Reproducibility of anterior chamber angle analyses with the swept source optical coherence tomography in young, healthy Caucasians

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**Purpose:** To assess the reproducibility of iridocorneal angle (ICA) analysis in young, healthy Caucasian subjects using swept-source optical coherence tomography (SS-OCT) by determining variability and inter-observer agreement between expert and non-expert observers.

**Methods:** Thirty-one healthy volunteers (non-experts, subjects with basic knowledge of ophthalmology) acquired 3 consecutive SS-OCT images of the right eyes of their peer non-experts. Images were analyzed by 31 non-experts and additionally by 3 experts by manual placement of the ICA tool at the position of the scleral spur; whereby the angle opening distance (AOD) and the trabecular iris space area (TISA) at 500µm and 750 µm were calculated. A random intercept model was used to determine the amount of variation between observers. In addition, the intra-observer variability between non-experts and experts was calculated by determining the coefficient of variation (CV).

**Results:** The inter-observer variability did not differ between the experts in the analysis of the anterior chamber parameters. A significant difference was found in the expert analysis for the nasal and temporal angle in the AOD500 (p = 0.002), AOD750 (p < 0.01) and TISA750 (p < 0.01), and the values AOD500 (p = 0.025), AOD750 (p = 0.012) and TISA500 (p = 0.010) were significantly larger if non-experts analyzed SS-OCT images. The CV was only significant larger for non-experts for AOD500 (11.1% versus 8.7%, p < 0.01).

**Conclusions:** This study compared the variability of anterior chamber angle parameters and demonstrated high reproducibility of angle analysis and low CV in young, healthy Caucasian subjects using SS-OCT. Nevertheless, non-experts obtained significant larger values compared with experts, implying that training is a necessary requirement before analyzing SS-OCT images in ophthalmic practice.