Inter-examiner reproducibility of ocular response analyzer using the Waveform Score

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Aim: To evaluate the inter-examiner reproducibility of Ocular Response Analyzer (ORA) parameters using the Waveform Score (WS) for quality control of acquisition.

Methods: Fifteen healthy subjects (8 males - 7 females, mean age 35 ± 6.7 years) had their intraocular pressure (IOP) measured with ORA (Reichert Inc., Depew, New York, USA, version 2.04) by two masked examiners. An acquisition protocol that aimed at obtaining at least four reliable measurements in each eye with WS ≥ 6 and with as few repetitions as possible was employed. Additional good quality criteria included symmetrical force-in and force-out applanation signal peaks on the ORA waveform and few or no distortions of the applanation signal curve. A maximum of 8 measurements per eye was allowed. One eye per patient (right eye) was included in the analysis. The inter-examiner reproducibility of ORA parameters was assessed using the intraclass correlation coefficient (ICC).

Results: Quality index of ≥ 6 was obtained in at least 3 measurements per eye. ICC including the best four measurements per eye was high for all ORA parameters. In specific, ICC for Goldmann-correlated IOP (IOPG) was 0.961, for Corneal-Compensated IOP (IOPcc) was 0.962, for Corneal Resistance Factor (CRF) was 0.987 and for Corneal Hysteresis (CH) was 0.988. Similar reproducibility was found when only the three best measurements per eye were included in the analysis.

Conclusions: The protocol for IOP measurement with ORA using the Waveform Score ≥ 6 as quality index seems to be highly reproducible for all ORA parameters and practical in order to obtain reliable measurements.