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A Study on the Pattern of Blindness in Children of A Blind School in Manipur

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Abstract: ***This study was done to find out the different causes of blindness in children residing in Manipur and also to take measures to prevent complete loss of vision in order to reduce the burden to the family members and society. A total of 40 children from 5 to 20 years enrolled in a blind school were examined in detail. The children underwent visual acuity estimation, external ocular examination and fundoscopy. Among the 40 students, 10 students had visual acuity less than 3/60 and less than 1/60 in 30 students. The most common causes of blindness were congenital anomalies, cataract and corneal scarring. The aetiology was unknown in 2.5%. Over all 70% of the children had avoidable blindness which was either treatable or preventable. The major avoidable causes in this study were congenital cataract, vitamin A deficiency and glaucoma. In developing country like India, blindness is still a significant public health problem. Cases of easily treatable blindness is high so to reduce the blindness we require specialised, paediatric ophthalmology units, systems for early identification and referral and increased public awareness. We conclude that early detection and treatment can save a child's vision and future.***

Keywords: Childhood blindness , congenital anomalies, cataract, vitamin A deficiency.

1. Introduction

Blindness is a serious public health problem that affects a person's quality of life and imposes major socioeconomic and psychological impacts on patients and their relatives. According to WHO (World health organization,1997), it is defined as visual acuity of less than 3/60 (0.05) or corresponding visual field loss (a field less than 10°) in the better eye with best possible correction. Worldwide currently,1.4 million children are estimated to be blind; 1 million of these live in Asia and 300,000 in Africa.[1] The estimated blind children in India is 320,000.[2] Even though this represents a small fraction of the total blindness the control of childhood blindness is a priority of''VISION2020—The Right to Sight''. This is a global initiative which was launched by WHO in 1999 to eliminate avoidable blindness worldwide by the year 2020 .[3] Although blindness in children is relatively uncommon, it is a priority of VISION2020, as severe visual loss in early childhood adversely affects development, mobility, education and social and employment opportunities.

The main causes of blindness in children are corneal scarring (mainly due to vitamin A deficiency), congenital anomalies like anophthalmos and microphthalmos, cataract, glaucoma, ROP(retinopathy of maturity), refractive error and low vision from untreatable causes in all regions. This study was undertaken to determine the causes of blindness in children attending schools for the blind in Manipur.

2. Material and Methods

- The screening of the children was obtained with the consent from the authority of the Government Ideal Blind school, Takyel, Manipur which is in the north eastern part of India.. The school authorities were briefed about the aims and objectives of the study.
- A total of 40 students were examined. Detailed ophthalmic history were taken. Visual acuity was assessed in each eye using a Snellen tumbling "E" visual acuity test chart. . Patients who were unable to cooperate with the "E" chart, were assessed the ability to fix and follow a light. Anterior segment of the eye were examined using a torch and posterior segment by direct and indirect ophthalmoscope after dilatation of the pupil. Refraction and low vision work up was done where indicated.
- For each child, the need of optical, medical or surgical interventions was recorded and the visual prognosis was assessed. Children requiring further investigations and treatment procedures were referred to RIMS (Regional Institute of Medical Sciences), Imphal or any higher centre for further management. Data produced was tabulated with variables like sex, age, visual acuity, probable diagnosis, and avoidability of the blindness.

3. Results

A total of 40 students were examined from Government Ideal Blind School, Takyel, Imphal. In the sex distribution, among the children examined 27 out of 40 students were males and 13 were females. Male: Female ratio being 2.07: 1 (**Fig** 1).

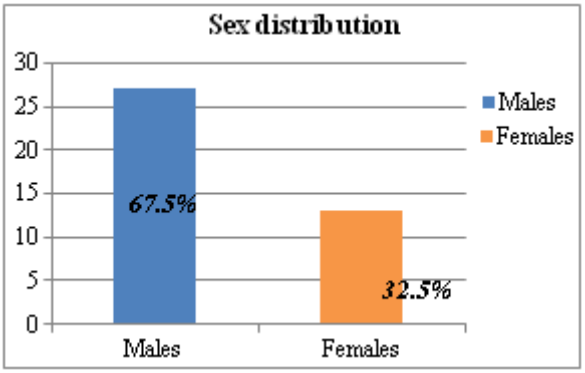

Figure 1: Sex distribution

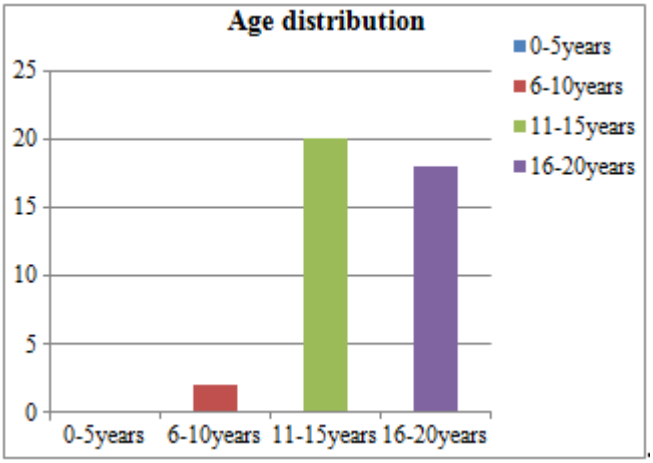

Figure 2: Age group Distribution

Students in the age groups of 5-20 years were included in this study. Of the 40 students, 23 were below the age group of 15 years and 17 students above the age group of 16 years (**Fig 2)**.

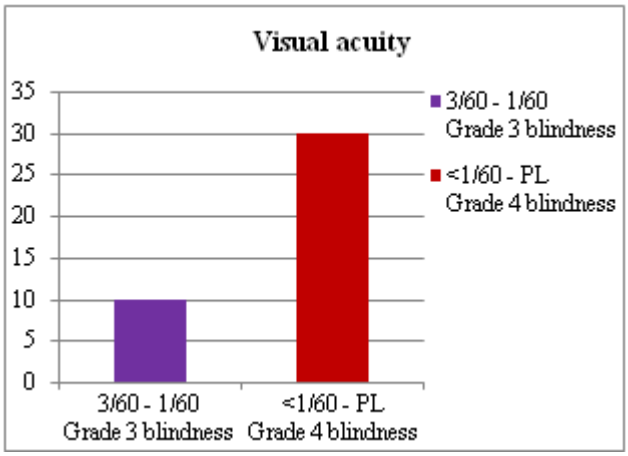

Figure 3: Visual acuity

Only10 students out of 40 had visual acuity of 3/60 to1/60 and less than 1/60 in 30 students (**Fig 3)**.

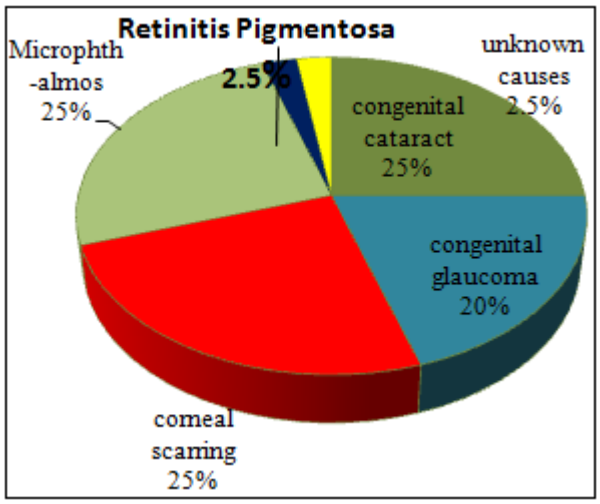

Figure 4: Causes of blindness

Table 1: Showing causes of blindness

Diagnosis	*No of cases*
Congenital cataract	10
Congenital glaucoma	8
Corneal scarring (secondary to Vit A deficiency, corneal infection and trauma)	10
Congenital Microph-thalmos with or without Coloboma of iris and choroid	10
Retinitis pigmentosa	1
Unknown cause	1
Total	40

In this study congenital cataract, corneal scarring and congenital microphthalmos were responsible for 75% of visual loss, congenital glaucoma 20% and 2.5% in case of retinitis pigmentosa. In 1 child(2.5%) the underlying cause is not known. (**Fig 4)**. On diagnosis, out of the 40 students each of the 10 students presented with cataract, glaucoma and corneal scarring. Congenital glaucoma was seen in 8 cases ,1 case in retinitis pigmentosa and 1 unknown cause. (Table 1)

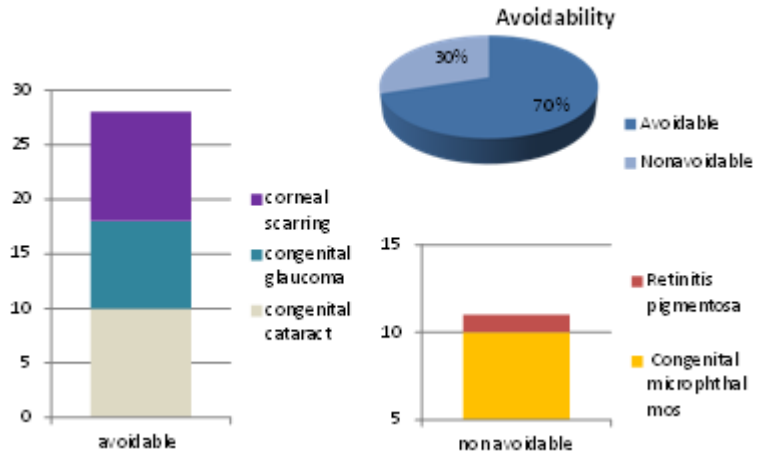

Figure 5: Distribution of avoidability

Overall 28 children had potentially avoidable cause of blindness (congenital cataract, congenital glaucoma and corneal scarring) and non avoidable in 12 children (retinitis pigmentosa and congenital microphthalmos). (**Fig5)** 10 children had preventable causes of blindness and treatable causes in 28children.

Figure 6: Cataract

Figure 7: Glaucoma

Figure 8: Corneal Scarring

Figure 9: Microphthalmos

4. Discussion

In the present study, amongst children attending schools for the blind congenital cataract, corneal scarring and congenital abnormalities was the most common cause of blindness (25% each). In case of corneal scarring, it was difficult to distinguish the different infectious causes of corneal blindness. VAD (vitamin A deficiency) is also one important contributing factors for corneal blindness. It is an easily preventable cause of blindness and the incidence has decreased in the more prosperous states like Maharashtra in west India .[4] Congenital abnormalities of the globe (microphthalmos, anophthalmos and coloboma) were responsible for 25% blindness in this study. This is comparable with the results of the blind school study in Delhi in north India (27.4%), [5] Karnataka (28.7%) and Tamil Nadu in south India (20.6%), were as higher in Maharashtra in west India (35%) .[4]

Treatable causes of blindness includes congenital cataract 25% and glaucoma 20%. The reasons for the high proportion of cases of glaucoma in this study are unknown. Congenital cataract was the most important treatable cause of childhood blindness for which early diagnosis and referral, surgery by an experienced ophthalmologist, and long-term follow-up and management of aphakia and amblyopia are essential. Thus in this section there is a need to expand specialist pediatric ophthalmic services.

A study of schools for the blind in south India had identified retinal dystrophies (including albinism) as the most common single cause of SVI(severe visual impairment) and blindness, accounting for 26.1% .[6] Retinal dystrophies accounted for 2.5% of visual loss in our study.

Similar studies have been done worldwide. Studies in African countries have shown the major anatomical cause of blindness or severe visual impairment was corneal pathology/phthisis followed by lens pathology, uveal lesions and optic nerve lesions .[7] Whereas in Nepal the major etiological factors were those of childhood such as Vitamin A deficiency, measles and similar causes followed by the hereditary causes .[8] The findings of the studies done in India are consistent with the results of this study. In all the above studies more than 50% of the cases, the cause of blindness was avoidable, as also suggested by this study.

5. Conclusion

In common with other developing countries, a large proportion of the childhood blindness in India is avoidable. The present study shows three important avoidable causes of blindness, cataract,corneal scarring and glaucoma as common cause of visual loss. These findings suggest that a need for screening for early detection of cataract and glaucoma by specialist paediatrics, as early referral and management would improve the prognosis from surgery. Thus to prevent childhood blindness we need to set up a separate unit/ subdivision of paediatric ophthalmology in every medical institute. We need to train young ophthalmologist and PGs students with advanced teaching methods and equipment. It would also be useful to document the changing patterns in the causes of childhood blindness in individual states to allow early action against emerging avoidable causes.

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