
Spectrum Of Ocular Disorders In Children Visiting A Tertiary Teaching Hospital

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Abstract

Background: Eye diseases are important cause of medical consultation in children, with the spectrum varying in different localities. This study aimed to determine the spectrum of childhood eye diseases in a medical college serving rural area. **Methods:** We conducted a collaborative, prospective and observational review of all patients ≤ 16 years old who presented to the Department of Ophthalmology and Department of Paediatrics of a medical college in malwa region of Punjab between July 2017 and July 2018. Detailed history was obtained from the children with respect to the age at presentation, sex and presence of any known ocular disease. A comprehensive ocular examination was carried out including visual acuity, pen torch examination, slit lamp biomicroscopy, cover-uncover tests, ocular motility, retinoscopy and dilated funduscopy. Data was collected and analyzed using SPSS. **Results:** We evaluated the reports of 415 children, with a male:female ratio of 1.4:1. Children aged 11-16 years made up the largest group n-245(59.03%). Refractive errors (44.09%), VKC (26.74%) were the most common conditions. Ocular injury was more common in males (n=4). Disc pallor was found more in patients referred from paediatrics department who were regular follow up patients with cerebral palsy. **Conclusion:** Collaborative approach between the paediatricians and ophthalmologists could play a key role in the timely diagnosis and treatment of ophthalmic disorders in children to meet the challenges of childhood blindness.

Keywords: Allergic conjunctivitis, Paediatric ocular disorders, Ocular trauma, Refractive errors

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I. Introduction

Childhood blindness refers to a group of diseases and conditions occurring in childhood or early adolescence which if left untreated results in severe blindness or some visual impairment that are likely to be untreatable later in life.^{1,2} World Health Organization (WHO) defined blindness as a visual acuity less than 3/60 or a corresponding visual field loss of less than 10 degrees in the better eye with the best possible correction.³

Paediatric ophthalmic disorders are important because of their impact on children development, education, future work, opportunities and quality of vision. Specifically, addressing childhood blindness is a priority because these individuals are blind for several decades.

The consequences are especially severe in developing countries where resources and education are lacking. The World Health Organization (WHO) reports that there are approximately 19 million visually impaired children in the world, and 1.4 million are blind.⁴ Approximately 500,000 children become blind every year, which is equivalent to one child every minute. 70-90% of blind children are in the poorest countries of Africa and Asia. In India, 0.8 per 1000 children are estimated to be blind.⁵ This is bound to be an underestimation of the overall problem because it excludes children with visual impairment that does not conform to the WHO definition of blindness.

Population-based studies from India reported a prevalence of uncorrected visual acuity of 2.7% and 6.4% among children aged 7-15 years in rural and urban population respectively. The prevalence of best corrected visual acuity of 20/40 or worse was reported to be 0.78% and 0.81% in rural and urban population respectively.⁶

About half of the causes of blindness and visual impairment are potentially preventable or treatable.⁷ Childhood blindness is a priority second only to adult cataract in terms of the number of blind person years lived and the consequent overall economic impact on the society.⁸ Paediatric ophthalmic disorders can arise because of events that occur during the prenatal or neonatal periods or childhood. Many of the causes of childhood blindness are also associated with childhood mortality (e.g. premature birth, measles, congenital rubella, vitamin A deficiency and meningitis). Optical, orthoptic, medical and surgical intervention can be employed to

manage paediatric ophthalmic disorders. Timely and periodic screening is critical for the detection of visual impairment and its etiology to plan early intervention. The pattern of ocular diseases in children varies depending on the anatomical structure involved, such as whole globe or specific tissues of the eye such as sclera, conjunctiva, cornea, uvea, lens, and retina. The aim of the study was to find out the spectrum of eye diseases in the Department of Ophthalmology and Department of Paediatrics of a medical college in malwa region of Punjab.

II. Material and Methods

This was prospective collaborative observational study conducted in the department of Ophthalmology and department of Paediatrics of a medical college in malwa region of Punjab. The study period was 12 months, from July 2017 to July 2018. All children <16 years of age, reporting to the department of Ophthalmology for the first time and also the children referred from the Department of Paediatrics were included in the study.

A total of 415 children were enrolled in the study after taking written informed consent from the guardians. Children with 6/6 and everything normal were excluded. All premature babies, measles, VITAMIN A deficiency, cerebral palsy, congenital Rubella were referred for early detection of any ophthalmological problem. All the children diagnosed disc pallor were referred to the Paediatrics department for detailed work up, It was made mandatory so that any child visiting department of Ophthalmology and department of Paediatrics should have four compulsory visits in hospital at birth, at one year, three years and five year.

The study protocol was approved by the Local and Institutional Ethics Committee. The children were divided into three groups: Preschool (0-5), school going (6-10 years), and older (11-16 years) children for studying various ocular morbidities in different paediatric age groups. After taking consent from the guardians, the preliminary data such as name, age, sex, residence, educational status, and residential area were recorded first. Detailed visual acuity testing and refraction was done for all children by the senior optometrist. Presence of amblyopia was noted. Detailed anterior segment examination was done by both torchlight and slit lamp by the consultant ophthalmologist. This information was retrieved by methods of examination such as visual acuity testing by Snellen test for school going children and by preferential looking system for younger children, refraction (subjective, objective and cycloplegic), slit lamp examination, Extraocular movements, cover test and convergence test using RAF rule and fundoscopy. Detailed pupil examination was done to see for abnormalities of lens, vitreous, and retina. IOP was recorded wherever glaucoma suspected. Ocular USG and laboratory investigations were done wherever required. The whole data were then analysed in detail. After examination patients were provided treatment accordingly and those who need further evaluation were called for follow up.

III. Results

A total of 415 children were included in this study. The age and sex distribution of the study is shown in Table 1 and Table 2. There are 247 males and 168 females in the group with a male to female ratio 1.4. The age range was 0-16 years. The mean age was 8 years. There were more male children in each group 59.03% were in the age group 11 years to 16 years followed by 6 years to 10 years (26.02%) and minimum in the age group less than 5 years (14.93%).

Table 1: Age distribution of Eye Diseases

Age (in years)	Males	Females	Total
0-5	36(8.67%)	26(6.25%)	62(14.93%)
6-10	66(15.90%)	42(10.12%)	108(26.02%)
11-16	145(34.93%)	100(24.09%)	245(59.03%)
	247(59.51%)	168(40.48%)	415(100%)

Table 2 demonstrates the frequency of eye disorders. The most common disorder was refractive error. Refractive errors were found in 183 (44.09%) almost equal in male and females. VKC was found in 111 (26.74%), but it was more common in 77 males (18.55%) whereas 34 females (8.19%). Squint was found in 17 cases (4.09%) out of which there were eleven males and six females. Infective Conjunctivitis in 17 cases (4.09%), Stye in 11 cases (2.65%), Chalazion in 5 cases (1.20%), Congenital Nasolacrimal Duct obstruction in 15 cases (3.61%), all the cases were advised massage but only 3 cases underwent syringing and probing under short general anaesthesia (GA). Cerebral palsy patient had disc pallor in nine cases (2.16%). Congenital cataract in 3 (0.72%), one child had bilateral cataract for which he underwent cataract surgery with IOL implantation under general anaesthesia. Vitamin A deficiency was seen in 10 cases (2.40%). Amblyopia was found in two females and one male. Lateral Palsy in two cases who had history of trauma in one case and other had history of fever.

Glaucoma was found in 0.96% cases (n=4).A four years old boy with history of blunt trauma on abdomen had purtscher’s retinopathy.One 16 year old was diagnosed with usher syndrome.

Table 2: Spectrum of diseases according to gender distribution

	Male n(%)	Female n (%)	Total n (%)
Refractive error	94(22.65%)	89(21.44%)	183(44.09%)
VKC	77(18.55%)	34(8.19%)	111(26.74% %)
SQUINT	11(2.65%)	6(1.44%)	17(4.09%)
NLD BLOCKADE	7(1.68%)	8(1.92%)	15(3.61%)
CONGENITAL CATARACT	2(0.48%)	1(0.24%)	3(0.72%)
INFECTIVE CONJUNCTIVITIS	11(2.65%)	6(1.44%)	17(4.09%)
VIT A DEFICIENCY	4(0.96%)	6(1.44%)	10(2.40%)
PTOSIS	1(0.24%)	0	1(0.24%)
TRAUMA	4(0.96%)	0	4(0.96%)
CHALAZION	5(1.20%)	0	5(1.20%)
STYE	7(1.68%)	4(0.96%)	11(2.65%)
ROP	1(0.24%)	2(0.48%)	3(0.72%)
DISC PALLOR	9(2.16%)	0	9(2.16%)
AMBLYOPIA	2(0.48%)	1(0.24%)	3(0.72%)
BLEPHERITIS	2(0.48%)	0	2(0.48%)
Glaucoma	1(0.24%)	3(0.72%)	4(0.96%)
6 th nerve palsy	2(0.48%)	0	2(0.48%)
Retinitis Pigmentosa (Usher Syndrome)	1(0.24%)	0	1(0.24%)
FB	5(1.2%)	6(1.44%)	11(2.64%)
TUMOUR	0	2(0.96%)	2(0.48%)
PURTSCHERS RETINOPATHY	1(0.24%)	0	1(0.24%)
	247(59.51%)	168(40.48%)	415

Table 3 demonstrates the frequency of eye diseases according to different age group.Refractive error was found more in 11-16 year age group(30.1%) followed by 6-10 (11.08%) followed by less than five age group (2.89%).VKC was found more in 11-16 year age group(13.97%) followed by 6-10 (9.87%) followed by less than five age group (2.89%).

Table 3: Spectrum of diseases according Age distribution.

Spectrum of Diseases	0-5	6-10	11-16	Total n (%)
Refractive error	12(2.89%)	46(11.08)	125(30.1%)	183(44.09%)
VKC	12(2.89%)	41(9.87%)	58(13.97%)	111(26.74% %)
SQUINT	7(1.68%)	2(0.48%)	8(1.92%)	17(4.09%)
NLD BLOCKADE	15(3.61%)	-	-	15(3.61%)
CONGENITAL CATARACT	-	-	3(0.72%)	3(0.72%)
INFECTIVE CONJUNCTIVITIS	3(0.72%)	5(1.20%)	9(2.16%)	17(4.09%)
VIT.A DEFICIENCY	-	6(1.44%)	4 (0.96%)	10(2.40%)
PTOSIS	-	1(0.24%)	-	1(0.24%)
TRAUMA	-	1(0.24%)	3(3.72%)	4(0.96%)
CHALAZION	-	3(0.72%)	4(0.96%)	5(1.20%)
STYE	-	5(1.20%)	6(1.44%)	11(2.65%)
R0P	3(0.72%)	-	-	3(0.72%)
DISC PALLOR	2(0.48%)	1(0.24%)	6(1.44%)	9(2.16%)
AMBLYOPIA	-	1(0.24%)	2(0.48%)	3(0.72%)
BLEPHERITIS	-	1(0.24%)	1(0.24%)	2(0.48%)
Glaucoma	-	1(0.24%)	3(0.72%)	4(0.96%)
6 th nerve palsy	-	-	2(0.48%)	2(0.48%)
Retinitis Pigmentosa	-	-	1(0.24%)	1(0.24%)
FB	-	5(1.20%)	6(1.44%)	11(2.64%)
TUMOUR	-	1(0.24%)	1(0.24%)	2(0.48%)
PURTSCHERS RETINOPATHY	-	1(0.24%)	-	1(0.24%)
				415

IV. Discussion

This study was conducted so that children with paediatric problems such as malnutrition ,cerebral palsy ,premature babies could get the detailed eye check up preventing them to lead a normal life. School screening camp were also encouraged collaboratively by both ophthalmology ad paediatrics department with a common goal of reducing childhood blindness. All the parents ,school teachers and principals were counselled for compulsory check up at 1 year,3 years and five years .School eye screening is the second largest program of the National Programme for Control of Blindness in India.⁹ Timely and periodic screening is critical for the detection of visual impairment and its etiology and to plan early intervention.

The major ocular disorder encountered in our study was refractive error followed by VKC .In our study refractive errors were the most common ocular morbidity and accounts for 44.09 % ,majority of those belongs age group (11-16 years) .Percentage of males presented to the hospital is more when compared with females.This was in agreement with various studies conducted by Abiose et al and Nkaga and Dolin.¹⁰⁻¹¹ VKC is a chronic ,bilateral inflammation of the superior and limbalpalpebral inflammation of the superior and limbal palpebral conjunctiva.The warmer the climate ,greater the prevalence.Males typically are affected more than females¹² . This location has many thermal plants and in vicinity to dry and hot climate so VKC is more common than other ocular disorders.

As up to 70% of childhood blindness worldwide might be effectively avoided by currently available primary, secondary, and tertiary preventive strategies,¹³⁻¹⁶ the need to improve existing strategies, especially in developing countries, as well as to develop new strategies, particularly in industrialised countries, to control childhood blindness is clear. However, given the economic considerations in healthcare provision in both settings, there is a need to demonstrate the relative value of these strategies to overall public health. Furthermore, there is a need to assess their effectiveness through their impact on the burden of disease

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