

Research Article

Epidemiological and Clinical Profiles of Childhood Cataract Seen at the Yaounde Central Hospital

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Abstract

Purpose: To describe the epidemiological and clinical profiles of childhood cataract seen at the Yaounde Central Hospital.

Patients and methods: A retrospective descriptive study was carried out over a 7-year period (January 2013 to December 2019). Institutional ethical committee waived the need for individual parental consent based on the retrospective nature of the study. Data collected from records were made anonymous and confidentiality was respected. Medical records of children aged 0 to 15 years, diagnosed of cataract were included. Variables studied include age, sex, presenting complaint, signs, laterality, cataract morphology, ocular abnormalities, associated systemic disease, presumed aetiology, acceptance of surgery and primary implantation.

Results: During the study period, 56 children with cataracts were seen, amongst whom, 28 girls and 28 boys. Acquired cataract represented 37.5% of case. They were all unilateral and 90.5% were post-traumatic. Congenital cataract represented 62.5% of cases. They were bilateral in 67.7% of cases and were diagnosed at a mean age of 6.3 ± 3.9 years. Congenital cataract was an isolated finding in 94% of cases. Seven cases underwent surgery (5 bilateral congen-

ital and 2 unilateral post-traumatic). The median age at the time of surgery was 4 years.

Conclusion: Late presentation is common, and the rate of surgery-uptake is low. We recommend the putting in place of measures to train personnel for both delivery room and routine baby check screening. The creation of subsidized reference ophthalmic centres with trained personnel and equipment could also help reduce cost and increase surgery uptake.

Keywords: Acquired cataract; Childhood cataract; Congenital cataract

Introduction

About 500 000 children become blind worldwide each year, but in developing countries up to 60% are thought to die within a year of becoming blind [1]. Those who survive childhood have a huge burden of disability in terms of “blind years”, affecting their opportunities for education and employment. Controlling blindness in children is therefore a priority of VISION 2020: The Right to Sight. The causes of blindness in children can be classified either according to the anatomical site most affected or according to the underlying cause, based on the time of onset of the condition [2]. In Cameroon, a hospital-based study on childhood blindness reported the lens to be the first anatomical site [3]; and a study carried out in a school for the blind, reported the lens to be the third site, following corneal and optic nerve lesions [4]. Vitamin A supplementation, measles immunization, and improved nutrition are reducing corneal blindness in many low-income countries and cataract is becoming a more important cause of childhood blindness [5,6]. Other African studies have shown lens-related causes (mainly cataracts) to be the commonest causes of childhood blindness [7,8]. Childhood cataract blindness presents an enormous problem of human morbidity, economic loss, and social burden.

Cataract in children may be congenital or acquired, unilateral or bilateral. Over 90% of cataracts are congenital or developmental [9]. The global prevalence of childhood cataract varies from 0.32 to 22.9/10 000 children, with a median of 1.03 per 10 000 [9]. Despite those low-income countries present a slightly lower prevalence compared to developed countries, cataracts in children in low-income countries present with diagnostic and management challenges. Diagnostic challenges include systems for increasing public awareness, early case detection and referral; while management challenges include availability of infrastructure, equipment and skilled personnel with expertise in assessment, surgical management and long-term follow-up of cases to prevent and/or treat amblyopia. Good outcome depend on early surgery, correction of aphakia and management of amblyopia [10]. Knowledge on the epidemiology of childhood cataract in our setting will enable better planning of paediatric ophthalmology services. The aim of our study was to describe the epidemiological and clinical profiles of cataract in children seen at the Yaounde Central Hospital.

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Patients and methods

This was a retrospective descriptive study carried out over a 7-year period (January 2013 to December 2019) at the Yaounde Central Hospital. Institutional ethical committee waived the need for individual parental consent based on the retrospective nature of the study. Data collected from records were made anonymous and confidentiality was respected. Sampling was consecutive and the medical records of children aged 0 to 15 years, were included. Variables studied include age, sex, presenting complaint, signs, laterality, cataract morphology, ocular abnormalities, associated systemic disease, presumed aetiology, acceptance of surgery and primary implantation.

Patients underwent ophthalmic examination that comprised measuring uncorrected distant visual acuity in verbal children, evaluation visual behaviours in preverbal children, oculomotor examination, slit lamp examination and fundoscopy. When the fundus was not visible, a B-scan was done to exclude retinoblastoma and to ensure the retina was not detached. A paediatric consult was sought in those with congenital cataract in order to exclude an associated systemic disease. The presumed aetiology was trauma for those with a history of ocular trauma and uveitis for those with signs of chronic intraocular inflammation. The rest were considered congenital. Surgery consisted of manual lens aspiration with or without implantation.

Results

During the study period, 56 children aged 0 to 15 years with cataract were seen, amongst whom, 28 (50%) girls and 28 (50%) boys. The mean age was 7.7 ± 4.1 years. The most frequent presenting complaint was decreased vision (41.1%), followed by leukocoria (33.9%). Table 1 shows the presenting complaints.

	n	%
Decreased vision	23	41.1
Leukocoria	19	33.9
Ocular misalignment	3	5.4
Others	11	19.6
Total	56	100

Table 1: Distribution of presenting complaints.

The most common sign on clinical examination was leukocoria (n=23; 41.1%). Nystagmus was present in 8 cases (14.3%) and strabismus in 3 cases (5.4%). Other associated signs are presented in table 2. Thirty-one cases had unilateral cataract (55.4%) and 25 had bilateral cataract (44.6%). Amongst those with unilateral cataract, the cataract was found in the right eye of 16 patients (51.6%) and in the left eye of 15 patients (48.4%). The morphology of the cataract was described in 46 records. The most frequent cataract morphologies were total cataract (n=25; 54.3%); cortical (n=12; 26.1%) and nuclear (n=5; 10.9%), as shown in table 3. The morphology was the same in both eyes of bilateral cases.

Cataract was congenital in 35 cases (62.5%) and acquired in 21 cases (37.5%) (Table 4). All cases of acquired cataracts were unilateral. Congenital cataract was unilateral in 32.3% of cases (n=11/34) and bilateral in 67.7% of cases. It was diagnosed at a mean age of 6.3 ± 3.9 years (range: 1 month - 13 years), and 60% of cases were females. Nystagmus was present in 22.8% of cases (n=8). According

to the clinical presentation, congenital cataract was an isolated finding in 94% of cases. It was associated with ocular abnormalities in 3% of cases and with systemic abnormalities in 3% of cases. The aetiology of congenital cataract was known in 6% of cases (1 case of Down's syndrome and one case of cytomegalovirus infection).

	n	%
Posterior synechia	5	8.9
Retinal detachment	2	3.6
Microphthalmos	1	1.8
Corneal scar	1	1.8
Iris atrophy	1	1.8
Pupillary sphincter tear	1	1.8

Table 2: Other associated signs.

	n	%
Total cataract	25	54.3
Cortical	12	26.1
Nuclear	5	10.9
Posterior polar	3	6.5
Anterior subcapsular	1	2.2
Total	56	100

Table 3: Distribution of cataract morphology.

		n	%
Congenital		35	62.5
Acquired	Trauma	19	33.9
	Uveitis	2	3.6
Total		56	100

Table 4: Aetiology of cataracts.

Seven cases underwent surgery (5 bilateral congenital cases and 2 unilateral post-traumatic cases). Surgeries were done under general anaesthesia. Due to age, preoperative visual acuity measurement was possible only in the 2 children with post post-traumatic cataract (hand movement and light perception). The median age at the time of surgery was 4 years. The technique was manual aspiration and posterior chamber polymethacrylate (PMMA) Intraocular Lens (IOL) in those aged at least 5 years. There were no per-operative complications. Intense post-operative intraocular inflammation was present in all cases and managed with oral and topical steroids. Post-operative visual acuity in the post traumatic cases improved to 0.3 and 1.0. Amongst the younger patients (those with congenital cataract), vision could not be measured quantitatively but there was however a noticeable improvement in visual behaviour observed both in the clinic and at home (Table 5).

Discussion

Cataracts are one of the most treatable causes of visual impairment and blindness in children. Visual outcomes in congenital forms are largely dependent on the timing of surgery [11-14], which in turn, depends on early diagnosis. In this study, the mean age at diagnosis

of congenital forms was 6.3 years. Many developing countries are faced with late presentation. Boni et al., [15] in Côte d'Ivoire reported that 39.1% of cases of congenital cataract presented after the age of one. This could be explained by the fact that neonatal eye screening is not a routine in our health systems. Late presentation could also result from late recognition. Lack of knowledge among parents and non-specialist health caregivers, as well as limited accessibility to specialist centres could be other reasons. Despite these, a study in France reported an average age at diagnosis of 19.7 months [16]. Another study in Ireland found that 63% were diagnosed following presentation with parental/carer concerns about visual function and no case of congenital cataract was diagnosed by neonatal screening examination [17]. Screening neonates for the red reflex and referring suspected cases to ophthalmic centres is an efficient method for early diagnosis [18,19]. Magnusson et al., after comparing different screening procedures, found that screening in the maternity ward is preferable to well-baby clinic screening and to no screening at all, since it leads to early detection [20].

Median age at surgery		4 years
Sex ratio (M:F)		2.5:1
Laterality	Bilateral	71.4%
	Unilateral	28.6%
Aetiology	Congenital	71.4%
	Traumatic	28.6%
Morphology	Nuclear	57.1%
	Total	28.6%
	Cortical	14.3%
Primary implantation		28.6%

Table 5: Characteristics of cases that had surgery (n=7).

No difference in prevalence of childhood cataract by gender was observed in the study. A similar finding was reported in a systematic review on childhood cataract by Sheeladevi et al., [9]. Females were more represented in the subgroup of congenital cataract in this study. Gender however does not appear to influence congenital cataract as some authors have reported a male predominance [15,21], while others reported a female predominance [16].

The presenting complaint for most cases in this study was decreased vision. This is because the children were older and could notice a change in visual acuity either as the cataract progressed with time or comparatively to the better eye. Leukocoria and strabismus are major symptoms that lead to the diagnosis of cataracts in children [15,16]. Leukocoria and strabismus were the second and third most frequent symptom in our study.

Nystagmus is a sign of visual loss from visual deprivation and consequently is more common with late presentation. It was present in 22.8% of cases with congenital cataract in this study, a finding similar to that of Boni et al., [15], who reported 21%. Although the absence of preoperative nystagmus is a good predictor of a good visual outcome [13], some patients with nystagmus can still have a favourable outcome when surgery is done as early as possible and amblyopia treatment follows [22,23]. Cockrett et al., [23] therefore advised that the presence of nystagmus should not affect the decision to perform timely surgery in congenital cataract.

Unilateral cataract accounted for slightly over half of the cases. This is because all our cases of acquired cataracts were unilateral. Lim et al., [24] reported a similar finding in a study on the characteristics of paediatric cataracts in Toronto. Congenital cataract is more often bilateral. In our subgroup of congenital cataract, bilateral cases represented 67.7%, close to the 66% reported by Rahi et al., in the United Kingdom [25]. Higher proportions of 71% and 82% have been reported respectively by Fakhoury et al., [25] and Boni et al., [15].

Association to ocular and systemic abnormalities in congenital cataract was 3% each in this study. Fakhoury et al., [16] reported associations of 27% and 22% respectively. This difference could be due to procedures and techniques used to investigate these associations. Not all the parents could afford investigations requested either by the ophthalmologist or by the paediatrician. We could be underestimating the magnitude of such associations which have an impact on the management of congenital cataract.

Diagnosis of any underlying cause is important to ensure effective and prompt management of multisystem complications, to facilitate accurate genetic counselling and to streamline multidisciplinary management. In our setting where most patients are poor and lack health insurance, getting a comprehensive workup to determine the aetiology of congenital cataract is a huge challenge. In this study, we were able to have a clear aetiology for 2 cases: one case of Down's syndrome after a paediatric consult and one case of CMV infection. Next generation sequencing which was shown to improve the diagnosis of congenital cataract in research setting [26], has been introduced into clinical care, with a positive diagnosis rate of 66.7% [27]. The right diagnosis will aid in providing better genetic counselling. A clinical geneticist is not available in our setting to help in the diagnosis and provide adequate counselling.

Early management has a huge impact on the lives of the children, their families, communities, as well as on the socioeconomic status of the country [28]. In developing countries, late presentation as well as long delays between diagnosis and surgery usually leads to late management [15]. Poverty and ignorance could result to this delay. Families need to pay for the surgery fee and buy consumables. Others do not adhere to the advice of urgent surgery despite counselling, as sometimes, traditional beliefs may override medical advice. Some parents believe their children are too young for surgery, especially intraocular surgery. The mean age at surgery from other developing countries are ≥ 4 years [15,29].

Surgical technique and technique for IOL implantation in paediatric cataract surgery have advanced. The accepted technique is lens aspiration, primary posterior capsulectomy and anterior vitrectomy. Optical correction includes aphakic glasses, contact lenses and primary IOL implantation [30]. Despite controversy, IOLs are implanted in infants with increasing frequency. Primary implantation is said to reduce the incidence of open-angle glaucoma among eyes rendered primarily pseudophakic compared with those that remained aphakic after cataract surgery [31,32]. In our setting, due to the lack of a vitrector, of appropriate IOL diameters and the severe intraocular inflammation which follows surgery, we opted for secondary implantation in younger children. We do Nd:Yag laser posterior capsulotomy when they develop posterior capsule opacification.

This study is limited by its retrospective nature. Data on the mode of detection and timing of ophthalmic assessment following detection

were not available. Post-operative amblyopia management and outcome were not available for all cases.

Conclusion

Childhood cataract showed no gender preference. Acquired forms were unilateral and mostly of post traumatic origin. Congenital cataract was more frequent and usually bilateral. Late presentation was common and surgery uptake was low. We recommend the putting in place of measures to train personnel for both delivery room and routine baby check screening, in order to increase awareness and early referrals which may in turn lead to earlier surgery. The creation of subsidized reference ophthalmic centres could also help reduce cost and increase surgery uptake.

Conflict of Interest

The authors declare no conflict of interest.

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