

Epidemiological Analysis of Congenital Cataract in a Sample of Iraqi Patients

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Abstract : **Aim** and epidemiological Cross sectional study to determine the most common causes of congenital cataract in a sample of Iraqi patients referred to the main tertiary eye center in Iraq. Setting: Ibn Al-Haithem Teaching eye Hospital /Baghdad-Iraq.

Patients and Methods : A total of (57) patients (108 eyes); were included in this study. Any child with congenital cataract referred to the hospital or discovered during routine outpatient examination was included.

Examination of the patients was done by operative microscope after light general anesthesia especially for uncooperative patients. Parents of the patients were interviewed using a standardized questionnaire. Serological tests for intrauterine infections done and Biochemical tests as reducing substances in urine and blood glucose were also performed.

Results: (32) 56.14% males and (25) 43.85% females. (51) 89.4% bilateral and (6) 10.5% unilateral. Consanguinity of the parents found in (33)57.89% of the patient. Their ages were ranging from 25 days to 12 years. Regarding the causes, 29 (50.87%) were idiopathic, 24 (42.1%) inherited and 4 (7.01%) intrauterine infection. Only 3 patients had other systemic abnormalities and the main presenting symptom was white pupil.

Conclusion : Congenital cataract mainly presented in the first year of life, most cases were bilateral with leukocoria as the main presenting symptom. Most cases were idiopathic.

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Introduction

Prevention of visual impairment due to congenital and infantile cataract is an important component of the World Health Organization's international program for elimination of avoidable blindness by 2020 [1].

Congenital cataract refers to lens opacity present at birth. Lens opacities that develop during the first year of life are called infantile cataract and because some lens opacities escape detection at birth and are noted only on later examination, these terms are used interchangeably by many physicians [2]. Congenital cataract is responsible for nearly 10% of all visual loss in children worldwide [3-5], and it occurs in about 3 in 10 000 live births [6].

Cataracts can occur as an isolated defect, and may be sporadic or familial in any of the Mendelian

patterns. Gene loci on chromosomes 1, 2, and 16 have all been implicated in the autosomal-dominant variety. It can also be autosomal recessive or associated with chromosomal translocations [7].

Congenital and infantile cataracts may be unilateral or bilateral. They can be classified by morphology, presumed or defined genetic etiology, presence of specific metabolic disorders, or associated ocular anomalies or systemic disorders [2].

In general, approximately one-third of congenital cataracts are component of a more extensive syndrome or disease, one-third occur as an isolated inherited trait, and one-third from undetermined causes [2, 4].

This study conducted to determine the etiology of congenital cataract among patients referred to the main tertiary eye center in Iraq.

Patients and Methods

This study was done over a period of one year from January to December 2012 and 57 patients (108 eyes) included who were referred to the main tertiary eye center in Iraq (Ibn Al-Haitham Teaching Eye Hospital) as cases of congenital cataract.

Diagnoses of congenital cataract were confirmed by examination with slit lamp or operative microscope after light general anesthesia for uncooperative patients who were difficult to be examined by slit lamp. Fundus examination was done or B-scan when it was difficult in cases of dense cataract.

Patients parents were interviewed using a standardized questionnaire which include information regarding patient's age, age at presentation, residency, consanguinity of the parents, family history of congenital cataract, presenting symptom, laterality of cataract, any associated abnormalities.

The patients sent for serological tests for intrauterine infections by ELISA (at the Central public health laboratory) for the patient and the mother and other tests done as reducing substances in urine, serum calcium and phosphate, blood sugar and thyroid function test. Pediatric consultation done to exclude any systemic diseases associated with congenital cataract.

The entire data entry and analysis were performed using a computer software program of the Statistical Package for the Social Sciences (SPSS) version 15.0(18). Standard approaches were used including frequencies, descriptive summaries in relation to patients group of ages and gender and non parametric chi-square test(χ^2) and kolmogorov-smirnov test were used to elicit the differences between variables. A P-value of $<0.05\%$ was been considered to indicate the level of significance throughout the study.

Exclusion criteria:

1. Patients with other ocular anomalies.
2. Patients with history of ocular trauma.
3. Patients with history of uveitis, keratitis or any other cause of secondary cataract.
4. Patients with systemic diseases that could be associated with congenital cataract (as Down syndrome, Lowe syndrome, Galagtosemia or others)

Results

We had 32 males and 25 females and according to the history, 33(57.89%) of the patients had positive history of parent's consanguinity which was statistically significant (p -value=0.000). Only 3 patients had systemic diseases which is not associated with the cataract (1 cerebral palsy, 1 hydrocephaly and 1 cardiac anomaly).

Questionnaire and checklist.

1. Name:
2. Date of birth:
3. Age at presentation:
4. Residency:
5. Consanguinity of parents:
6. Family history of congenital cataract:
7. Unilateral or bilateral:
8. Presenting symptom: a) White pupil. b) Squint. C) Poor fixation. d) Nystagmus. e) Others.
9. Associated abnormalities:
10. Investigations: a. TORCH (to patient and mother).
b. reducing substances in urine.
c. fasting blood sugar.
d. thyroid function test.
e. serum calcium and phosphate.
11. Fundus examination:(to confirm the diagnosis)
12. B-scan:
13. Pediatrician consultation:

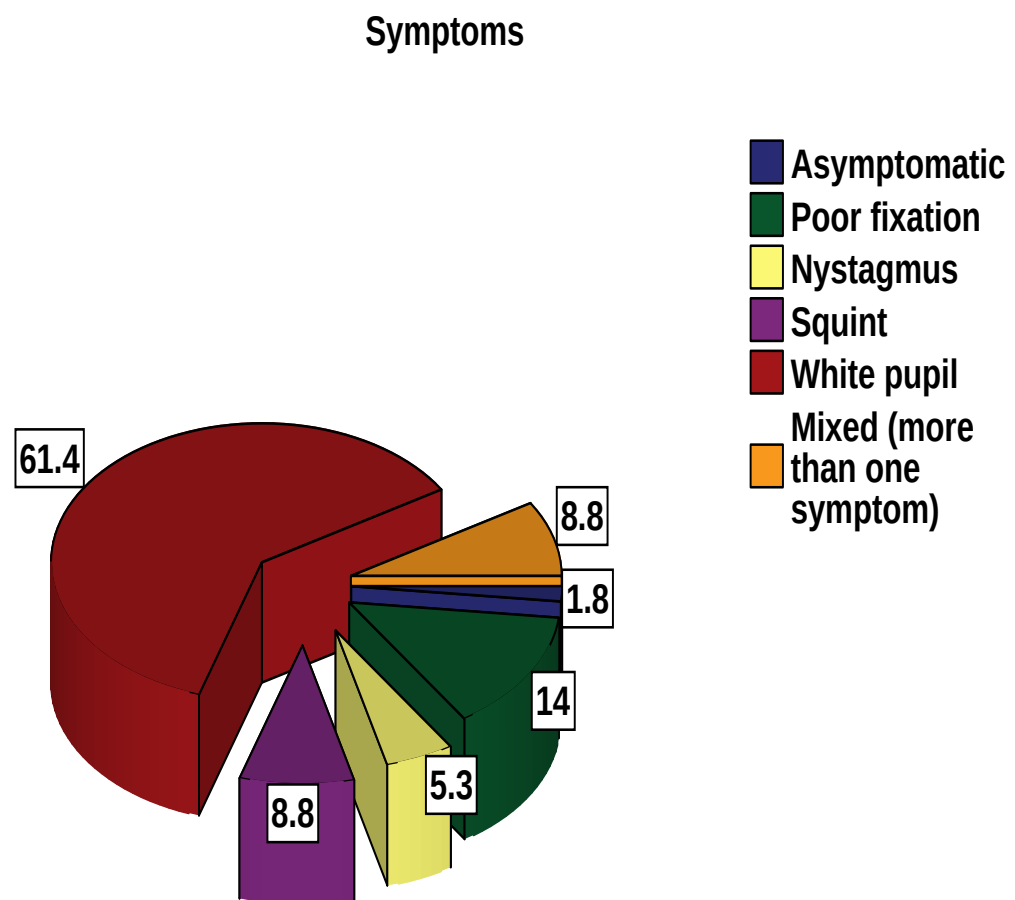
Patients' age Groups *	Patients' gender				Total	
	Male		Female			
	No.	%	No.	%	No.	%
0-1 years	18	56.3	19	76.0	37	64.9
>1-2 years	5	15.6	2	8.0	7	12.3
>2-3 years	3	9.4	-	-	3	5.3
>3-4 years	4	12.5	1	4.0	5	8.8
>4-5 years	1	3.1	-	-	1	1.8
>5-6 years	1	3.1	-	-	1	1.8
>6 years	-	-	3	12.0	3	5.3
Total	32	100	25	100	57	100

Table 1. Distribution of patients according to the age groups and gender at presentation

*: χ^2 :122.667, df: 6, P: 0.000

As we see in table (1), 64.9% presented within the 1st year of life which was statistically significant with p-value=0.000. 15 cases (20%) of the patients presented within the first three months of life.

Graph 1. Distribution of patients according to the presenting symptoms



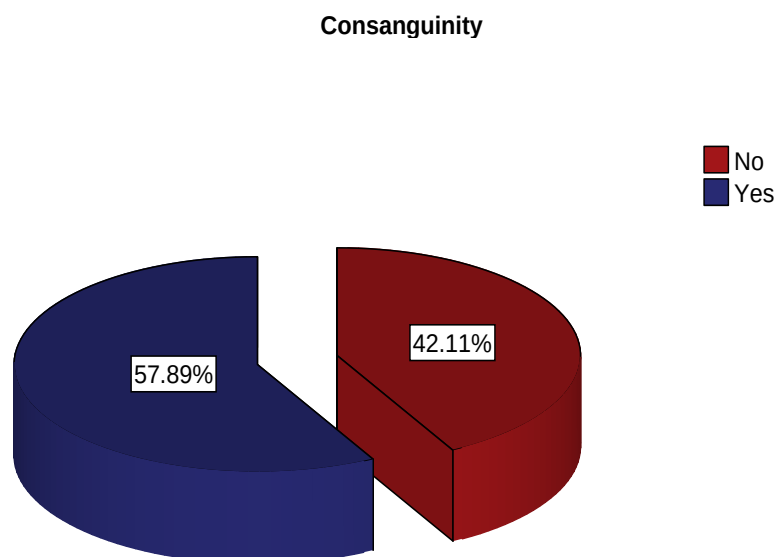
* The obtained value of test (Z Kolmogorov - Smirnov was 2.892) allowed confirming this differences (P: 0.000)

	No. of patients	%
Leukocoria(White Pupil)	35	61.4
Squint	5	8.8%
Nystagmus	3	5.3%
Poor fixation	8	14%
Asymptomatic	1	1.8%
Mixed	5	8.8%
Total	57	

(Table 2) Distribution of patients according to the presentation

5 patients presented with more than one presenting symptom as white pupil with nystasgmus (4) and white pupil with poor fixation (1) and all of them were from rural areas.

Graph 2. Distribution of patients according to patients' consanguinity*.



* The obtained value of test (**Z** Kolmogorov - Smirnov was 2.869) allowed confirming this differences (**P**: 0.000)

Type of Cataract	Etiology of Cataract								Total	
	Inherited		Idiopathic		Intrauterine infection		Metabolic			
	N0.	%	N0.	%	N0.	%	N0.	%	N0.	%
Bilateral	24	100	23	79.3	4	100	-	-	51	89.5
Unilateral	-	-	6	20.7	-	-	-	-	6	10.5
Total	24	100	29	100	4	100	-	-	57	100

(Table 3). The relation between the etiology of congenital cataract and its laterality

χ^2 :6.475, df: 2, P: 0.039

(Table 3) shows that the most frequent etiology seen was idiopathic and it is statistically significant with p-value=0.039.

Discussion

Congenital cataract is one of the treatable causes of blindness in children .unfortunately there are no previous studies in our country regarding the incidence of congenital cataract.

In our study we included 57 patients(108 eyes)of isolated congenital cataract(all had no other associated ocular anomalies),more than half of the cases(37/57) 64.9% presented before the first year of life, this percentage considered comparable to other studies as that done in Spain by Perucho MS et al. [8] and two studies in UK by Rahi JS et al in 2000 and 2001 [9, 10], but in our study only (15 cases) 20% detected in the first three months (which is the critical period for treatment) and it is very low in comparison to other studies as in Spain [8], in which 57% detected within the first 3 months of life also in UK [9] 50% detected within the first 10 weeks of life.

Among these results we didn't find any cases that had been diagnosed at birth in the maternity unit that means failure of early detection in our country while in Spain [8] 17% detected at birth. So early detection by screening programs for congenital cataract in the maternity units and primary health care centers (during immunization schedules), by examining the pupillary red reflex using a direct ophthalmoscope is important to decrease the burden on the baby's future visual acuity [11].

Males were seen to be more affected than females, which is similar to results seen in UK [9] and this result could be due to the small sample size.

Bilateral cases were (51) 89.4% and this percentage is higher than that seen in other studies as in UK at 2000 [10] which was bilateral in 61%

and in 2001[9] it was 65% while in Spain [8] it was bilateral in 56%, and a third study in Denmark by Haargaard B. et al. found that 64 % of cases were bilateral [12] the cause could be that unilateral cataract is less readily detected than bilateral disease.

Leukocoria was the main presenting symptom seen (70%) which is comparable to the results seen In Spain [8], 5 of the patients presented with mixed symptoms and all of them were from rural areas. On the other hand only one case was asymptomatic (blue dot) and he presented to the hospital because of the strong family history.

Cases of idiopathic etiology were 50.87% while in Spain they were 68% [8] and in India 73% [13] (all unilateral cases and 45% of the bilateral cases).In Denmark by two thirds of all cases were bilateral (87% of unilateral and 50% of bilateral cases).

42% of the cases considered as inherited according to the history only because it needs chromosomal analysis which is not readily available in our country.

Only 4 cases (7%) were due to intrauterine infections, all the investigations were done at the same laboratory by ELISA and all of them had TORCH positive(toxoplasmosis ,cytomegalovirus) but no one of the patients had fundus lesion.

None of the patients presented with metabolic disease that can cause congenital cataract because of the highly selective exclusion criteria.

Epidemiological studies of congenital anomalies which may be individually uncommon are challenging but are an important first step toward reducing their considerable combined impact on health of children [14]

Conclusion

Congenital cataract mainly presented in the first year of life, most cases were bilateral with

leukocoria as the main presenting symptom. Most cases were idiopathic.

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