Abstract:

**Purpose:**
To obtain normal values of the optical quality (OQ) of the eye and intraocular scattering (IS) in healthy young population. To calculate neural CSF (nCSF) from measured Modulation Transfer Function (MTF) and Contrast Sensitivity Function (CSF).

**Methods:**
We evaluated the retinal image quality and CSF in 181 eyes within a group of 107 healthy young patients. Their best spectacle-corrected visual acuity (BSCVA) was 20/20 or better assessed with a standard logMAR chart. Retinal images were acquired with a clinical double-pass (DP) instrument (OQAS, Visiometrics, Spain) using a 4-mm exit pupil diameter. DP images contain information about aberrations and IS (Diaz-Douton et al. IOVS 2006). From the DP images, several parameters related with the OQ of the eye (MTF, Strehl ratio and OQAS values at contrasts 100%, 20% and 9%) and with the IS (Objective Scatter Index, OSI) were obtained. CSF was measured with a CSV-1000 test (Vector Vision, Greenville, OH) in mesopic conditions. We computed the nCSF of all patients from the corresponding CSF and MTF ratio.

**Results:**
Mean age was 22.47 years ± 3.04 (SD) (range 19 to 30 yr.) and 43.92 % were men. Mean BSCVA was -0.14±0.07 log MAR. Normal OQ and IS parameters were (Mean ± SD): Strehl ratio 0.27±0.06; OQAS Value 100% 1.48±0.24; OQAS Value 20% 1.58±0.32; OQAS Value 9% 1.64±0.39 and OSI 0.38±0.19. The corresponding measured CSF were 1.63±0.20 for 3 cpd frequency, 1.78±0.21 (6 cpd), 1.4±0.26 (12 cpd), and 0.96±0.29 (18 cpd). nCSF calculated was 1.76±0.21 (3 cpd), 2.12±0.23 (6 cpd), 2.00±0.28 (12 cpd), and 1.86±0.33 (18 cpd). As expected, OQ results were similar to those found in other previous non-clinical studies. OSI values showed a low IS in the studied population.

**Conclusions:**
We obtained normal values of OQ and IS in healthy young adult population with a DP system in a clinical environment. We calculated nCSF comparing MTF and CSF values. These results can be a referent for the early detection of pathologies where OQ, IS or sensory function are impaired. Future work is oriented to study OQ and IS in other age ranges.
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