Clinical Profile of Amblyopia in Young Adults

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Abstract

Aim: To study clinical profile of amblyopic patients in relation to refractive status, socio economic status, use of glasses and social impact on society.

Results: Myopes improving with spectacles are 45% and mixed astigmatism 69%. Most common age group for detection of amblyopia in young adults is 21-30 years(47.1%) with predominance of female(55.7%) belonging from middle class families (81.4%) having studied mostly from Government Marathi medium school(45.7%) with previously not using given glasses(57.1%) and with taken amblyopia of only (7.1%) and with spectacles maximum correction with mixed astigmatism (54.2%) between 6/36-6/9 in right eye (43%) and in left eye (30%) . Hypermetropies' improving to 6/12 is only 13%. So there's very few cases improving with the spectacles in hypermetropes in amblyopia.

Interpretation: Lack of school screening programs and awareness for health check-up delays the diagnosis of amblyopia leading to non-improvement of vision and due to lack of knowledge and social stigma girls especially avoid wearing glasses even after prescribing leading to amblyopia.

Conclusion: School health camps, proper health education, timely examination, and proper use of spectacles is must.

Keyword: *MYOPICS: (M),HYPERMETROPICS: (H), Visual acuity: (VA)*

Introduction

Amblyopia is a "developmental defect of spatial visual processing that occurs in the central visual pathways of the brain." It presents most dramatically as loss of visual acuity in one or, rarely, both eyes, but amblyopia is more than this; certain forms of amblyopia also present with diminished contrast sensitivity, Vernier acuity, grating acuity, and spatial localization of objects. These defects may be explained by the mechanism of lack of use of an eye because of media opacity or extreme refractive errors that cause a chronically blurred image to form on the fovea of that eye; however, the cause of amblyopia in an eye that has strabismus is not as straightforward and is the result of abnormal binocular interaction[1].

Types of amblyopia[2]: -

1.Strabismic

2.Stimulus deprived

3.Anisometropic

4.Bilateral ametropic

5.Meridonal

- In the absence of an organic lesion, a difference in best corrected VA of two Snellen lines or more (or >1 log unit) is indicative of amblyopia[3].

- Visual acuity in amblyopia is usually better when reading single letters than letters in a row. This 'crowding' phenomenon[4] occurs to a certain extent in

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normal individuals but is more marked in amblyopes and must be taken into account when testing preverbal children[5].

Aim: -

To study clinical profile of amblyopic patients in relation to refractive status, socio economic status, use of glasses and social impact on society.

Inclusion Criteria: -

- Patients of age <30 years
- Visual acuity less than log mar 0.2 in one eye or both eyes without any organic cause

Exclusion Criteria: -

Vision affected due to any cause anterior segment or posterior segment cause

Study Design: -

- Hospital based longitudinal non-randomized study.

Materials and Method

- All the young adults up to the age of 30 years coming to Department of ophthalmology, KIMSDU Hospital, Karad were screened out by taking visual acuity and correction with refraction for amblyopia over a period of 1 year from August 2018 to July 2019.

SAMPLE SIZE: -

- 70 patients were enrolled

Observations and Results

Observation:

- **TABLE 1** This table shows that sample size of 70 cases when given the vision correction with refraction the result comes out to be 43 patients that is 50.2% of patients had spherical correction and amongst them 26 patients that is 37.1% are myopic correction and 17 patients that is 24.2% are hypermetropia correction.

This table also shows about the cylindrical correction which is minimum only in 8 patients that us 11.4% and remaining 19 patients that is 27.14% patients have mixed correction.

- TABLE2: Taking results from above table now further extending our discussion regarding correction and its visual acuity relation, this table will discuss about relation of hypermetropies with its visual acuity correction.

Amongst the hypermetropies that is total 17 patients so here n=17 , out of them 10 patients power for refraction comes out to be between (+2.5- +5) and amongst the 10 patients only 3 patients that is 30% have full correction but 60% that is 6 patients have correction till log mar 0.4-1 and only 1 patient could have correction till log mar 1.

Rest of 23.07% patients have correction till +2 in which 75% patients have good visual correction ranging from log mar 0-0.3.

- **TABLE 3:** This table gives you the Relation of myopia with visual acuity correction. The total patients which comes out to be myopic are 26 that is 37.1% and amongst them 76.8% Patients who had myopic correction had spectacles of more than -2 power

- Precisely, 38.4% patients' spectacles range from 2-5sph and amongst them 70% patients their visual acuity correction is up to logmar0-logmar 0.3 which Is almost full correction and rest 38.4% patients have spectacles no. more than 5sph for which spectacles correction for 50% patients is > logmar1.

- Rest 23% patient having spectacles correction <-2 visual correction ranges from log Mar o-logmar0.3

- **Conclusion—low myopic number have good spectacles correction but very high myopic number do not have full correction even if higher refraction is given.**

- *MOST OF AMBLYOPIC MALE (42.3%) AND FEMALE (53. %) ARE MYOPIC.*

TABLE 4: RELATION OF AMBLYOPICS WITH THE TYPE OF SCHOOL STUDIED FROM:

This table shows that out of 70 students, 56 students have studied from Marathi medium government school and 10 from semi -government and only 4 from private school.

TABLE 5:

This table shows the relation between the type of school to its regular school health check-up, and the socio-economic status regarding glasses advised and

still not using.

The results show that out of 56 Marathi medium students only 23 had school health check-up, and amongst them only 20 were advised glasses previously and only 10 students were using it.

Semi-govt schools are better in position as out of 10, 9 had school check-up and 5 were advised previously to wear glasses but only 4 are wearing.

Private schools are conducting school check-ups regularly as all 4 had previously school health check-up done and all 4 are wearing spectacles though not regularly.

TABLE 1: WITH N=70, PATIENTS WITH DIFFERENT SPECTACLES NUMBER ARE AS FOLLOWS:-

SPHERICAL -MYOPIA	26(37.1%)
SPHERICAL -HYPERMETROPIA	17(24.2%)
CYLINDRICAL	08(11.42%)
MIXED	19(27.14%)

TABLE 2: Relation of HYPERMETROPIA with visual acuity (N=17)

Relation of HYPERMETROPIA with visual acuity (N=17)

SPECTACLES	+2			+2.25 - +5			> +5			Total
NO. OF PATIENTS	4(23.5%)			10(58.8%)			3(17.6%)			17
	Log0-0.3	0.4-1	>log1	Log0-0.3	0.4-1	>log1	Log0-0.3	0.4-1	>log1	
	3(75%)	0(0%)	1(25%)	3(30%)	6(60%)	1(10%)	2(66.6%)	1(33.3%)	0(0%)	

TABLE 3: Relation of MYOPIA with visual acuity (N=26)

SPECTACLES	-2			-2.25 -- -5			>-5			Total
NO. OF PATIENTS	6(23.07%)			10(38.4%)			10(38.4%)			26
	Log0-0.3	0.4-1	>log1	Log0-0.3	0.4-1	>log1	Log0-0.3	0.4-1	>l0g1	
	5(83.3%)	1(16.6	0	7(70%)	2(20%	1	2(20%)	3(30%)	5(50%)	

TABLE 4: REALTION OF AMBLYOPIC STUDENTS WITH THEIR TYPE OF SCHOOL

	MARATHI MEDIUM	**SEMI- GOVT**	**PRIVATE SCHOOLS**
N=70	56	10	4

TABLE5: RELATION between type of school and previously done school health check-up.

	SCHOOL CHECK UP	ADVICED GLASSES (FROM SCHOOL /OUTSIDE)	WEARING GLASS
MARATHI (56)	23	20	10
SEMI GOVT (10)	9	5	4
PRIVATE (4)	4	4	4

Discussion

• This study is conducted on all the young adults up to the age of 30 years coming to Department of ophthalmology, KIMSDU Hospital, Karad by taking visual acuity and correction with refraction for amblyopia over a period of 1 year from August 2018 to July 2019. This study was approved from institutional ethics committee. This study is done with the primary aim to see clinical profile of amblyopic patients in relation to refractive status, socio economic status, use of glasses and social impact on society.

• In this study the sample size of 70 cases when given the vision correction with refraction the result comes out to be 43 patients that is 50.2% of patients had spherical correction and amongst them 26 patients that is 37.1% are myopic correction and 17 patients that is 24.2% are hypermetropia correction.

• And this study also shows about the cylindrical correction which is minimum only in 8 patients that us 11.4% and remaining 19 patients that is 27.14% patients have mixed correction.

In our study, we now further extending our discussion regarding correction and its visual acuity relation, our further discussion is about relation of hypermetropies with its visual acuity correction.

Amongst the hypermetropies that is total 17 patients so here n=17 , out of them 10 patients power for refraction comes out to be between (+2.5- +5) and amongst the 10 patients only 3 patients that is 30% have full correction but 60% that is 6 patients have correction till log mar 0.4-1 and only 1 patient could have correction till log mar 1.

• Rest of 23.07% patients have correction till +2 in which 75% patients have good visual correction ranging from log mar 0-0.3 .

• In our study we also get the relation of myopia with visual acuity correction.

• The total patients which comes out to be myopic are 26 that is 37.1% and amongst them 76.8% Patients who had myopic correction had spectacles of more than -2 power

• Precisely, 38.4% patients' spectacles range from 2-5sph and amongst them 70% patients their visual acuity correction is up to logmar0-logmar 0.3 which Is almost full correction and rest 38.4% patients have spectacles no. more than 5sph for which spectacles correction for 50% patients is > logmar1.

• Rest 23% patient having spectacles correction <-2 visual correction ranges from log Mar o-logmar0.3

• In our study we also correlate with the type of school which is in direct proportion to its socio economic status like Marathi medium and semi-govt school students are considered from lower status and private school students are higher socio-economic students.

• This study shows that out of 70 students, 56 students have studied from Marathi medium government school and 10 from semi -government and only 4 from private school.

• In this study shows the relation between the type of school to its regular school health check-up, and the socio-economic status regarding glasses advised and still not using.

• The results show that out of 56 Marathi medium students only 23 had school health check-up, and amongst them only 20 were advised glasses previously and only 10 students were using it.

• Semi-govt schools are better in position as out of 10, 9 had school check-up and 5 were advised previously to wear glasses but only 4 are wearing.

• Private schools are conducting school check-ups regularly as all 4 had previously school health check-up done and all 4 are wearing spectacles though not regularly.

Conclusion

• This study gives us following points to note down:

• 1) Spherical number is more common than mixed or astigmatism

• 2) Myopia is more common than hypermetropia (37.73%)

• 3) Amongst demographic distribution male and female both have more percentage of myopic number.

• 4) 58.8% of hypermetropies have spectacles number between 2-5sph with visual acuity improving up to logmar0.4-1

• 5) Low myopic number have good spectacles correction but very high myopic number do not have full correction even if higher refraction is given.

• Most of the amblyopia detected patients (70%) are from marathi medium school and from middle class families where routine school health check ups are not conducted properly so not diagonosed on time , only 30% of students who studies in english medium private schools have proper school health check up so were detected for amblyopia .

• Out of those only 10% students were wearing spectacles so had full correction, but students belonging to middle class or low socio-economic status who had lesser awareness about the disease had not wore glasses due to which they donot had full correction.

• Our study focuses on the fact:

Early detection of amblyopia by proper school health check- up and then treatment of amblyopia and also to avoid those factors causing amblyopia since childhood like proper use of glasses.

Why treats amblyopia? [6] Direct benefits include potentially improved stereoptic appreciation and the occasional realignment of strabismic eyes with attainment of improved visual acuity. For most patients, the creation of a better-sighted[7] "spare tire" should trauma or disease claim the sound eye is all that can be promised logically. Of interest is a study that showed a threefold greater risk of loss of the sound eye if the other is amblyopic.

• **Ethical approval**: All procedures performed on human participants were in agreement with ethical standards of the Institutional and/or National Ethics Committee.

• **Source of Funding**: Self

• **Conflict of Interest**: None.

References

1.. Eggers H.M.: Amblyopia. In: Diamond G.R., Eggers H.M., ed. Strabismus and paediatric ophthalmology, Vol. 5 in Podos SM, Yanoff M, eds. Textbook of ophthalmology, London: Mosby; 1993.13.1–17

2.. Sireteanu R., Fronius M.: Naso-temporal asymmetries in human amblyopia: consequence of long-term interocular suppression. Vision Res. 1881; 21:1055- 1063.

3.. Hess R.F., Pointer J.S.: Differences in the neural basis of human amblyopia: the distribution of the anomaly across the visual field. Vision Res. 1985; 25:1577-1594.

4.. Hess R.F., Holliday I.E.: The spatial localization defect in amblyopia. Vision Res. 1992; 32:1319-1339.

5.. Abrahamsson M., Fabian G., Sjostrand J.: A longitudinal study of a population-based sample of astigmatic children. II. The changeability of anisometropia. Acta Ophthalmol 1990; 68:435-440.

6. Tommilla V., Tarkkanen A.: Incidence of loss of vision in the healthy eye inamblyopia. Br J Ophthalmol 1981; 65:575-577.

7.. Lam G.C., Repka M.X., Guyton D.L.: Timing of amblyopia therapy relative to strabismus surgery. Ophthalmology 1993; 100:1751-1756.