Orginal Article

Spectrum of Ophthalmic Diseases in Children at A Referral Hospital

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Purpose: To give an overview of diseases seen at a tertiary care hospital pediatric ophthalmology outpatient clinic in Punjab.

Material and Methods: A descriptive retrospective study was done of patients visiting the paediatric ophthalmology clinic from May 2004 to April 2005 by accessing the OPD registers kept by the hospital. Patients were categorized into ten different groups, using an anatomical classification. The age categories were divided into three groups, children below the age of one, ages1-5 years and the older children were placed in the six to fifteen years category.

Results: A total number of 3289 children were included with a male 63.6% and females 36.4% and the mean age was 5.1 years. Diseases of lens effected 33% of the patients examined. Squint was the second most common disorder seen affecting 17% of these children. Errors of refraction affected 15% and oculoplastic 9%. Trauma was an important cause of morbidity in 10% of these children and corneoscleral tear was the main culprit. The rest of the conditions were glaucoma 6%, conjunctival diseases 4%, vitreoretinal 3%, orbital 3% and miscellaneous 3%.

Conclusion: In this study, boys were found to be more often affected with eye diseases and the presentation to a tertiary care hospital was most often late. Most paediatric eye diseases need special care and early intervention; therefore it is crucial that good provincial and district paediatric ophthalmology centers are set up.

More than 1500 children per year may need surgery in a busy tertiary care hospital, therefore expansion of facilities and training more health professions is important.

There are about 1.5 million blind children in the world and more than one million children in Asia alone[1,2]. Approximately half of all blindness in children especially in poor countries is avoidable[3]. Cataract is the leading cause of preventable blindness[4,5]. Globally 190,000 children are blind from cataract alone[4]. These facts and figures are alarming and as healthcare providers, parents and teachers, we need to come together to identify the childhood eye diseases early enough in-order to give the child a more happy and productive life.

Paediatric ophthalmology is an upcoming field in Pakistan as in many other developing countries. Keeping in mind the alarming situation of eye diseases in children, this specialty is all the more vital to our setup. In-order to streamline local pediatric

ophthalmology services, reliable data is required by medical community and policy makers. Therefore we need more and more audits to be conducted at different levels of health facilities starting from basic health units to tertiary care hospitals. Keeping the above requirements in mind, we undertook this study. The objective is to highlight the spectrum of childhood diseases that are seen at a tertiary care level in-order to provide input for prevention and control of diseases to all stakeholders.

MATERIAL AND METHOD

This retrospective analysis was conducted in the pediatric eye clinic of Unit III of Mayo Hospital, Lahore on patients attended the hospital from May 2004 to April 2005.

Hospital receives patients from all over Lahore and the neighboring cities in the middle Punjab area. All the children seen in the pediatric ophthalmology OPD clinic up to fifteen years of age were included in this study and patients lacking a definitive diagnosis and missing patient profiles were excluded.

The OPD registers of the audit period were accessed and closely studied. All the relevant information was then entered into the computer. The ophthalmic technicians and the senior registrar himself maintain these registers.

The eye diseases diagnosed at the clinic during this one-year period were categorized into ten different groups, using an anatomical classification and described in order of frequency. The age categories were divided into three groups[1], children below the age of one[2], aged 1-5 years[3] and the older children were placed in the 6-15 years age category.

Statistical analysis was done using SPSS. The data was analyzed according to age, gender, diagnosis, and management. Simple descriptive analysis was carried out.

RESULTS

This study comprised of a total number of 3289 children, out of which, 2093 (63.6%) were male and 1196(36.4%) were female. The average age of all the children examined was 5.1 years. Forty five patients were excluded because of lack of definitive diagnosis and missing profiles.

Diseases of lens were the highest in number, affecting 1100 children. The male to female ratio was 1.8. In this group 15% of the affected children were less than one year of age, while the majority, 52% were in the six to fifteen years age group, (Table1).

Cataract alone was further scrutinized and it was found that the majority of cases (71%) were acquired and males were affected mostly in the 5-15 years age group. Traumatic cataract made up 15% of the cataract cases with predominance again in males in the older group of patients (5-15 years). Congenital cataract closely followed with 14%, affecting 5-15 year old children with a fractional increase in males (Table 2).

Squint was the second most common disorder seen among these children. A total number of 545 cases were seen. The male to female ratio was 1.9:1. The greater part of these children 51% were above the age of five years, where as 40% were between the ages of one to five. Only 9% were under the age of one year (Table 1).

Errors of refraction were the third common disorder, affecting 494 children, of which the majority, (63%) were above the age of five, 30% in the one to five age group and only 7% were under the age of one. In the gender distribution major bulk of the cases were males (Table 1). The cases in this category comprised of hypermetropia (82%), Myopia (11%), and astigmatism (5 %). The majority of the children, (54%) were males between the ages of five and fifteen and were affected by hypermetropia.

Oculoplastic disorders affected 281 cases of which 58% were males and 42% were females. The one to five age group comprised of 45%, 34% above the age of five and only 21% under the age of one (Table 1). Within this category, nasolacrimal duct blockage was the major disease seen among these children who presented with epiphora (Fig. 1). Ptosis made up 11% of the oculoplastic cases, 73% acquired and 27% congenital and in both categories, ptosis affected boys more frequently in the five to fifteen years age group (Fig.1).

Corneoscleral diseases made up a total of 236 cases of which 66.5% were male and 33.5% female. Out of the total number, 56% were above the age of five , 34% in the one to five years and only 10% under one year of age (Table 1). Majority of the corneoscleral disorders were caused by trauma in the form of corneoscleral tears.

Glaucoma cases numbered 183. The types of glaucoma presented to the clinic were acquired 52%, congenital 40%, and secondary 8%. Those in the above five years age group were 43%, in the one to five age

category 37% and under the age of one were only 20% (Table1).

Conjunctival diseases numbered 140 cases. The majority of the cases comprised of conjunctivitis. There were cases of subconjunctival haemorrhage and conjunctival cyst numbering four and eight cases respectively. The remaining 128 cases were of conjunctivitis of which 68% were male and 32% female. In the age categories, the majority of the cases (56%) belonged to the five to fifteen age group (Table 2).

Vitreoretinal diseases numbered 120, with 61% males and 39% female. The majority of the cases belonged in the 6-15 age group category. There were 62 cases of retinal detachment, eight of which were traumatic. There were 31 cases of retinoblastoma of which one was a recurrent case. Only 12 cases of vitreous hemorrhage were seen.

Table 1: Frequency, Gender and age Distribution of Children Presenting to Paediatric Ophthalmology Clinic (n=3289)

Diseases (n)	**<1 year**	**1 to 5 years**	**6 to 15 years**
	M/F (%)	**M/F (%)**	**M/F (%)**
Lens (1100)	1.6 (15)	1.7 (33)	1.9 (52)
Squint (545)	1.2 (9)	1.6 (40)	2.2 (51)
Errors of refraction (494)	2 (7)	1.6 (30)	1.9 (63)
Oculoplastic (281)	1.9 (21)	1.1 (45)	1.6 (34)
Corneoscleral (236)	2.1 (10)	1.3 (34)	2.6 (56)
Glaucoma (183)	1.9 (20)	1.2 (37)	1.6 (43)
Conjunctival (140)	1.2 (8)	2.3 (36)	2.2 (56)
Vitreoretinal (120)	0.4 (11)	1.8 (28)	1.9 (61)
Orbital (103)	5 (6)	3 (27)	1.7 (67)
Miscellaneous (87)	1.3 (10)	1.9 (30)	1.4 (60)

Table 2: Frequency, Gender and Age Distribution of Cataract and Glaucoma (n= 572 and 183) respectively.

Cataract	**< 1 year**	**1 to 5 years**	**6-15 years**	**Total cases**
Acquired	18%	29%	53%	407
Traumatic	1%	23%	76%	83
Congenital	31%	29%	40%	82
Glaucoma				
Acquired	16%	40%	44%	95
Congenital	26%	36%	38%	74
Secondary	29%	14%	57%	14

Orbital diseases numbered 103 cases. In this category, 40% (41 cases) were affected with phthisis bulbi. There were 30 cases (29%) of soft eye with the etiology not known. Endophthalmitis comprised of 14 cases (14%). Other pathologies of the orbit such as orbital mass and proptosis made up a small fraction of the disorders.

Miscellaneous group of cases comprised of all the diseases (87 cases) for which the anatomical classification was not applicable. 43(49%) of the cases were of nystagmus, mostly in males in the 6-15 age group. The rest of the cases were very few in number.

DISCUSSION

The evidence seen in these results is self-explanatory. A great deal needs to be done in the field of pediatric ophthalmology, but in order to proceed; the current situation in this field needs to be identified. Primarily, the commonly seen eye diseases in children should be determined. Mayo hospital, Lahore is an ideal set up for this kind of research. This hospital covers the most congested area of the city and therefore receives a large number of outdoor patients who come from all corners of the city as well as other parts of the country.

Boys were more affected in all the diseases encountered. This is probably due to the fact that boys are greatly valued by culture and are more often brought to the hospital. This unfortunate fact can be tackled with the help of counseling.

In a population based cross-sectional survey done in Karachi from July to August 2003, the pattern and prevalence of eye diseases among children age 5-15 years was assessed. The total number of children examined was 5110. It was found that errors of refraction (2%) made up the majority followed by conjunctivitis (1.2%) and squint (0.6%)[7]. This shows that the reality on the ground is quite different from that in a tertiary care hospital. The reason could be

that in this society, low vision is not taken all so seriously unless it is so severe that it interferes with everyday life activities. Many children don't even go to school, and children have a great capacity for adaptation that low vision can be tolerated fairly easily at first.

Worldwide, the main cause of visual impairment and blindness among children are genetic conditions[1], even though it is difficult to generalize to this extent as there is no uniform survey and the results differ in different parts of the world. But in this setup, along with genetic diseases, there is the added burden of preventable eye diseases as well. Taking this into consideration, the genetic aspect becomes less significant.

Diseases of the lens was the main category of the diseases encountered in the clinic with cataract being the essential component, keeping in mind that the patients are filtered out before they reach the eye clinic. Cataract surgery is one of the most cost effective public health interventions[4], yet many children all over the world are blind simply from cataract. In this setup, there are many reasons, as many of the children seen at the clinic belonged to lower socioeconomic status and many come from faraway areas. Countless parents believe that congenital blindness, regardless of the cause is untreatable and therefore never seek help. Fear of the parents plays a crucial role for not bringing children to the hospital. Fear mainly revolves around surgery in such a young child and fear of the child dying during the operation[4].

Children were brought rather late to the clinic at the age of three or four. It was difficult to diagnose whether the cataract was congenital or acquired. In some children it was obvious as they already had developed nystagmus. There was no means of determining the causative factors but, according to a study carried out in western India, 4.6% cases of congenital cataract is due to rubella[2]. This is a common cause of cataract blindness in this region and accounts for more than 25% of all new cases of congenital cataract in Western India[2].

The ingestion of corticosteroids, antibiotics, anti-diabetic drugs, others (busulfan, triparanol, chlorpromazine, dinitrophenol, etc.) has been implicated as a cataractogenic factor by a number of studies. Use of abortifacients is also cited as a cause of congenital cataract[2,6].

Squint affected boys more than girls and presentation was more in the older age group. Most parents are able to recognize a squint, but due to financial restraints are not able to make the trip to a faraway tertiary care hospital. With proper spread of information and counseling, these children do not have to live with the stigma that often accompanies squint.

Errors of refraction are the cause of blindness in one quarter of blindness and half of low vision[5]. Hypermetropia was most often seen in this study. This is consistent with the majority of the studies done, as hypermetropia is more common during childhood[10]. At the clinic, it was common to see children up to the age of four who have hypermetropia of three or four diopters. Where a child presented with hypermetropia of more than four, glasses were prescribed.

Oculoplastic diseases category was dominated by nasolacrimal duct blockage, which presented as epiphora. In children, the duct may not be completely developed at birth. Parents were initially counseled and given instructions for massage of the lacrimal sac area. Persistent cases required probing and syringing. This congenital tear duct blockage clears spontaneously by 6 months of age[11]. If it does not clear on its own, the outcome is still likely to be good with treatment.

According to present literature, the majority (61%) of lacrimal drainage obstruction in children is developmental; others are caused by infections (24%), trauma (12%), and dysfunction (3%). The condition is bilateral in almost one third of the cases[11].

Follow up is an integral part of patient eye care especially in children suffering from glaucoma. Most parents are unaware of the signs and symptoms of glaucoma. In children, unlike adults, glaucoma has clear-cut signs and symptoms such as excessive tearing, photophobia and enlarged eyes, or one eye larger than the other. If parents are educated about these signs and symptoms, they will then be in a better position to save their children from potential blindness. People with positive family history have four times increased risk of developing glaucoma[5, 13], raising awareness among the community is therefore essential.

Trauma was a major category in this audit and corneoscleral tear was the most significant type of trauma seen at the clinic (Fig. 2). Families are usually large and children are not always given proper care, so they are more at risk of sustaining trauma. In this study, there was a large male predominance in trauma. In most cases, boys comprised of double the

number of girls affected (Fig. 3). Also boys are more often allowed to do outside activities that put them at risk of injuring themselves. A study conducted at a hospital in Central Africa, showed that males are more often affected by ocular trauma than females with a ratio of 1:3[14]. Community-based education should stress on raising awareness among families especially in the lower socioeconomic status group.

Involvement of parents plays a positive role in the well being of a child. Good visual outcome does not only depend on competency and good surgical skills, because in children, frequent regular post-op follow up is highly essential[3,8]. Parents need to know that the inflammatory process is more severe in children as compared to adults[2,8]. Many of them believe that there is no need for follow up after the surgery. They need to understand the implications of not coming back for follow up. This is not easy for the parents, as it is a social as well as a financial burden on the families involved. The frustrations and depression which follows low vision and blindness need to be acknowledged[1]. This does not affect only the children involved, but also the rest of the family, as the child slowly loses the capability to take care of himself. He will then grow up to be an economical burden on the family.

CONCLUSION

It is evident in this study that most children presented late with the disease and mostly, boys in above-five age group were affected.

Good strategies for case finding need to be devised specially for cataract in children. There is also need to train people in the community about signs of cataract[8]. In this way early presentation and surgery will lead to a better visual outcome.

Most pediatric eye diseases need special care and early intervention; therefore it is crucial that good provincial and district pediatric ophthalmology centers are set up.

Trauma is potentially preventable and therefore every effort should be made, not only to establish, but also to maintain community education centers, which are effective in delivering the message.

Fig. 1: Frequency of different oculoplastic diseases in children presenting to paediatric ophthalmology clinic (n=281)

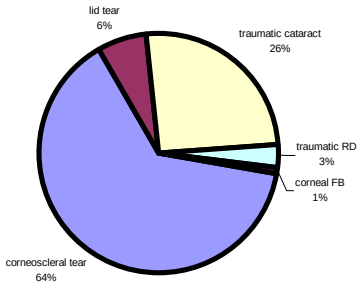

Fig. 2. Types and frequency of trauma (n = 325)

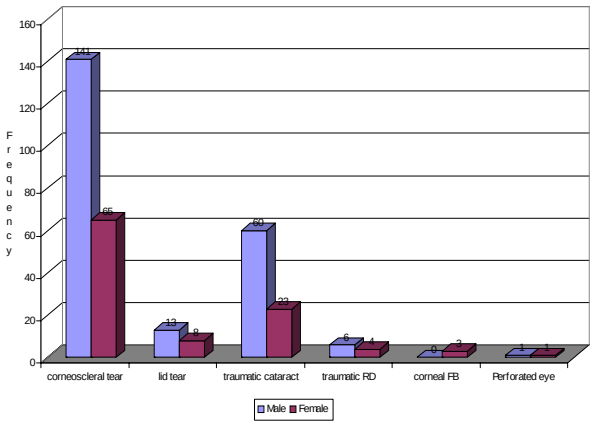

Fig. 3: Age and Gender distribution of different types of trauma cases (n = 325)

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