers and 14 were due to fist blow.

Table 1: Socio-demographic profile of study participants (n=136)

Age (In years)	Frequency	Percentage
0 - 5	46	33.8
6 – 10	58	42.6
Above 10	32	23.6
Sex		
Male	84	61.8
Female	52	32.2
Education level of mother		
Illiterate	56	41.2
literate	22	16.2
Primary	26	19.1
Middle - Secondary	26	19.1
Higher Secondary & above	6	4.4
Occupation of mother		
Home maker	68	50.0
Labourer	50	36.8
Domestic help	14	10.3
Teacher	4	2.9
Total	136	100

Table 2: Distribution of Ocular morbidities (n=136)

Ocular morbidities	Frequency	Percentage
Ocular injury	78	57.4
Congenital cataract	8	5.8
Retinoblastoma	10	7.4
Chronic dacryocystitis	10	7.4
Traumatic cataract	8	5.8
Ocular infections	14	10.4
Others*	8	5.8
Total	136	100

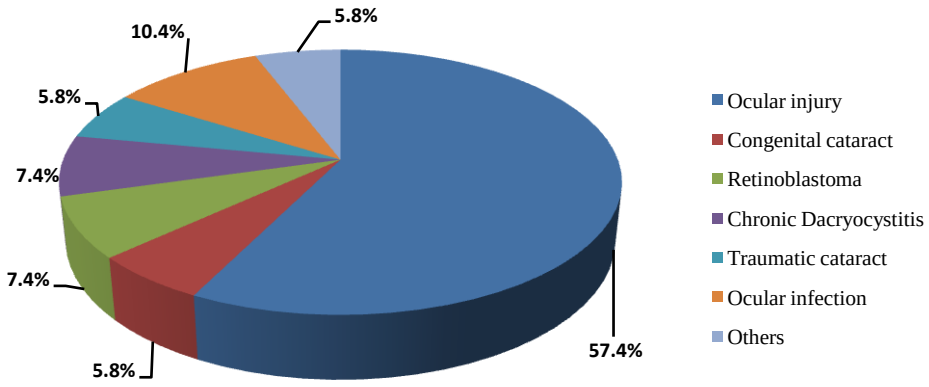
*Squint, dermoid cyst, ptosis, haemangioma

Table 3: Association between ocular injury with demographic characteristics (n=136)				
Demographic Characteristics	Ocular injury			
	Present	Absent	Total	
Age (In years)	N (%)	N (%)	N (%)	
0 - 5	26 (19.1)	20 (14.7)	46 (33.8)	$\chi 2$ =1.248
6 - 10	36 (26.5)	22 (16.2)	58 (42.7)	df =2
Above 10	16 (11.8)	16 (11.7)	32 (23.5)	P =0.536
Total	78 (57.4)	58 (42.6)	136 (100)	
Sex				
Male	54 (39.7)	30 (22.1)	84 (61.8)	$\chi 2$=4.317
Female	24 (17.7)	28 (20.5)	52 (38.2)	df =1
Total	78 (57.4)	58 (42.6)	136 (100)	P=0.038*

Figures in parenthesis shows row percentage *statistically significant difference at p-value < 0.05

Table 4: Distribution of types of Ocular injury (n=78)		
Types of Ocular injury	Frequency	Percentage
Closed globe	34	43.6
Open globe	36	46.2
Chemical	8	10.2
Total	78	100

Figure 1: Pie chart shows distribution of Ocular morbidities (n=136)



IV. Discussion

In the present study, proportion of males were more than females which is quite similar to study done by Wagle N et al at Tertiary care Hospital, Goa, where 70.7% were male and 29.3% were female.[7] This may be due to gender bias in health care seeking behaviour in the society. In our study ocular morbidities were seen more in males compared to females. The predominance of males in ocular morbidities is also seen in previous studies.[7,8] Out of all children who were admitted in the IPD of NBMCH for consultation, majority (42.6%) were in the age group 6 to 10 years. However, the study by Wagle N et al found higher frequency of consultation in the age group 10-15 years (43.9%).[7] The higher proportion in ocular morbidity among older children may be due to better detection of visual problem by them, suggesting lack of awareness among parents to detect them earlier.

In the present study, ocular injuries (57.4%) were the most common cause of ocular morbidity, which is higher than the study done by Wagle N et al in Goa, where ocular injuries accounted for 36.58% of all.[7] Open globe injury was responsible for 46.2% of childhood ocular morbidity, which is lower than the study conducted by Wagle N et al in Goa, where it accounted for 66.6% of all. These were seen commonly in males. Open globe injury was most common injury noted in present study, while in several other studies closed globe injury was most common.[9] Globally, the frequency of ocular trauma is also high.[10] Major cause of ocular trauma in children includes unsupervised play and use of dangerous objects. Occurrence in ocular trauma is significantly higher in boys in all countries.[10,11] Ocular injuries were leading cause of unilateral blindness, it was found in a community based study conducted in Botswana on childhood blindness.[12]

In our study, ocular infections remained the second most common cause (10.4%) of ocular morbidity in children, followed by Retinoblastoma (7.4%) and congenital cataract (5.8%). However, congenital cataract (34.14%) was the second most cause of ocular morbidity found in the study done by Wagle N et al .[7]

V. Conclusion

The present study suggests that ocular injuries are one of the important causes of childhood ocular morbidity, which cause avoidable blindness and these can be avoided by adopting various protective measures. In majority of ocular injuries children are not responsible for their actions. Information, education and communication (IEC) activities should be carried out to educate parents and guardians regarding the home safety measures & preparation of safe environment for their children.

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