

Clinical Profile of Pediatric Cataract Patients Attending a Tertiary Care Centre of North Karnataka

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Abstract: *Background:* Cataract is one of the leading causes of blindness in children. Cataract is responsible for about 10% blindness among children in India. Etiology of cataract is not well defined especially for childhood cataracts and epidemiological data for Indian population is not available in details. The present study is an attempt to get information on etiology and clinical profile of cataract in pediatric age group with an emphasis on preventable factors. *Aims and objectives:* To study the causes and clinical profile of Pediatric cataract among patients attending the Ophthalmology department in a tertiary care hospital of North Karnataka. *Materials and Methods:* A hospital based prospective study was carried out in a tertiary care hospital of North Karnataka. Total 100 children up to 15 years of age presenting with cataract from 1st June 2013 to 31st July 2016 were included in study. After obtaining detail history, all children underwent ophthalmic examination including indirect ophthalmoscopy and ultrasound B scans for posterior segment evaluation. Cataract is broadly classified into traumatic, heredity, cataract associated with ocular dysmorphism and systemic syndromes, maternal drug intake and maternal infections during pregnancy. The data collected was studied and analyzed. *Results:* Of the 100 children, 67 were males and 33 females, 66 were with bilateral and 34 were unilateral cataract. Trauma was found to be most common cause of pediatric cataract (36%), 29% had hereditary, 18% had ocular or systemic syndromes, 14% due to maternal drug intake during pregnancy and 3% had cataract due to maternal infection during pregnancy. Children with bilateral cataract had nystagmus at the time of presentation to hospital. *Conclusion:* Most common type of the pediatric cataract was traumatic cataract followed by hereditary, association of ocular and systemic syndromes, maternal drug intake and maternal infection during pregnancy to pediatric cataract were found. Most of them were preventable. Parents, school children and caregivers should be educated about the traumatic eye injuries and use of safety goggles should be promoted. Hereditary cataract can be avoided by genetic counseling and maternal infections and drug intake during pregnancy can be managed by proper antenatal care including immunization.

Keywords: Pediatric, hereditary, trauma, cataract

Introduction

Pediatric cataract is responsible for more than one million childhood blindness in Asia [1]. It is estimated that around 200,000 children are currently blind due to cataract. Every year 20,000 to 40,000 neonates are born with congenital and developmental cataract [2]. In developing countries like India, 7.4-15.3% of childhood blindness is due to cataract [3-5]. Prevention of visual impairment due to congenital and infantile cataract is an important component of World Health Organization's international program for the elimination of avoidable blindness by year 2020 [6]. Early detection and advanced surgical techniques have improved the prognosis of pediatric cataract in developed countries. However, pediatric cataract and aphakia are still a

major cause of childhood blindness in developing world. Information regarding etiology of pediatric cataract is few and sketchy. Trauma, hereditary, association of ocular dysmorphism and systemic syndromes, maternal drug intake and maternal infections during pregnancy are known and important causes of cataract in children [7].

Etiology of cataract in children differs much from the causes in adults and requires different strategy. The number of "blind years" lived due to blindness in childhood is much greater compared to the blindness occurring in adults. Management of cataract in children requires special knowledge, skill and equipments. Relatively little information on childhood cataract is available from

developing countries. Few studies have been carried out to know the etiology of pediatric cataracts in India [2-3, 5, 8-10]. In light of complexity in the etiology of pediatric cataracts, the present hospital-based study was performed to identify the causes and clinical profile of childhood cataract in patients with an emphasis on factors that may be preventable of proper education and training are given to parents and young children.

Material and Methods

Type of study: Hospital based Prospective analysis.

Period: From 1st June 2013 to 31st July 2016.

Site of Study: Ophthalmology Department, BLDE University Shri B M Patil Medical College, Hospital and Research Center, Bijapur, Karnataka.

Ethics: The study was conducted with permission from the medical ethics committee.

All children up to 15 years of age with cataract were included in the study. After obtaining informed consent from either parent a detailed history including family history, history of trauma, antenatal, perinatal, drug history, history of other ocular and systemic diseases and history of consanguinity was obtained. Examination of all children done (for non cooperative children examination done under anesthesia). For evaluation, pupil was dilated with combination of 1% tropicamide and 5% phenylephrine eye drops. In children less than six months of age, 0.5% tropicamide and 2.5% phelylephrine was used.

Anterior segment examination and type of cataract was determined by using slit lamp biomicroscopy. Fundus status was evaluated with indirect ophthalmoscope, + 20 diopters Volk lens. Intraocular pressure was measured using applanation tonometer. B scan ultrasonography was done in all cases. Examination of the parents of children with family history of cataract was done in slit lamp to find out any lenticular opacity of inherited type. Information of all children analyzed according to etiology of cataract, laterality, morphology of cataract. The information was compiled using Statistical Package for Social Science (SPSS) version 16.

The cases were broadly divided into traumatic, heredity, cataract associated with ocular dysmorphology and systemic syndromes, maternal drug intake and maternal infections during pregnancy.

Traumatic cataract: This group included the children with positive history of trauma.

Hereditary cataract: This group included children with positive family history. The presence of any lenticular opacity of inherited type in either parent confirmed the cataract in children as hereditary type.

Cataract associated with ocular dysmorphology and systemic syndromes: This group included children with the dysmorphology were identified as coloboma of iris/lens/choroids/optic disc, anirida, microcornea, persistent fetal vasculature and Cataract associated with syndromes.

Cataract associated with maternal drug intake: This group included cataract due to drug intake during pregnancy, especially steroids.

Cataract associated with maternal infection: This group includes cataract caused by maternal infections mainly by TORCH group. The data collected was studied and analyzed.

Results

Table-1: Distribution of children based on Gender

Gender	N	Percent
Male	67	67
Female	33	33
Total	100	100

Table-2: Distribution of children based on Age

Age(Yrs)	N	Percent
0-5	51	51
6-10	45	45
11-15	4	4
Total	100	100

Table-3: Distribution of children based on Laterality of cataract

Unilateral or Bilateral	N	Percent
Unilateral	34	34
Bilateral	66	66
Total	100	100

Of the 100 children, 67 were males and 33 females (Table-1), age ranging from 5 months to 15 years. 51 children in 0-5 years age group, 45 children in 6-10 years age group and only 4 children in 11-15 years age group (Table-2). 66 were with bilateral and 34 were unilateral cataract (Table-3). Trauma was found to be most common cause of pediatric cataract (36%), 29% had hereditary, 18% had ocular dysmorphology and systemic syndromes, 14% due to maternal drug intake during pregnancy and 3% had cataract due to maternal infection during pregnancy (Table-4 shows gender based distribution of cataract etiologies, Table-5 shows age based distribution of cataract etiologies, Table-6 shows laterality based distribution of cataract etiologies). Children with bilateral cataract had nystagmus at the time of presentation to hospital. Morphological types of the cataract: Posterior subcapsular cataract was most common morphological type, followed by Nuclear (25), Total cataract (23) and Posterior polar cataract (3) (Table-5).

Table-4: Gender based distribution of cataract etiologies

Etiology	Male	Female	Total
Trauma	29	7	36
Hereditary	17	12	29
Maternal drug intake	7	7	14
Maternal infection	2	1	3
Cataract in ocular/systemic syndrome	12	6	18

Table-5: Age based distribution of cataract etiologies

Etiology	0-5	6-10	11-15	Total
Trauma	15	19	2	36
Hereditary	16	11	2	29
Maternal drug intake	8	6	0	14
Maternal infection	3	0	0	3
Cataract in ocular/systemic syndrome	9	9	0	18

Table-6: Laterality based distribution of cataract etiologies

Etiology	B/L	U/L	Total
Trauma	7	29	36
Hereditary	28	1	29
Maternal drug intake	13	1	14
Maternal infection	2	1	3
Cataract in ocular/systemic syndrome	16	2	18

Out of 36 children with traumatic cataract, 29 (29%) children were male and 7 (7%) were female. 29 were unilateral and 7 were bilateral. Traumatic cataract was most common in 6-10 years age group (19), followed by 0-5 years age group (15) and 11-15 years age group(2). 70% of children had penetrating trauma while 30% of children had blunt trauma. Most common agent of trauma was wooden stick and more common in males than in females. Hereditary cataract: 29 (29%) of children had positive family history and in 8 children lens opacity was found in either parent after evaluation in slit lamp. Parents of 6 children had history of consanguineous marriage.

Cataract associated with ocular dysmorphology and systemic syndromes: 12 children shown ocular abnormalities (five had Persistent Fetal Vasculature, three had typical iris and choroidal coloboma and four cases had microcornea along with cataract). In Cataract associated with systemic syndrome (8), for 4 children provisional diagnosis of Down syndrome was made and other 4 had dysmorphic face and cataract, the syndrome in which could not be determined.

Maternal drug intake: 14 children had history of intake of drugs (mainly steroid) by their mother during pregnancy.

Maternal infection: In three cases history of maternal infection (mainly TORCH infection) is found. These children had cataract and other features of congenital rubella syndrome (microcephaly, valvular heart disease and delayed developmental milestones).

Discussion

Many etiological studies have been carried out both in developed and developing countries to determine the causative factor for pediatric cataract [8, 10-11]. Studies performed in various parts of world shows variation in the etiological factors affecting childhood cataract.

Most common cause of cataract in our study was traumatic followed by hereditary. Traumatic cataract was an important cause of unilateral cataract in the pediatric age group in our study. Male patients were more in the traumatic group than the female patients, and play related injuries were more common than the household injuries. This may be due to the fact that boys in our society are more exposed to the outside activities and girls are confined to their home doing household chores.

The study by Thakur et al reported only 10.7% of children with traumatic cataract, which is far below compared to our study [12]. Similarly in one study conducted in western India by Johar et al, only 11.6% of children had traumatic cataract while remaining 88.4% had non-traumatic cataract [13]. In our study, 36 percent of children had traumatic cataract which is quite a large number. This may be because of the fact that our institute is a tertiary referral centre with general anesthesia facility and the 24-hour emergency service, which is lacking in surrounding peripheral eye hospitals.

In hereditary cataract, history of consanguinity was present in 6% of patients with hereditary cataract in our study which is less than that found in the previous reported studies [14, 7]. However, this is comparable to the study done by Johar et al [13]. Association of cataract with ocular dysmorphism and systemic syndrome is also one of etiology for pediatric cataract. The relationship between the congenital cataract and

the maternal drug use has been mentioned in the literature [7]. The ingestion of corticosteroids, antibiotics, anti-diabetic drugs, others (busulfan, triparanol, chlorpromazine, dinitrophenol, etc.) has been implicated as a cataractogenic factor by a number of studies [13]. However large studies with adequate sample size will be required to verify these associations. Maternal infection was not a common cause of congenital cataract in our study as compared to the study from south India and Oman [8, 14]. It may be due to the fact that only few children presented before the age of one year.

Conclusion

One important finding of our study is traumatic cataract being the most common cause of pediatric cataract. Parents, school children and caregivers should be educated about the traumatic eye injuries and use of safety goggles should be promoted which might reduce the incidences of childhood cataract. Health personnel posted in village health posts should be trained with some simple examination tools like red reflex test for early detection and referral of children with congenital and infantile cataract. Most of children had cataract due to preventable factors.

Awareness programs for pregnant women for concerning precautions during pregnancy and also for keeping records of medications taken during pregnancy might help in future etiological studies. Hereditary cataracts and cataract associated with maternal infections during pregnancy could be avoided by genetic counseling, regular antenatal check up, immunization. Large epidemiological studies are needed to prove the possible association between cataract and the various antenatal and the perinatal factors.

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