



A PROSPECTIVE SIX MONTHS STUDY OF CONGENITAL & DEVELOPMENTAL CATARACTS

Ophthalmology

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ABSTRACT

Background: Congenital & Developmental cataracts occur due to some disturbance in the normal growth of the lens. In congenital cataract the opacity involve embryonic or foetal nucleus & in developmental cataract (occur from infancy to adolescence) opacities involve infantile or adult nucleus, deeper parts of cortex or capsule. Cataract is responsible for about 10% blindness among children in India. This study was performed to survey the causes of childhood cataracts & to identify the preventable factors¹.

Etiology: Maternal Infections like TORCH causes cataract in 50% of cases & about one third are idiopathic (33%), one third are hereditary include trisomy 21 (Down's), Stickler syndrome, Lowes syndrome & malnutrition during pregnancy¹.

Material & Methods: It is a six months observational hospital based study. Parents of patients were informed in their native language & informed consent was taken.

Results: Out of 30 children, the commonly affected age group was upto 4 years. The most common type of cataract was lamellar. Male to female ratio was 1.5 : 1. Bilateral cataract were 70% & unilateral were in 30% cases. 73.1% cases were associated with ocular defects. 20% cases had associated systemic diseases & 23.3% cases had h/o consanguinity.

Conclusion: Our study shows that majority of non-traumatic cataracts are due to potentially preventable causes. Health education to women of child bearing age & ophthalmological check up early in life can prevent visual morbidity.

KEYWORDS

Congenital cataracts, Developmental Cataract, Ocular & systemic associations.

INTRODUCTION :

The prevalence of blindness in children varies from approximately 0.3/1000 in developed countries to 1.2/1000 in developing nations². Vision 2020 : The right to sight, a global initiative to eliminate avoidable blindness, was launched by WHO on 18th February 1999. Its objective is to assist member countries in developing sustainable system which will enable them to eliminate avoidable blindness from major causes which include childhood blindness by year 2020³. The high number of blind years resulting from blindness during childhood is one of the reasons why the control of childhood blindness is a priority of the WHO & International Association for Prevention of Blindness (IAPB)⁴. Cataract in pediatric age group create a major ophthalmological, socioeconomic & national problem. Around (0.4%), in 250 newborns have some form of congenital cataract⁵. These cataracts often deprive its victim of the vision in the crucial period of life. Hence successful visual rehabilitation is critical. Since no such study was done in our region, we analysed the congenital & developmental cataracts with a view to study its correlation with ocular & systemic conditions. We also studied the various morphological forms.

AIMS & OBJECTIVES :

1. To study the relation of various etiological factors with congenital & developmental cataract.
2. To study various morphological types of congenital cataracts.
3. To evaluate relationship of various ocular anomalies & associated systemic diseases with the cataracts.

MATERIAL & METHODS :

It is an observational & hospital based cohort study.
(Study : January 2014 to June 2014)

Setting & study population.

All children less than 18 years of age with congenital or developmental cataract attending RIO OPD during study period were included. Approval of Ethical Committee of IGIMS Medical College & Hospital, Patna was taken. 30 Children were included in our study, of which youngest child was of 4 months & eldest was 16 years of age.

Inclusion criteria for case selection :

1. Patients of either sex upto 18 years of age with unilateral/ bilateral cataract diagnosed clinically, ophthalmologically & with slit lamp.
2. Congenital cataracts included are present since birth &

developmental cataract are present after birth.

3. Patients with associated ocular or systemic abnormalities.
4. Consanguinity was considered.
- I grade in case of parent's marriage amongst blood relation
- II grade in marriage between cousins
- III grade in marriage between second cousins.
5. Low birth weight (LBW) is birth wt. <2500 gm.
6. Systemic abnormalities like mental retardation, Down's, Marfan's or neurofibromatosis were considered only after pediatric evaluation.
7. Vision was tested by Snellen's chart (older children >5 years), animal charts in verbal, following light in children <1 year.

Exclusion criteria :

1. Secondary cataracts like traumatic, post uveitis, post ROP were excluded.

Procedure :

Patients satisfying all inclusion & exclusion criterion were enrolled for the study. Those included in the study were required to answer the questionnaire by parent or legal guardian after taking informed consent. Blood tests & fundus examinations were done.

Statistical Analysis :

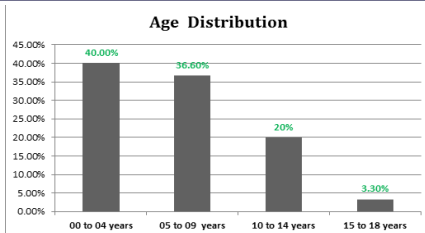
The collected data was worked upon Excel spread sheet. 2 tests were applied to draw the probability to find the significance of parameters. Probability $P < 0.05$ were termed as significant while probabilities $P > 0.05$ were termed as non-significant. Probability $P < 0.005$ was termed as highly significant. Calculations were done by using Software Epi Info (SPSS 2002).

RESULTS :

Out of 30 patients, 12 cases were below 4 years of age, followed by 11 cases between 4–9 years of age. Youngest patient was 4 months of age whereas eldest was 16 years of age.

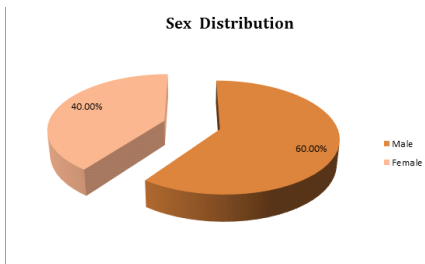
Table-1 : Age Distribution

Age (Years)	No. of cases	Percentage
00 – 04	12	40.0 %
05 – 09	11	36.6 %
10 – 14	06	20.0 %
15 – 18	01	03.3 %

**Table- 2 : Sex Distribution**

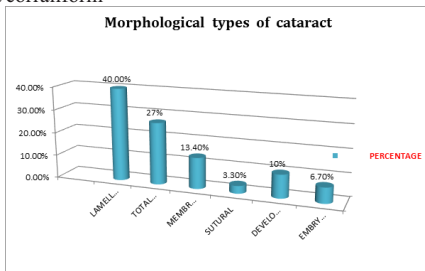
Sex	No . of cases	Percentage
Male	18	60.00 %
Female	12	40.00 %

The incidence of congenital cataracts & developmental cataracts is more in males (60%) than in females (40%).

**Table-3 : Morphological types of cataract**

Type	No. of cases	Percentage
Lamellar	12	40.0 %
Total congenital	08	26.7 %
Membranous	04	13.4 %
Sutural	01	3.3 %
Developmental		
- Punctate	02	6.7 %
- Coralliform	01	3.3 %
Embryonic nuclear	02	6.7 %
Total	30	100.0 %

The commonest presentation was of lamellar cataract & least was sutural & coralliform

**Table-4 : Relation of cataract with ocular anomalies**

Type	Male	Female	Total
Non-associated	17	10	27
Associated	01	02	03
Total	18	12	30

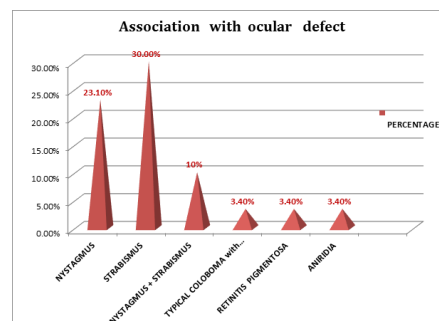
While applying statistical analysis Odds ratio 3.4, Relative risk 1.89. Though 10% cases were shown to be associated with ocular anomalies, it was not shown to be statistically significant.

Table-5 : Association with ocular defects

Ocular Defect	Male	Femal	Total
Nystagmus	04	03	07 (23.1%)
Strabismus	05	04	09 (30%)
Nystagmus + Strabismus	02	01	03 (10%)
Typical coloboma with microphthalmos	01	-	01 (3.4%)
Retinitis Pigmentosa	-	01	01 (3.4%)
Aniridia	-	01	01 (3.4%)
Total	12	10	22 (73%)

The above table shows that strabismus is the commonest associated ocular defect, followed by nystagmus. The case of aniridia was part of WAGR syndrome (Wilm's tumour aniridia, genitourinary abnormality,

mental retardation). The case of R.P. was associated with hypothyroidism.

**Table-6 : Relation of cataract with systemic disease**

Systemic disease	Male	Female	Total
Cong. heart disease with PDA	01	-	01
CRS	01	-	01
MR	01	-	01
Hypothyroidism	-	01	01
Rickets with convulsions	01	-	01
WAGR	-	01	01
Total	04	02	06

Table-7: Relation of cataract with consanguinity

	Male	Female	Total
Heredity	04	03	07
Consanguinity	05	02	07
Total	09	05	14

DISCUSSION :

We carried out an analysis of 30 cases over a period of 6 months. This, being a hospital based study incidence of congenital & developmental cataract & sample size could not be calculated.

Age & sex distribution :

The youngest patient was a 4 months old whereas eldest was 16 years old. The age of presentation was found to be maximum at birth. 60% & 30% presented between birth to 3 years of age. We had 60% male children as against 40% female patients. The M : F = 1.3 : 1. Rahi et al (2000)⁶, median age of detection of cataract was 8 weeks with 70% detected by the age of one year. Narendran R et al (2007)⁷, 21% presented before 3 months of age & 68% before one year. Martinez et al (2007)⁸, 75% diagnosed within one month of clinical manifestation. As far as sex incidence is concerned, present study tends to match findings with those of Singh et al & Narendran K. Laterality in the present study, out of 30 cases, 21 (70%) were bilateral cataracts of which males accounted for 61.9% & female 31.1%. Our findings tend to coincide with those of Rahi et al. Narendran K (2007) series suggests that bilateral cataracts 4 times more common as compared to unilateral. Martinez et al (2007) found 50% bilateral & 44% unilateral cataract.

Associated ocular anomalies :

In our study, the commonest ocular defect was found to be strabismus (30%) followed by nystagmus (23.1%) Jain et al (1983) found strabismus & nystagmus to be most common associated ocular anomaly standing at 28.94% & 15.79% respectively. Rahi et al (2000), associated ocular anomalies were more common in unilateral than bilateral cases. Microphthalmos being most commonly associated.

Systemic Association :

In our study a total of 20% of cases were associated with various systemic disorders including 26% of cases associated with some delayed milestones with 6% having frank mental retardation. Jain et al (1983)⁹, mental retardation found to be most commonly associated systemic abnormally, 9% associated with metabolic disorders & 5% with various syndromes. Rahi J S (2000)⁶, various systemic associations highlighted in study. Down's syndrome, prenatal rubella infection, cerebral palsy & metabolic disorders.

Bhatti et al (2003)¹¹, 22% of cases were associated with some or other syndrome & 20% with major birth defects.

CONCLUSION

1. The most commonly clinical congenital cataract was Lamellar cataract (40%)

2. The most commonly affected age group was upto 4 years (40 %)
3. The male : female ratio is 1.5 :1
4. Bilateral Congenital cataracts were 70% & unilateral were 30% , whereas 73.1% cases were associated with ocular defects & 26.9% were not associated with any ocular defects.
5. 20% cases were having systemic diseases associated with congenital cataracts.
6. 23.3% cases were associated with heredity or consanguinity.

In our study, it was noticed that most of our congenital (non traumatic) cases are due to potentially preventable diseases .Ophthalmological check up as at the earliest & awareness amongst paediatricians for early reference is also necessary to prevent visual morbidity & reduce the socio-economical burden on the family & society at large.

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