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Optical Quality in Patients with Amblyopia

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Amblyopia is a common functional condition that affects normal visual development. The double-pass technique is a new clinical tool that is often used to globally measure optical characteristics of human eyes. In this study it is particularly used to assess optical quality (OQ) in amblyopic eyes. We evaluated the normal values of OQ provided by a double-pass system (Optical Quality Analysis System, OQAS, Visiometrics, Spain) [1][2][3] in two groups of patients with amblyopia (treated and untreated) and in a control group (healthy eyes). A pupil diameter of 4 mm was used to analyze retinal image quality. Several parameters related to the OQ of the eye (MTF, Strehl ratio and OQAS values [OV] at contrasts 100%, 20% and 9%) [4] were obtained from the double-pass images. Moreover, we measured the best spectacle-corrected visual acuity (BSCVA) with a standard logMAR chart and the contrast sensitivity function (CSF).

53 eyes (of 32 healthy young subjects) and 11 eyes (of 11 amblyopic subjects) were finally included for comparison. Mean ages (\pm SD [range]) were of 6.71 ± 2.77 (4 to 14 yr.) for the amblyopic groups and 8.51 ± 3.78 (4 to 16 yr.) for the control group. The results showed lower statistically significant values ($p < 0.05$) in the majority of the OQ parameters for both amblyopic groups with respect to the control group, even in those treated amblyopic eyes with a normal VA and CSF. The double-pass technique provides useful information on the OQ of amblyopic eyes, completing the information showed by VA and CSF measurements.

References

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