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Higher-order aberrations in different groups of ametropias

Purpose – To study the distribution of ocular higher-order (HOAs) in different groups of ametropias and to determine whether the degree of myopia, hyperopia or astigmatism affects the HOAs. **Methods** – Higher-order aberrations were analyzed by LADAR WAVE 4000 – Alcon - in 53 eyes of 28 patients across an at least 6.5mm dilated pupil, under cycloplegia. Coma, 3rd order spherical aberrations and other aberrations (5th and 6th order) were analysed in two sections. The first was according to the spherical equivalent. Patients were classified in three subgroups: less than -0,25D, -0,24D to +0,25D, +0,26 spherical diopters or more. The second section was according to the astigmatism, classified in this subgroups: 0,50D or less, 0,51D to 2,00D, and more than 2,00 cylindrical diopters. Correlation analysis was performed to assess if there is an association between the incidence of HOAs and a particular subtype of ametropia. One way analysis of variance (ANOVA) and Kruskal-Wallis test were performed. **Results** - There was no statistically significant differences in the occurrence of coma and other aberrations (5th and 6th order) in all studied groups. There was a statistically significant difference in the occurrence of spherical higher-order aberration, according to the spherical equivalent, between two groups: less than -0,25D and -0,24D to +0,25 spherical diopters (higher values were found in the second group, $p < 0,05$).

Conclusions – Results suggest that there is a correlation of spherical equivalent and the occurrence of HOAs, however further studies are necessary to validate this preliminary data.