Impact of Mimicked Anisometropia on Visual Functions and Aniseikonia in Adults

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Abstract

Introduction: Anisometropia is a condition in which refractive error between two eyes is differs in ≥ 1Diopter (D) and potentially disrupt the visual function. This study aimed to investigate the effects of mimicked anisometropia on stereoacuity, visual acuity (VA), contrast sensitivity (CS) and aniseikonia among different magnitude of anisometropia groups. Materials and methods: This cross-sectional study was conducted on 20 healthy emmetropic adults. Soft contact lenses from 1Diopter Sphere (DS) to 4DS were fitted to induce unilateral myopia, hyperopia and astigmatism. VA, stereoacuity, CS and aniseikonia were measured at baseline and at each level of defocus. Results: VA degraded in all groups at all magnitudes of anisometropia induced as compared to baseline ($p<0.05$). No significant changes was observed on stereoacuity and CS in hyperopic (stereoacuity:0.08±0.21; CS: 1.71±0.25) and astigmatic

(stereoacuity:0.03±0.35; CS: 1.78±0.17) groups at 1D anisometropia induced compared to baseline (stereoacuity: -0.11±0.20; CS: 1.91±0.11). In comparison with baseline, significant percentage of horizontal aniseikonia was observed at magnitude of 3D (myopic: p<0.01; hyperopic: p=0.04; astigmatic: p=0.03) and 4D (myopic: p<0.01; hyperopic and astigmatic: p=0.02) for all groups. Meanwhile, for vertical anisometropia, significant percentage was presented at 3D (p=0.04) and 4D (p<0.01) in myopic group, 4D (p=0.02) in hyperopic group and non-significant increment was observed in vertical aniseikonia of astigmatic anisometropia group. Conclusion: Maximum effects on visual functions were observed among mimicked myopic anisometropia, followed by hyperopic and astigmatic anisometropia. Out of all visual functions assessed, the most pronounce change was observed in stereoacuity.

Author keywords

Aniseikonia; Contrast sensitivity; Mimicked anisometropia; Stereoacuity; Visual acuity

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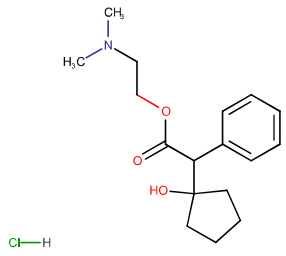

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