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# Unilateral Congenital Cataracts: Clinical And Therapeutic Aspects

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***Abstract :***
***Purpose :*** *To describe the clinical and therapeutic features of congenital cataracts.*
***Introduction :***
*Congenital cataracts are the cause of about 60% of leukocoria in children. A congenital cataract occurs in about 1/3000 births, without sex or side predominance. The management of unilateral congenital cataracts must be urgent because of the deep amblyopia that will develop rapidly.*
***Material and method :***
*We carried out an observational, retrospective and descriptive study in the ophthalmology department of the 20 August 1953 hospital in Casablanca over a period of 5 years. We collected sixty-four (64) children. Epidemiological, clinical, paraclinical and therapeutic parameters were studied.*
***Results :***
*A total of sixty-four (64) children were operated on for unilateral congenital cataracts during the study period. The mean age of onset of symptoms was 6.9 months, the mean age at the time of surgery was 33.7 months, only 35.9% of cases were operated on before the age of one year.*
*Clinically, leucocoria was the most common warning sign at 54.7%, followed by strabismus at 35.9%. The cataract was obturating in all cases at the time of surgery. The most representative clinical forms were posterior polar cataract, composite partial cataract in 25% of cases each.*
*Therapeutically, anterior phacophagy was performed in all children. Posterior capsulotomy with anterior vitrectomy was performed in 95.3% of cases to prevent secondary cataracts, especially in non-cooperating young children. Postoperative complications were dominated by inflammation, in 25% of cases.*
***Conclusion :***
*Unilateral congenital cataracts represent a challenge involving three main actors: ophthalmologist, orthoptist and parents in order to guarantee optimal visual recovery.*
***Keywords :*** *Congenital Cataract-Leukocoria-Amblyopia*

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## I. Introduction :

Congenital cataracts are the cause of about 60% of leukocoras in children [1]. A congenital cataract occurs in about 1/3000 births, with no gender or side predominance [2,3]. It is often associated with other ocular malformations (microphthalmia, hypertrophic hyperplasia of the vitreous). The management of unilateral congenital cataracts must be urgent because of the profound amblyopia that will develop rapidly [4]. The objective of our study is to describe the clinical and therapeutic features of congenital cataracts.

## II. Materials And Method :

We carried out an observational, retrospective and descriptive study in the ophthalmology department of the 20 August 1953 hospital in Casablanca from October 2019 to October 2024, in a period of 5 years.

A total of sixty-four (64) children aged 0 to 15 years were collected. Cases of unilateral congenital cataracts associated with persistent hyperplasic primary vitreous (PHPV) were excluded from the study.

The following parameters were studied: age of onset of symptoms, age of surgery, presence of strabismus, visual behavior, visual acuity, corneal diameter, intraocular pressure, keratometry and axial length before surgery, density and type of cataracts.

The power of the implant calculated according to the SRKII formula with an emmetropic subcorrection according to age. The correction factor was applied by decreasing the calculated theoretical power by 40% between 0 and 3 months, 35% between 3 months and 6 months, 30% between 6 months and 1 year, and then by 5% every six months, until 3 1/2 years when this residual correction factor of 5% must be kept for up to 5 years [5-8].

The operative technique consisted of phacopahagia and anterior vitrectomy in all patients with implantation in all children except four children who had microphthalmia (axial length less than 16 mm).

The treatment of amblyopia was carried out in the following way: Before 6 to 8 months: the occlusion is 80% of the waking time of the non-operated eye, for a short period (20% of the waking time) with both eyes open ; From 6 to 8 months: a permanent and alternating or asymmetrical total occlusion (at no time are both eyes open at the same time) is prescribed. ; After 1 year: prescribed daily, the occlusion is highly asymmetrical
The statistical analysis was done using IBM SPSS 24 software.

## III. Results :

Epidemiologically, a total of sixty-four (64) children were operated on for unilateral congenital cataracts during the study period. The mean age of onset of symptoms was 6.9 months, the mean age at the time of surgery was 33.7 months, only 35.9% of cases were operated on before the age of one year. There was no gender predominance, with girls and boys accounting for 51.6% and 48.4% respectively.

Clinically, leucocoria was the most common warning sign at 54.7%, followed by strabismus at 35.9%. Visual acuity was not quantified in 49 children (76.6%) because it was not applicable in children under 2 years of age and difficult to quantify in non-cooperative children. When it was 23.4%, it was less than or equal to 3/10. A strabismus was present in almost half of the cases with esotropia in 28.1% and exotropia in 20.3% and nystagmus was present in 15.6% of cases.

The cataract was obturating (Figure 1 and 2) in all cases at the time of surgery, it was a posterior polar cataract (25%), partial composite (25%) and total cataract (20.3%) in 1/4 of the cases each (Table I).

**Figure 1:** Posterior subcapsular cataract **Figure 2:** White total cataract

**Table I: Clinical types of congenital cataract**

| Clinical type of cataract | Effective | Percentage (%) |
|---|---|---|
| Posterior polar | 16 | 25.0 |
| Composite Partial | 16 | 25.0 |
| Total | 13 | 20.3 |
| Nuclear | 9 | 14.1 |
| Posterior subcapsular | 4 | 6.3 |
| Zonular | 2 | 3.1 |
| Posterior Lenticone | 2 | 3.1 |
| Coralliform | 1 | 1.6 |
| Anterior polar | 1 | 1.6 |
| Total | 64 | 100 |

After a general examination by the paediatrician and the examination of siblings, congenital cataracts were classified as idiopathic in 93.8% of cases and due to embryofetopathy in 6.3% of cases.

The following preoperative parameters were evaluated, including mean keratometry, corneal diameter, intraocular pressure, axial length, and implant strength after age-appropriate correction (Table II). Microphthalmia was present in 4 children (6.3%). Intraocular pressure was normal in all children before surgery. A drug preparation for surgery was made of a topical steroid combined with non steroidal anti-inflammatory topical and a topicamide cocktail with atropine.

**Table II: Preoperative parameters**

| Parameters<br>Mean (Standard Deviation) | Before 2 years | 2-5 years | 5-10 years | 10-15 years old |
|---|---|---|---|---|
| Mean Keratometry (Diopter) | 43.35 (1.48) | 43.98 (1.93) | 42.82 (1.06) | 42 (1.41) |
| Corneal Diameter (mm) | 10.69 (0.90) | 11.50 (0.43) | 11.22 (0.61) | 12.16 (0.23) |
| Intraocular pressure (mmHg) | 6.24 (0.89) | 6.88 (1.56) | 9.18 (1.11) | 11 (0.81) |
| Axial Length (mm) | 19.24 (1.84) | 22.06 (1.39) | 23.64 (1.93) | 24.84 (2.42) |
| Selected power (Diopter) | 22.68 (3.77) | 21.59 (4.01) | 19 (4.18) | 15 (5.10) |
| Under correction (%) | 29.26 (4.87) | 10.94 (4.04) | 5 (0) | - |

After an incision measuring an average of 2.75 mm, anterior phacophagy was performed in all children. Posterior capsulotomy (figure 3) with anterior vitrectomy was performed in 95.3% of cases to prevent secondary cataracts, especially in young children who did not cooperate with YAG laser capsulotomy. Implantation was done in the posterior chamber in all cases, implantation was done in 93.8% with implantation in the capsular sac in more than half of the cases. Suturing of the main incision was done in all children with removal after 6 to 8 weeks.

Postoperative medical treatment was proposed, containing oral and local antibiotic, local corticosteroid, atropine dilation in all children.

After a mean follow-up of 31.5 months, extremes 3 and 60, optical correction of residual ametropia and treatment of amblyopia, we obtained the following functional and refractive results: functionally, visual acuity was not quantified before the age of 2 years, it was on average 5/10 in children aged 2 to 5 years, 4/10 in children aged 5 to 10 years and only 2/10 in children aged 10 to 15 years (this poor visual acuity could be explained by the delay in treatment in this age group and a poor response to amblyopia treatment. On the refractive level, there was residual hyperopia between 0.86 and 2 diopters and a small residual myopia between 2 and 5 years of age. Astigmatism averaged -1 diopter in all age groups (Table III).

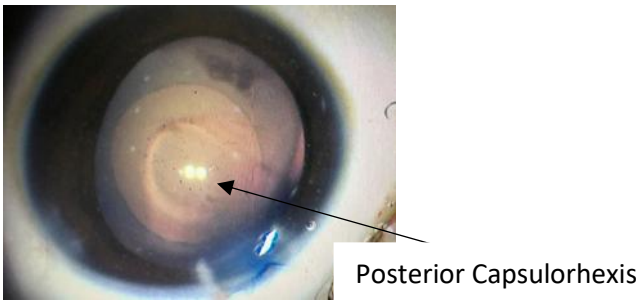


**Figure 3 : Posterior Capsulorhexis**

**Table III : Distribution of refractive results by age group**

| Parameters<br>Mean (Standard Deviation) | Before 2 years | 2-5 years | 5-10 years | 10-15 years old |
|---|---|---|---|---|
| Visual acuity | Not applicable | 0.5 | 0.4 | 0.2 |
| Sphere | 0.86 (2.80) | -0.10 (1.54) | 0.1 (1.41) | 2 (1.24) |
| Cylinder | -1.05 (0.56) | -1.14 (0.69) | -1.15 (0.54) | -1.08 (0.66) |
| Spherical equivalent | 1.10 (3.19) | -0.03 (2.10) | 0.31 (1.96) | 2.54 (1.56) |

Postoperative complications (Table IV) were marked by inflammation, one case of hyphema, one case of intraocular implant dislocation, secondary cataract in 3 cases and one case of secondary glaucoma in a child operated on at 2 months of age and implanted with a normal axial length for his age of 17.36 (n=17) and a normal corneal diameter of 10 mm. The child underwent filtering surgery and then filtering surgery.

**Table IV : Post-operative complications**

| Post-operative complications | Effective | Percentage (%) |
|---|---|---|
| Inflammation | 16 | 25.0 |
| Endophthalmitis | 0 | |
| Hyphema | 1 | 1.6 |
| Intraocular lens dislocation | 1 | 1.6 |
| Secondary glaucoma | 1 | 1.6 |
| Secondary cataract | 3 | 4.7 |
| Retinal detachment | - | |

## IV. Discussion :

Cataracts are the first cause of preventable blindness in children [4]. Congenital cataracts are the cause of about 60% of leukocoria in children [1]. A congenital cataract occurs in about 1/3000 births [2,3]. The mean age of children at the time of surgery was 33.7 months. For Mandal S. and *al.* [9], in a study of 30 patients aged 9 months to 14 years, the mean age at the time of surgery was 55 ± 51 months.

Congenital cataracts present several anatomical and clinical forms. In our series, posterior polar, partial composite and total cataracts were predominant (25%, 25% and 20.3%). Our result is similar to that of Park Y and *al.* for whom the most common type of cataract was posterior subcapsular cataract (65.2%), four of which had posterior lenticonus, followed by nuclear/lamellar cataract (28.9%) and anterior subcapsular (5.8%) [10]. For Tătaru C.I. and *al.* in a series of 103 eyes from 83 patients, total cataract was noted in 28.16% of cases followed by lamellar cataract in 16.5% of cases [11]. There are only a few studies on unilateral congenital cataracts, several mixed series on unilateral and bilateral congenital cataracts. In our series, the etiology of congenital cataracts was mainly of idiopathic origin, in 93.8% of cases.

Unilateral congenital cataracts are a particularity of congenital cataracts because they constitute a therapeutic emergency due to the risk of amblyopia [4]. In our series, there is a delay between the appearance of the first signs and treatment. In the literature, several studies underline the value of early management in order to ensure a favorable visual prognosis [13-14]. The gold standard surgical technique in children is phacophagy with posterior capsulorhexis and anterior vitrectomy [15]. In our study, capsulorhexis and anterior vitrectomy were performed in children under 10 years of age.

Several studies report post-operative complications, including inflammation, ocular hypertension, secondary cataracts, secondary glaucoma, and intraocular implant dislocation [16-22]. The choice of implant is essential for an optimal refractive result while taking into account the growth of the eyeball and refractive variations [23].

The treatment of amblyopia is essential in the management of unilateral congenital cataracts**.** Congenital cataracts are a cause of deprivation amblyopia [24] and surgery is only one step in a long course in the rehabilitation of the child's visual function [25].

## V. Conclusion :

Unilateral congenital cataracts are a therapeutic emergency. This is a challenge involving 3 main actors: ophthalmologist, orthoptist and parents. The delay in consultation is the consequence of a lack of awareness among parents. The refractive results are determined by the choice of the right implant strength for the child's age. Visual recovery depends on compliance with amblyopia treatment, its precocity and its effectiveness.

**Conflict of interest:** No conflict of interest is declared.

## References:


[1] S, Qureshi W, Ali A. Leukocoria In Children. J Pediatr Ophthalomo Strabismus 2008;45:179–80
[2] Lagrèze W. The Management Of Cataract In Childhood. Klin Monbl Augenheilkd 2009; 226:15–21
[3] Francis PJ, Berry V, Bhattacharya SS, Moore AR. The Genetics Of Childhood Cataract. J Med Genet 2000;37:481–8
[4] Wiesel TN, Hubel DH. Comparison Of The Effect Of Unilateral And Bilateral Eye Closure On Cortical Unit Responses In Kittens. J Neurophysiol 1965;28:1029–40
[5] Roche O, Beby F, Orssaud C, Dupont Monod S, Dufier JL. Cataracte Congénitale : Revue Générale. J Fr Ophtalmol 2006;29:443–55.
[6] Mcclatchey SK. Intraocular Lens Calculator For Childhood Cataract. J Refract Surg 1998;24:1125–9.
[7] Dahan E, Drusedau MU. Choice Of Lens And Dioptric Power In Pediatric Pseudophakia. J Cataract Refract Surg 1997;23(Suppl. 1):618–23.
[8] Hoffer KJ. The Hoffer Q Formula: A Comparison Of Theoretic And Regres Sion Formulas. J Cataract Refract Surg 1993;19:700–12.
[9] Mandal S, Maharana PK, Nagpal R, Joshi S, Kaur M, Sinha R, Et Al. Cataract Surgery Outcomes In Pediatric Patients With Systemic Comorbidities. Indian J Ophthalmol 2023;71:125-37.
[10] Park Y, Yum HR, Shin SY, Park SH (2022) Ocular Biometric Changes Following Unilateral Cataract Surgery In Children. Plos ONE 17(8): E0272369. Https://Doi.Org/10.1371/Journal. Pone.0272369

[11] Tătaru CI., Tătaru CP., Costache A., Boruga O., Zemba M., Ciuluvică RC., Sima G. Congenital Cataract – Clinical And Morphological Aspects. Rom J Morphol Embryol 2020, 61(1):105–112.
[12] Foster A, Gilbert C, Rahi J. Epidemiology Of Cataract In Childhood: A Global Perspective. J Cataract Refract Surg. 1997; 23(Suppl 1):601-4.
[13] Ye HH, Deng DM, Qian YY, Lin Z, Chen WR. Long-Term Visual Outcome Of Dense Bilateral Congenital Cataract. Chin Med J. Sep 5 2007; 120(17):1494-7.
[14] Lesueur LC, Arné JL, Chapotot EC, Et Al. Visual Outcome After Pediatric Cataract Surgery: Is Age A Major Factor. Br J Ophthalmol. 1998; 82(9):1022-5.
[15] Forbes BJ, Guo S. Update On The Surgical Managment Of Pediatric Cataract. J Pediatr Ophthalmol Strabismus. 2006; 43(3):143-5.
[16] Ledoux D, Trivedi RH, Wilson E, Payne FJ. Peadiatric Cataract Extraction With Intraocular Lens Implantation: Visual Acuity Outcom When Measured At Age Four Years And Older. J AAPOS. 2007; 11(3):218-24.
[17] Vasavada A, Chauhan H. Intaocular Lens Implantation In Infants With Congenital Cataracts. J Cataract Refrac Surg. 1994; 20(6):592-8.
[18] Gimbel HV, Ferensowicz M, Raanan M, Deluca M. Implantation In Children. J Pediatric Ophthalmol Srabismus. 1993; 30(2):69- 79.
[19] Dahan E, Salmenson BD. Pseudophakia In Children: Precautions, Technique, And Feasibility. J Cataract Refract Surg. 1990; 16(1):75-82.
[20] Plager DA, Bothun ED, Freedman SF, Wilson ME, Lambert SR. Complications At 10 Years Of Follow-Up In The Infant Aphakia Treatment Study. Ophthalmology. 2020;127(11):1581–3. [Pubmed: 32437863]
[21] Louison S, Blanc J, Pallot C, Alassane S, Praudel A, Bron AM, Et Al. Visual Outcomes And Complications Of Congenital Cataract Surgery. Journal Francais D'ophtalmologie. 2019;42:368–74.
[22] Lambert SR, Lynn MJ, Hartmann EE, Dubois L, Drews-Botsch C, Freedman SF, Et Al. Comparison Of Contact Lens And Intraocular Lens Correction Of Monocular Aphakia During Infancy: A Randomized Clinical Trial Of HOTV Optotype Acuity At Age 4.5 Years And Clinical Findings At Age 5 Years. JAMA Ophthalmol. 2014;132:676–82. [Pubmed: 24604348]
[23] Mcclatchey SK, Hofmeister EM.The Optics Of Aphakic And Pseudophakic Eyes In Childhood. Surv Ophtalmol. 2010; 55(2):174-82.
[24] Mansouri B, Stacy RC, Kruger J, Cestari DM. Deprivation Amblyopia And Congenital Hereditary Cataract. Seminars In Ophthalmol. 2013;28:321–6.
[25] Lloyd IC, Dowler JG, Kriss A, Speedwell L, Thompson DA, Russell-Eggitt I, Et Al. Modulation Of Amblyopia Therapy Following Early Surgery For Unilateral Congenital Cataracts. The Br J Ophthalmol. 1995;79:802–6. [Pubmed: 7488596].