

Comparison of Contrast Sensitivity for Different Amount of Deviation of Alternate Esotropia

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Research Article

Volume 3 Special Issue 1

Received Date: July 26, 2018

Published Date: August 15, 2018

Abstract

Purpose: Aim of the present study is to compare contrast sensitivity in different amounts of deviation of alternate exotropia

Methods: A pilot, cross sectional, observational study was performed at tertiary eye care centers. Subjects with Ocular deviation between 10 to 40 prism diopters, Corrected distance Visual Acuity should be greater than 6/18 and Age should be between 10 to 40 years of age were included in the study. Contrast sensitivity was assessed with Pelli Robson Chart.

Results: 30 subjects were included in the study. Out of that, 16 subjects were in the age group of 11-20 years, 12 subjects were in the age group of 21-30 years and 2 subjects were in the age group of 31-40 years. 60% subjects were Female and 40% subjects were Male. The mean contrast sensitivity was considered in each amount of deviation. It shows that maximum contrast is deteriorated in the ocular deviation of 31-40 prism diopters.

Conclusions: As the amount of ocular deviation increases, contrast sensitivity will be more deteriorated.

Keywords: Contrast Sensitivity; Amount of deviation; Alternate Esotropia

Introduction

In case of ocular deviation, the images of an object are shifted from the foveal region to the parafoveal region. Density of the cone cells are variant, it means density of the cone cells are highest in the foveal region as compared to parafoveal region. Cone cells are solely responsible for contrast sensitivity also. When images are shifted from foveal region to parafoveal region, there are chances for deterioration of contrast sensitivity due to density of cone

cells is reduced. In case of Alternate Esotropia, the images are focused alternately at the nasal parafoveal region. So, due to anatomical consideration if deviation is increased, then deterioration of contrast sensitivity also increased.

Methodology

Pilot, Cross Sectional and observational study were performed at tertiary eye care centers. Inclusion criteria includes Subjects with Ocular deviation between 10 to 40

prism diopters, Corrected distance Visual Acuity should be greater than 6/18 and Age should be between 10 to 40 years of age. Individuals with any other systemic disease(specially which can affect study), Individuals with any other Ocular Pathology, with any active ocular infection, any ocular anomalies like Corneal Scar etc ,ocular deviation if less than 10 degree and Significant amount of amblyopic patient were excluded from the study. Full refractive correction along with detailed fundus evaluation was performed in each and every patient. Visual Acuity was assessed with Log Mar Chart in different amounts of deviation of Alternate Exotropia. Data analysis was done using SPSS software version 20.

Results

30 subjects were included in the study. Age wise distribution is shown in figure 1. 16, 12 and 2 subjects were in the age group of 11-20 years, 12 in 21-30 years and 2 subjects were in the age group of 31-40 years. Figure 2 shows gender wise distribution of the subjects. 60% subjects were Female and 40% subjects were Male. Figure 3 shows comparison of mean Contrast Sensitivity of subjects with Alternate Esotropia with different amount of ocular deviation. In Alternate Esotropia of 11-20 prism diopters, mean Contrast Sensitivity is 1.85. In Alternate Esotropia of 21-30 prism diopters, mean Contrast Sensitivity is 1.8. In Alternate Esotropia of 31-40 prism diopters, mean Contrast Sensitivity is 1.65. This shows that as amount of ocular deviation increases, Contrast Sensitivity deteriorates [1-3].

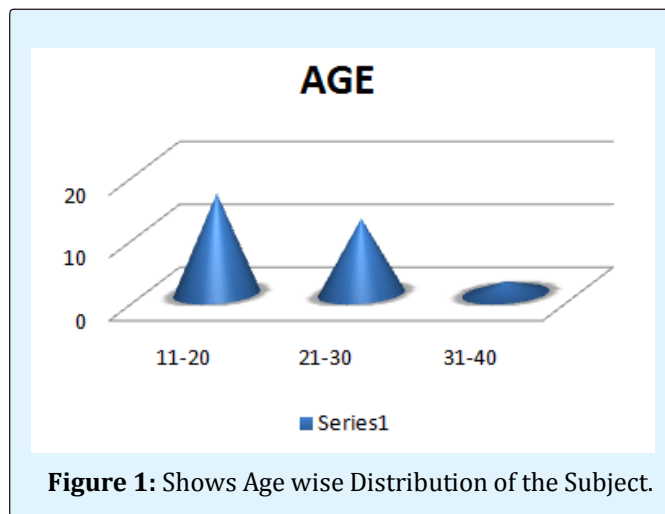


Figure 1: Shows Age wise Distribution of the Subject.

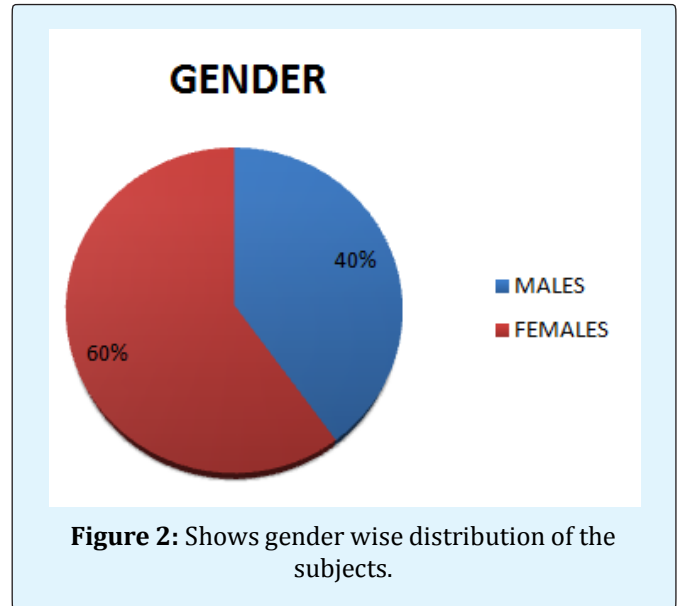


Figure 2: Shows gender wise distribution of the subjects.

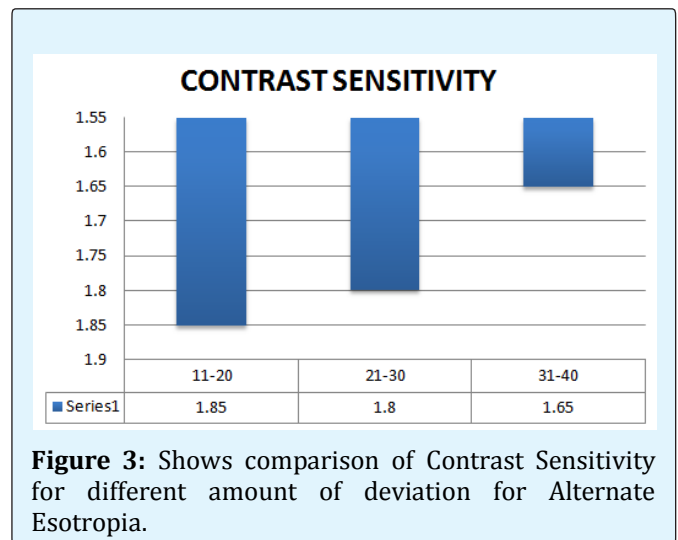


Figure 3: Shows comparison of Contrast Sensitivity for different amount of deviation for Alternate Esotropia.

Contrast Sensitivity	
11-20	1.85
21-30	1.8
31-40	1.65

Table 1: Contrast Sensitivity deteriorates.

Discussion

In case of ocular deviation, the images are shifted towards parafoveal region. And due to variation of cone cells in the macular region, it means cone cell density is highest at the foveal region compared to other region.

With increase in ocular deviation, contrast sensitivity is simultaneously deteriorated. So, in cases of Alternate deviation like Eso deviation, alternately images are focused at the nasal para foveal region and deteriorate the contrast sensitivity [4-7].

Conclusion

As the amount of ocular deviation increases, contrast sensitivity will be more deteriorated.

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