

## Relation between Amblyopia with Anisometropia

Rahman MH,<sup>1</sup> Atiquzzaman M,<sup>2</sup> Sharmin I,<sup>3</sup> Khan RU<sup>4</sup>

The aim of the study is to find out relationship of the depth of amblyopia with the duration of anisometropia that is the age of the patient. Eyes of 30 consecutive patients mean age  $9.20 \pm 2.17$  (SD) yrs, of both sexes with unocular amblyopia of anisometropic origin were selected for this prospective observational study in the department of Ophthalmology, Dinajpur Medical College Hospital from Jan 2015 to July 2016. All of them had cycloplegic refraction with atropine 1% in children younger than 10 years or cyclopentolate 1% older than 10 years to obtain degree of anisometropia. Snellen visual acuity of each eye was recorded and was converted to log MAR unit to obtain depth of amblyopia. Age below 9 years were 13 in numbers among them 8 male 5 female. Age 9 years and above 17 in numbers. Among them 9 were male and 8 were female. Mean age  $9.20 \pm 2.17$  (SD) years. Amount of anisometropia 1.5 to 3.00 diopter was in 17 (56.67%), 3.25-5.00 diopter was in 8 (26.67%) and above 5 diopter was in 5 (16.68%) cases. Mean anisometropia  $3.40 \pm 1.45$  (SD). Amblyopia was measured by subtracting visual acuity of two eyes expressed in log MAR. Mean amblyopia  $0.54 \pm 0.30$  (SD). A positive correlation found between depth of amblyopia and duration of anisometropia that is age of the patient. As the duration of anisometropia increases depth of amblyopia also increases.

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**Key words:** Amblyopia, anisometropia

### Introduction

**A**mblyopia is defined as unilateral or bilateral decrease in visual acuity caused by deprivation of form vision or abnormal binocular interaction or both for which no organic causes can be detected.<sup>1</sup> It is associated with strabismus, refractive error (anisometropia and severe ametropia) and form deprivation. It is well recognized that anisometropia can lead to amblyopia.<sup>2</sup> For years, the most important factor in determining the depth of anisometropic amblyopia was thought to be the magnitude of anisometropia. It is postulated that anisometropic amblyopia develops as a function of the duration of anisometropia that

is age of the patient.<sup>1</sup> If it can be demonstrated that older patients with anisometropia are more likely to have amblyopia than younger ones, or to have more severe amblyopia than support could be provided for early screening. The aim of the study is to find out relationship between depth of amblyopia and the duration of anisometropia.<sup>3</sup>

### Methods

This study was carried out in the Department of Ophthalmology, Dinajpur Medical College hospital from Jan 2015 to July 2016. It is a prospective observational study. Total Number of Patients were 30. All newly

1. \*Dr. Md. Harisur Rahman, Associate Professor, Department of Ophthalmology, Dinajpur Medical College
2. Dr. Md. Atiquzzaman, Department of Ophthalmology, Dinajpur Medical College
3. Dr. Ishrat Sharmin, Junior Consultant (Gynae & Obst.), Upazilla Health Complex, Birampur, Dinajpur
4. Dr. Rehan Uddin Khan, Assistant Professor, Department of Anaesthesiology, Dinajpur Medical College.

\* For correspondence

diagnosed patients of Unilateral amblyopia of anisometropic origin were included. Age from 6 to 14 years irrespective of sex. Patients having strabismus amblyopia, previous occlusion therapy or undergone surgery for strabismus were excluded. Pediatric patients with suspicious refractive error had complete ocular examination and orthoptic workup prior to treatment.

1) Cycloplegic refraction was carried out using atropine 1% in children younger than 10 years or cyclopentolate 1% in children older than 10 years. Spherical power and Spherical equivalent of the cylindrical power was taken in to consideration. Difference of refraction of the two eyes was calculated to obtain the degree of anisometropia.

2) Snellen visual acuity of each eye was recorded in all children and then it was converted to log MAR unit. Difference of log MAR acuity was calculated to obtain the depth of amblyopia.<sup>4</sup>

A difference of 1 line or more snellen visual acuity was treated as diagnostic criterion of amblyopia. A difference between spherical equivalent of the two eyes exceeding 1.5 diopter was considered anisometropia.<sup>2</sup>

Parameters evaluated:

- 1) Age
- 2) Sex
- 3) Visual acuity
- 4) Amount of anisometropia

Out come measures: Correlation of patients' age with the difference of log MAR acuity.

## Results

Amount of amblyopia: Amblyopia was measured by subtracting the visual acuity of two eyes expressed in log MAR values. In this study mean amblyopia was  $0.54 \pm 0.30$  (SD).

Table I: Age group and sex cross tabulation

Age group	Sex		Total
	Male	Female	
Age below 9 years	8	5	13
Age 9 years & above	9	8	17
Total	17	13	30

Table II: Correlation of depth of amblyopia and age

	Mean value $\pm$ (SD)	Pearson Correlation	p
Amblyopia in log MAR Value	0.54 $\pm$ 0.30		
Age in years	9.200 $\pm$ 2.10	0.644	0.000*

\*Correlation is significant at the level of 0.01.

## Discussion

The purpose of this study was to evaluate whether early vision screening can decrease the prevalence or severity of anisometropic amblyopia.<sup>5</sup> Eyes of 30 children of age between 6-14 years diagnosed anisometropic (diopter level  $\geq 1.5$ ) amblyopia were included to see the relation of depth amblyopia and the duration of anisometropia. The visual acuity of anisometropic child was measured in log MAR unit to detect depth of amblyopia. A positive correlation has been observed between depth of amblyopia and age. It means as the age increased depth of amblyopia also increased.<sup>2</sup>

## Conclusion

This study suggests that the depth of amblyopia increases as the age increased that is more severe amblyopia is prevalent among older children rather than younger children. So, the earlier treatment afforded by early screening could potentially prevent the development of amblyopia in at risk patients.

## References

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