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Study of Prevalence and Etiology of Cataract in Children in Rural area of Gujarat

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Abstract

Background and Aim: Cataract is the leading cause of visual impairment and blindness worldwide, accounting for more than 50% of the blindness cases. The objective of the present study was to determine the cause, presentations, types and over all social impact of cataract on children. The three main types of age-related cataracts are nuclear, cortical and posterior sub-capsular cataracts (PSCC). *Materials & Methods:* The study was conducted in the ophthalmology department in the medical institute. The present study is the hospital based study conducted from the period of Jan to July 2017 that is 6 months. All the children diagnosed with cataract in the ophthalmology ward were included in the study. *Results:* A total of 400 children were included in the study. All the children attended the opd of the ophthalmology department of the medical institute. 40 children were diagnosed with cataract. That shows the prevalence rate of 10%. The age range of presentation of cataract was found to be 3 – 10 years. The mean age was found to be 6.5 years. *Conclusion:* The prevalence of cataract in children was found to be 10%, the mean age of patients was 6.5 years; corneal opacity and lens opacity were the most common symptoms and signs, respectively. Idiopathic cataract was the most common type and decreased vision was the most common complication.

Keywords: Children; Cataract; Diabetes Mellitus; Etiology; Prevalence.

Introduction

Blindness has a great impact not only in terms of morbidity but it also hinders socio-economic development. Most of developing countries like India face major demographic changes that lead to age related diseases [1]. Globally, cataract has remained the major cause of blindness over the years. Approximately 45 million people are blind worldwide, out of which cataract accounts for 17.6 million (39%) cases. South East Asian region contributes to 50-80% of all blindness [2].

Cataract is the leading cause of visual impairment and blindness worldwide, accounting for more than 50% of the blindness cases. Driven by an increase in aged population and increasing demand for good vision, the number of persons who need cataract surgery is expected to rise worldwide [3].

In India, nearly 74% of adults 60 years and older have cataracts or have undergone cataract surgery, according to a population-based study. The pathogenesis of age-related cataract is multifactorial and not completely understood [4]. The three main types of age-related cataracts are nuclear, cortical and posterior sub-capsular cataracts (PSCC). In many patients, components of more than one type are present. Women have a significantly higher prevalence than men, and nuclear cataract is the most common type [5,6].

Childhood cataracts are responsible for 5% to 20% of blindness in children worldwide and for an even higher percentage of childhood visual impairment in developing countries, with the prevalence of childhood cataracts ranges from 1 to 15/10,000 children depending on the age groups, methods of ascertainment, and case definitions [7].

The majority of bilateral congenital or infantile cataracts not associated with a syndrome have no identifiable cause. Genetic mutation is likely the most common cause. Systemic associations include

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metabolic disorders such as galactosemia, Wilson disease, hypocalcemia and diabetes [8]. Cataracts may be a part of a number of syndromes, the most common being trisomy 21. Intrauterine infections including rubella, herpes simplex, toxoplasmosis, varicella and syphilis are another cause [9].

The earlier cataracts are diagnosed and treated, the more likely it is that sight will be preserved or develop normally because cataract blocks light from entering the eye and stimulating the retina, the area of the brain used for sight does not develop properly and lazy eye occurs [10]. Adequate history, proper examination, laboratory investigation as well as ophthalmological examination will allow the correct diagnosis. The objective of the present study was to determine the cause, presentations, types and over all social impact of cataract on children.

Materials & Methods

The study was conducted in the ophthalmology department in the medical institute. The present study is the hospital based study conducted from the period of Jan to July 2017 that is 6 months. All the children diagnosed with cataract in the ophthalmology ward were included in the study. The parents were informed about the study and prior informed consent was taken from all the parents. Only after the consent was signed, children were included in the study. Those children whose full information was not obtained or the parents refused to sign the inform consent were excluded from the study.

Statistical Analysis

Data were analyzed using SPSS version. 15. Descriptive statistics were done to find out the Mean and SD of the socio-demographic variable among the groups.

Results

A total of 400 children were included in the study. All the children attended the opd of the ophthalmology department of the medical institute. Of the total children examined 40 children were diagnosed with cataract. That shows the prevalence rate of 10%. The age range of presentation of cataract was found to be 3–10 years. The mean age was found to be 6.5 years. When there was comparison of gender the cataract was more found to be in females as compared to males. Of the total children involved nearly 60% were females and 40% were males. Unilateral cataract was found in 70% of the populations. When the parental history was recorded there was equal distribution of diabetes mellitus and toxoplasmosis among the mother of the children suffering from cataract. Most of the parents had the parental history of cataract.

Table 1: Characteristic of cataract in children

Characteristic	Frequency
Age	
< 1 year	4
1 – 5 years	8
6 – 10 years	18
11 – 16 years	10
Sex	
Male	16
Female	24
Eye involvement by cataract	
Unilateral	28
Bilateral	12
Maternal illness during pregnancy	
Toxoplasmosis	20
Diabetes Mellitus	20
Family history of cataract	
Yes	30
No	10

Discussion

Cataract blindness, one of the significant social issues in India with annual incidence 2 millions. India is the first country which started blindness control programme to fight against preventable blindness by most cost effective intervention, like vision-restore surgery [11]. District level surveys should be carried out every 4 to 5 years to know the exact problem in the particular, which may help further planning and allocation of resources.

It is possible that there may be nutritional stresses over the life period of people in the Indian subcontinent that predisposes them to cataracts and may also possibly explain the earlier onset of cataracts in this population [12,13].

A cataract is any light scattering opacity of the lens. It is estimated that congenital cataracts are responsible for 5% to 20% of blindness in children worldwide. Incidence varies from country to country [14]. One retrospective study of the

prevalence of infantile cataracts in the U.S. showed a rate of 3-4 visually significant cataracts per 10,000 live births. This is a similar rate to a U.K. study which showed 3.18 per 10,000. These numbers underestimate the total number since they do not take into consideration visually insignificant cataracts [15].

The causes of infantile cataracts have been the source of much speculation and research. Making a distinction between unilateral and bilateral cataracts may be useful when considering etiology. Cataracts are classified according to their morphological appearance and location; however, making the diagnosis of a specific type of cataract can be difficult if it spreads to involve multiple layers, obscuring the original opacity [16].

The majority of bilateral congenital or infantile cataracts not associated with a syndrome have no identifiable cause. Genetic mutation is likely the most common cause. Over fifteen genes involved in cataract formation have been identified, and the inheritance is most often autosomal dominant although it can be X-linked or autosomal recessive. Within the same pedigree, there can be considerable morphologic variation [17].

The mean age of the children suffering from cataract was found to be 6.5 years, which is in accordance with the other studies. In relation to the sign, symptoms and associated risk factors for the cataract, there is similarity with the previous study done earlier. In some children with mild cataracts, it's asymptomatic, and the symptoms appear later on which might delay the diagnosis. Symptoms like failure to notice toys, lack of reaction to light, apparent delay in development are the cause of concern. In case of mild cataract there is photophobia in bright lights. During the development of sensory nystagmus there is development of dense cataracts. Only few patients were reported to have maternal illness during pregnancy. Two diseases were reported in the maternal illness: Diabetes mellitus and Toxoplasmosis.

Conclusion

The prevalence of cataract in children was found to be 10%, the mean age of patients was 6.5 years; corneal opacity and lens opacity were the most common symptoms and signs, respectively. Idiopathic cataract was the most common type and decreased vision was the most common complication.

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