Pediatric Anesthesia and Critical Care Journal 2024;12(2):64-68
doi:10.14587/paccj.2024.10

PACCJ

Demographic and clinical characteristics of pediatric traumatic cataract transition

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Keypoints

The purpose of the study is to evaluate the demographic and clinical profile of patients with the diagnosis of pediatric traumatic cataract treated at the university clinic, and the results of treatment.

Abstract

Introduction

The purpose of the study is to evaluate the demographic and clinical profile of patients with the diagnosis of pediatric traumatic cataract treated at the university clinic, and the results of treatment.

Material and Methods

The study was conducted with retrospective observation at the ophthalmology clinic of the Azerbaijan Medical University, the data of 24 patients were examined. Information was collected on patients' age, gender, place of residence (rural, urban), nature of trauma, time elapsed after trauma, visual acuity, causes of visual impairment, tissues damaged by trauma. Cataracts were removed and an intraocular lens was placed in all patients. The results of the treatment were evaluated according to the complications that occurred during and after the operation, visual acuity.

Results

All of the children's traumatic cataract cases in our observation were associated with one or more comorbidities. The association of crystal only with corneal winter, sclera and anterior chamber damage is 16.7±7.6, respectively; 8.3±5.6; It was found in 12.5±6.7% of patients. The presence of third pathology (sclera, anterior chamber) against the background of joint damage of the cornea and crystal is 8.3±5.6, respectively; It was found in 12.5±6.7% of patients. Against the background of damage to the crystal, cornea and anterior chamber, the association of the fourth pathology (macular, vitreous body) was recorded in 16.7±7.6 and 12.5±6.7% of patients, respectively.

Conclusion

Summarizing the clinical and demographic characteristics of patients treated with pediatric traumatic cataract at the university clinic, the following conclusions can be drawn: the majority of patients are boys (95.8±4.1%) and are in the age range of 5-18 years, the specific weight of rural residents (75%) and urban residents 3 times more compared to; formation of traumatic cataract in children in most cases (50±10.2%) is observed within 3-6 months, the main reason for referral is corneal clouding and a sharp decrease in visual acuity; Damage to several tissues is typical for pediatric traumatic cataract, although all patients have comorbidity, damage to four tissues in several variants (16.7±7.6% cornea + anterior chamber and macula; 12.5±6.7% crystalline, corneal winter +anterior chamber+bone-like body; 8.3±5.6% crystal+sclera+retina; 4.2±4.1% crystal+cornea+retina) is observed; treatment of children's traumatic cataract is observed with complications in 20.8±8.3% cases.

Keywords

traumatic cataract, demographic and clinical characteristics, comorbidity

Introduction

Children's traumatic cataracts are more dangerous due to early impairment of visual function. The results of

scientific research on this problem have been published in Malaysia [1], Pakistan [2], India [3], China [4], France [5] and other countries. It has been shown that carelessness in the use of superglue at home [6] blunt trauma to the eyeball [7] is a common cause of pediatric traumatic cataracts.

The results of the treatment of pediatric traumatic cataract vary primarily depending on the demographic and clinical characteristics of the patients [8-10]. In most cases, children's traumatic cataract is related to the socio-economic status of the country, availability of medical care, adequate organization of treatment can slow down the development of traumatic cataract. Azerbaijan is a developing country with an accessible medical care network. Pediatric traumatic cataracts have not been studied here.

The purpose of the study: to evaluate the demographic and clinical profile of patients with the diagnosis of pediatric traumatic cataract treated at the university clinic, and the results of treatment.

Material and Methods

The study was conducted at the ophthalmology clinic of the Azerbaijan Medical University with retrospective observation, the data of 24 patients were examined. Patients under the age of 18 were included in the observation. Information was collected on patients' age, gender, place of residence (rural, urban), nature of trauma, time elapsed after trauma, visual acuity, causes of visual impairment, tissues damaged by trauma. Cataracts were removed and an intraocular lens was placed in all patients. The results of the treatment were evaluated according to the complications that occurred during and after the operation, visual acuity.

The statistical processing of the collected data was carried out using the statistical methods of quality indicators [11]. The number of complications per 100 patients in groups according to demographic and clinical profile (its mean error), visual acuity <0.1 after surgery; The number of patients with 0.1–0.4 and ≥0.5 was calculated. According to these indicators, the statistical significance of the difference between the groups was assessed by Pearson's correlation criterion ($\chi 2$). $p \leq 0.05$ was accepted as the critical limit of statistical significance.

Results

16.7 of the patients under our observation; 41.7 and 41.6% were aged 5-9, 10-14, 15-18, respectively, most of them were boys (95.8±4.1%).

The most important variant of comorbid cataracts due to their social importance is cataracts of traumatic origin observed in children. All of the children's traumatic cataract cases in our observation were associated with one or more comorbidities (table).

The association of crystal only with corneal winter, sclera and anterior chamber damage is 16.7±7.6, respectively; 8.3±5.6; It was found in 12.5±6.7% of patients. The presence of third pathology (sclera, anterior chamber) against the background of joint damage of the cornea and crystal is 8.3±5.6, respectively; It was found in 12.5±6.7% of patients.

Against the background of damage to the crystal, cornea and anterior chamber, the association of the fourth pathology (macular, vitreous body) was recorded in 16.7±7.6 and 12.5±6.7% of patients, respectively.

Two variants of the combination of four pathologies (crystal + sclera + macula + retina and crystal + cornea + retina + damage to the optic nerve) were observed in a relatively small number of patients (8.3±5.6 and 4.2±4.1%). has been done.

The most important demographic characteristic of these patients is that most of them are boys (95.8±4.1%), 10-14 (41.7±10.1%) and 15-18 (41.7±10.6%) years. Three out of four of the injuries fell to the share of the villagers (75.0±8.8%).

In most cases, the traumatism of the patients referred to the penetrating injury of the eye (66.7±9.6%), and a few (33.3±9.6%) to blunt trauma.

The specific weights of patients who have been admitted to the University Clinic for up to 3 months, 3-6, 6 and more months since the trauma occurred were 25.0±8.8, respectively; It was 50.0±10.2 and 25.0±8.8% (Table 1)

symptoms	variants of signs	% of Total	Complication rate, per 100 patients	The result of treatment Classification according to visual acuity		
				0.5 and more	0,1-0,4	<0,1
age, years	5 – 9	16,7±7,6	25,0±21,6	25,0±21,6	50,0±25,0	25,0±21,6
	10 – 14	41,7±10,1	20,0±12,6	50,0±1,8	40,0±15,4	10,0±9,4
	15 – 18	41,6±10,1	20,0±12,6	60,0±15,4	40,0±15,4	—
gender	Boy	95,8±4,1	21,7±8,6	47,8±10,4	39,1±10,1	13,1±7,0
	Girl	4,2±4,1	—	100,0		
Place of residence	Village	75,0±8,8	22,2±9,8	44,4±11,7	38,8±11,4	16,7±8,7
	City	25,0±8,8	16,7±15,2	66,7±19,2	33,3±19,2	—
Type of trauma	blunt	33,3±9,6	25,0±15,3	75,0±15,3	25,0±15,3	
	Traumatic	66,7±9,6	18,8±9,7	37,5±12,1	43,8±12,4	18,7±9,7
Time since trauma, months	3 və az	25,0±8,8	16,7±15,2	66,7±19,2	33,3±19,2	—
	3 – 6	50,0±10,2	16,7±10,7	41,7±14,2	50,0±14,4	8,3±7,9
	6 və çox	25,0±8,8	33,3±19,2	50,0±20,4	16,7±1,2	33,3±19,2
Visual acuity	0,3 və çox	8,3±5,6				
	0,1 – 0,3	16,7±7,6				
	0.1 and more	75,0±8,8	27,7±10,5			
Cause of visual impairment	Clouding of the cornea	83,3±7,6	20,0±8,9	50,0±11,1	50,0±11,1	
	Amblyopia	8,3±5,6	50,0±35,3	100,0		
	Secondary glaucoma	4,2±4,1			100,0	
	Optic neuropathy	4,2±4,1				100,0
Damaged tissues	Crystal + cornea	16,7±7,6		75,0±21,6	25,0±21,6	
	Crystal + sclera	8,3±5,6		100,0		
	Crystal+ front camera	12,5±6,7		100,0		
	Crystal + cornea + sclera	8,3±,6		50,0±35,3	50,0±35,3	
	Crystal + cornea + front camera	12,5±6,7	33,3±27,2	33,3±27,2	66,7±27,2	
	Crystal + cornea + anterior chamber + macula	16,7±7,6	25,0±21,6	25,0±21,6	75,0±21,6	
	Crystal + cornea + front camera + vitreous body	12,5±6,7	33,3±27,2	33,3±27,2	33,3±27,2	33,3±27,2
	Crystal+sclera+ macula+retina	8,3±5,6	50,0±35,3		50,0±35,3	50,0±35,3
	Crystal+cornea+retina+ optic nerve	4,2±4,1	100,0			100,0
Total			20,8±8,3	50,0±10,2	37,5±9,8	12,5±6,7

Tabe 1. Demographic and clinical characteristics of patients with pediatric traumatic cataract, predictors of complications during treatment

Preliminary examination of patients showed that 75.0±8.8% of them had severe visual impairment in the affected eye (visual acuity 0.1 or less), 16.7±7.6% had visual acuity 0.1-0. .3, and in 8.3±5.6% it was more than 0.3. As the cause of eye dysfunction, 83.3±7.6% had corneal clouding, 8.3±5.6% had amblyopia, 4.2±4.1% had secondary glaucoma, and 4.2±4.1% had optic neuropathy is indicated.

20.8±8.3% of the operated patients had one or another complication, 50.0±10.2% had visual acuity of 0.5 or more. The risk of complications varied in the range of 0-100%. A relatively high risk of complications was recorded in patients with the following characteristics:

– cataract operation against the background of joint damage of the lens, cornea, retina and optic nerve (100% probability of complications);

– amblyopia, cataract surgery against the background of damage to the crystal, sclera, macula and retina (50±35.3% probability of complications).

The frequency of complications of surgical treatment of patients with other symptoms (demographic characteristics) and against the background of the delay in the referral time varied in the range of 16.7±15.2 - 33.3±27.2%.

The probability of recovery of visual function (0.5 and more) varied in the range of 25.0±21.6 - 100%, depending on the clinical characteristics of the patients.

Information about the clinical features of pediatric traumatic cataract in the literature is limited. In this aspect [1], the observation made in Malaysia shows that 17.24% of children were 1-6 years old, 37.93% were 7-12 and 44.83% were 13-17 years old. There were no children under the age of 5 in our observation. In Malaysia, the specific gravity of girls was 17.24%, and in our observation it was 4.2%. The proportion of those with visual acuity less than 0.1 at the time of admission to the hospital was 68.97% in Malaysia, and 75.0% in our observation. In Malaysia, 72.4% of patients, and in our observation, 75%, were hospitalized within 6 months from the onset of trauma.

The specific weight of corneal opacity as a cause of visual impairment is also different (52.6% in Malaysia, 83.3% in our observation). A large difference is observed due to the role of amblyopia (26.3 and 8.3%, respectively).

The comorbidity characteristics of the patients were also different. But there is a similarity in terms of comorbidity options. More different clinical features are given in the literature cited by the author. In a number of sources, the specific gravity of the liver among patients is 50-60%, and the age range is narrower (3.6-9 years). It was also observed that the specific gravity of patients with corneal clouding was in the range of 0-100%, and the specific gravity of those with amblyopia was 11.2-100%.

Thus, the important features for pediatric traumatic cataracts differ between individual observations. This may also depend on the nature of the trauma and the timely and high-quality provision of first aid.

Discussion

The results we obtained differ primarily with the demographic characteristics of the patients. The proportion of boys was 95.8±4.1% in our observation, while it was 72.8% in China [4]. In our observation, there were no cataracts in children under 5 years of age. In China, the majority of childhood cataracts were recorded in the age range of 2-8 years [4].

The distribution of patients according to age and gender in our observation is very close to the corresponding results obtained in Malaysia [1] (specific weight of boys 95.8 and 82.8%% age 14 and over 41.6 and 44.8%). Our results on the mechanism and causes of acquired trauma are also consistent with the corresponding results in Malaysia.

The results of treatment of pediatric traumatic cataract depend on age. A positive result (visual acuity ≥0.5) in our observation was 60.0±15.4% in 15-18-year-olds, 50.0±15.8% in 10-14-year-olds, 25.0±21.6% in 5-9-year-olds. received in % cases. According to Chinese scientists, the positive result (visual acuity ≥0.3) was 33.9% in those aged ≤5 years, 53.4% in those aged 60-10 years, and 52.6% in those aged 11-14 years.

Thus, the demographic and clinical profile of children with traumatic cataract and the results of treatment in Azerbaijan are characterized by different and similar aspects.

Conclusion

Summarizing the clinical and demographic characteristics of patients treated with pediatric traumatic cataract at the university clinic, the following conclusions can be drawn:

1. The majority of patients are boys (95.8±4.1%) and are in the age range of 5-18 years, the proportion of rural residents (75%) is 3 times higher than that of urban residents;
2. Traumatic cataract formation in children in most cases (50±10.2%) is observed within 3-6 months, the main reason for referral is corneal clouding and a sharp decrease in visual acuity;
3. Damage to several tissues is typical for pediatric traumatic cataract, although all patients have comorbidity, damage to four tissues in several variants (16.7±7.6% cornea + anterior chamber and macula; 12.5±6.7% lens, cornea winter+anterior chamber+eye-like body; 8.3±5.6% crystal+sclera+retina; 4.2±4.1% crystal+cornea+retina) is observed.
4. The treatment of children's traumatic cataract is observed with complications in 20.8±8.3% of cases. The risk of complications depends on the clinical and demographic characteristics of the patients.

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