



Frequency and causes of amblyopia in children visting an eye O.P.D of tertiary care hospital

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Abstract

Purpose: To evaluate the frequency and causes of amblyopia in children in eye O.P.D of tertiary care hospital Dow University Hospital.

Patients and Methods: This was a cross sectional study in which total number of 500 patients, aged 5 to 18 years who came in eye O.P.D in between jan 2018 till dec 2018 were studied. After informed consent they all underwent detailed eye examination including refraction, slit lamp examination and fundoscopy. Visual acuity was assessed by snellen's chart and after cycloplegic refraction, best corrected visual acuity came out to be less than or equal to 6/12 in any eye without any other abnormality were defined as being amblyopic.

Result: Total of 500 cases, 44 came out to be amblyopic (8.8%). There was no significant association between genders and p value is 0.222%. Most of the amblyopia is found in bilateral eyes 52.3% while unilateral was seen in 47.7% subjects and the most common cause of amblyopia came out to be anisometropic amblyopia 27.3%, than high hypemetropia is on second 25.0%. Deprivation amblyopia 18.2%, astigmatic amblyopia 15.9% and least common cause being myopia 13.6%.

Conclusion: With high prevalence of amblyopia in our society, it is imperative to take measures for early screening and appropriate treatment plans in amblyopic children.

Keywords: amblyopia, anisometropia, cycloplegic refraction

Introduction

The word amblyopia arose from Greek language meaning visionary bluntness ^[1]. Amblyopia is the developmental neurological delay which lead to inhibition of one or both eye due to ignorance of signals by brain ^[2]. By definition amblyopia characterized by uniocular or binocular decreased in best corrected visual acuity without any evident physical and pathological abnormality but associated with one or more of the following conditions like deprivation amblyopia, anisometropic amblyopia, amblyogenic astigmatism ^[3, 4].

Prevalence of amblyopia varies among different population. One of the study in Iran showed prevalence of amblyopia due to uncorrected refractive error was 22.7% ^[5]. While other study showed that major and treatable cause of amblyopia is strabismic amblyopia in which 82% of amblyopic cases were of unilateral squint ^[6]. Another study from Peshawar, Pakistan which concluded males were affected more than females and strabismic amblyopia was the most common cause of amblyopia amongst them which is about 55% ^[7]. It is estimated that almost 2% to 3% of children are amblyopic depending upon inhabitants and description of amblyopia used in study ^[8, 9].

The main objective of a study were to determine the causes and frequency of amblyopia in children visiting an eye OPD. To our knowledge, there is no published data regarding prevalence and causes of amblyopia in a recent years.

Methodology

Total number of 500 children who came in eye O.P.D at

Dow University Hospital in between jan 2018 till dec 2018 were included in this study. After informed consent by their parents, the children underwent full ophthalmic examination, firstly computerized eye testing by auto refractometer (RM8800 TOPCON) than visual acuity assessed by snellen's chart and then best corrected visual acuity checked after complete cycloplegic refraction (by cyclopentolate hydrochloride 1.0 % drops instilled every 5 minutes for 45 min in both eyes) by a trained optometrist.

Other examination like hirshberg test, cover uncover test were performed in patients found having squint. All those patients whose visual acuity came out to be less than 6/12 in any eye were also assessed by slit lamp bio microscopy (TOPCON SL -3C) to rule out any pathology of anterior segment of eye like cataract, corneal opacity etc and fundoscopy were done by using +90 D lens with slit lamp by a trained ophthalmologist.

Children of age 5 to 18 years were included and best corrected visual acuity equal to or less than 6/12 whether unilateral or bilateral defined as an amblyopic eye. By definition anisometropic amblyopia was the difference in refractive error of both eyes of +2 diopters. Deprivation amblyopia was defined as subjects having significant opacity in the media like cataract. High refractive errors were defined as more than 6 diopters of myopia or hypermetropia and astigmatic amblyopia was defined as more than +3 diopters cylindrical number not improving with best possible refraction. Those who found to have history of trauma, previous history of ocular surgery and ocular surface diseases leading to decrease visual acuity and children who had systemic associations or syndromes were

excluded from the study.

Data analyses was done by IBM SPSS version 21 and the results were defined and presented as frequency and percentages for gender, causes and unilateral or bilateral amblyopia. Mean and standard deviation for age variable was calculated. Chi- square test was applied to access the association between gender and amblyopia

Results

Out of total 500 cases 44 were of amblyopia. The prevalence of amblyopia was found 8.8%. As shown in table 1.

Table 1: Percentage of Amblyopia

Total Cases (n=544)	Amblyopia
456	No
44 (8.8%)	Yes

Our study demonstrates that most of amblyopia was present in females 23 (52.3%) while males 21 (47.7%) were slightly less (table no. 2). There was no significant association of amblyopia seen between genders with a p- value of 0.222.

Table 2: Gender Distribution in Amblyopia

Total Cases (n=44)	Amblyopia n %	P-Value
Male 21	47.7%	0.222
Female 23	52.3%	

We divided subjects into two groups one is 5 year to 12 year and other is 13 years to 18 years. In first group (5 -12years) females were predominating with 11: 14 male to female ratio. In other group (13- 18 years) males were predominating with a ratio of 10:9 males verses females ratio as displayed in table no. 3.

Table 3: Age Range of amblyopic patients

Age Group	No. of Cases	Percent	M/F Ratio
5y-12y	25	56.8%	11/14
13y-18y	19	43.2%	10/9
Total	44	100.0%	
	Age	12 ± 4 years	

Amblyopia was found higher in bilateral eyes of 23 (52.3%) patients and 21 (47.7%) patients in unilateral eye as shown in table no. 4.

Table 4: Laterality of Amblyopia

	No. of Amblyopia	Percentage
Binocular	23	52.3%
Monocular	21	47.7%
Total	44	100%

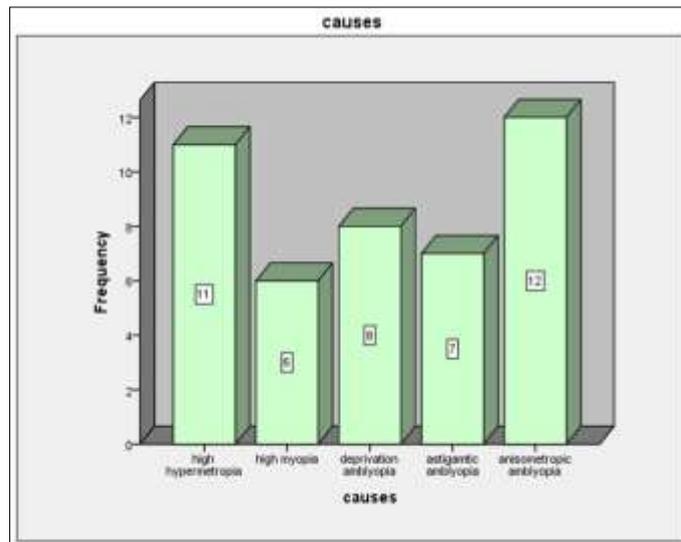


Fig 5: Causes of amblyopia

The most common cause of amblyopia was anisometric amblyopia seen in 12 (27.3%) subjects, followed by high hypermetropia 11 (25%), then it was deprivation amblyopia 8 (18.2%) while astigmatic amblyopia was observed in 7 (15.9%) patients and least was high myopia seen 6 (13.6%) subjects as decribed in table no. 5.

Discussion

Amblyopia is one of the most widespread cause amongst children’s visual loss but its primary detection and appropriate treatment can lead to better visual status. Prevalence of amblyopia differs among different countries throughout the world. In our study prevalence of amblyopia came out to be 8.8% which is slighter higher as compared to

study conducted in Andhra Pradesh India in which prevalence was found to be 6.6% (K Anjaneyulu *et al.*;) [10]. In another study which was carried out in Qasim province of Kingdom of Saudia Arabia with a total of 5176 children; 202 (3.90%) subjects were detected as amblyopic (Aldebasi YH *et al.*) [11]. Another study conducted by Sapkota K *et al.* in Nepal Eye Hospital concluded prevalence of amblyopia as 0.7% [12]. A similar study from China Huang D *et al* which included children of age 36 to 48 months showed prevalence of amblyopia as 1.47% [13]. While one of the study from our neighbouring city Lahore, they screened total of 1192 children in which 43 (3.60%) subjects were amblyopic [14]. In our study there is no significant association of amblyopia

amongst gender is found as amblyopic females were 23 (52.3%) and amblyopic males were 21(47.7%) and p value is 0.222%. This is in contradiction to study which was conducted in Nepal by Sapkota L *et al.*; which showed more males were amblyopic than females [12].

In our study bilateral amblyopia was found to be higher 23(52.3%) cases while unilateral eye was 21(47.7%), which is same as study done by Gupta M *et al*; which showed 58.06% bilateral cases while unilateral cases were 41.93% [15].

In our study the main cause of amblyopia found to be anisometric amblyopia (27.3%) followed by high hypermetropia (25%) and least cause is high myopia 6 (13.6%). Our result is consistent with study conducted in Iran [16] and china [17] which showed most common cause of amblyopia as anisometric amblyopia 58.1% and 67.3% subjects respectively [16, 17]. But one of the study conducted by Menon V *et al*; showed high hypermetropia (51.65%) as a most common cause of amblyopia while anisometric amblyopia was on second most common cause (22.1%) [18].

In our study amblyopia was more in females than males. Male to female ratio is 11:14 in age group of 5 to 12 years while on other age group 13 years to 18 years male are on more than a female with a ratio of 10:9 which is against to the results of study by Gupta M *et al* showed more male cases (81.25%) in younger age group while more female cases (75%) in older group [15].

Amblyopia is a major avoidable and curable cause of low vision in pediatric age group as in Vision of 2020 [19, 20]. and if left untreated leads to decreased quality of life. Therefore screening programs for amblyopia should be the main concern of government health services as to detect the cause early and provide full treatment of amblyopic children.

Limitations

This was a hospital based study and relatively small sample size and a single center study. Larger population studies or screening studies should be done to evaluate this treatable cause of low vision.

Conclusion

With high prevalence of amblyopia in our society, it is imperative to take measures for early screening and appropriate treatment plans in amblyopic children.

Conflict of Interest

None

References

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