Intraocular pressure related pattern amplitude reduction after clinically successful selective laser trabeculoplasty in normal tension glaucoma

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Purpose: To investigate intraocular pressure (IOP) related patterns before and after selective laser trabeculoplasty (SLT) for normal tension glaucoma (NTG).

Methods: 18 Chinese NTG patients underwent SLT. Success was defined as IOP reduction ≥ 20% by Goldmann applanation tonometry. 24-hour IOP-related pattern recording with a contact lens sensor (CLS) (SENSIMED Triggerfish®, Sensimed, Switzerland) was done before (baseline) and 1 month after SLT. A cosine function was fitted to the mean CLS patterns for each individual in the SLT success and non-success groups and the amplitude before and after SLT was calculated. Diurnal, nocturnal, and 24-hour CLS pattern local variability was determined for pre- and post-SLT sessions. Cosine amplitude and variability were compared before and after SLT by group using paired t-tests, with α = 0.05.

Results: Patients (11 women, 7 men) had a mean age of 65.1 ± 13.7 years. Mean IOP was 15.3 ± 2.2 mmHg at baseline and was reduced by 17.0% to 12.7 ± 1.8 mmHg 1 month after SLT (p = 0.001). SLT was successful in 8 patients (44%). The amplitude of the fitted cosine was reduced by 24.6% in the success group, but displayed an amplitude increase of 19.2% post-SLT in the non-success group. Higher diurnal local variability of the CLS pattern was observed after SLT in non-success subjects (p = 0.002), while nocturnal variability showed no significant change. The increase in diurnal variability in the non-success group led to an increase in 24-hour variability in this group (p = 0.001). No change in local variability (diurnal, nocturnal and 24-hour) was seen in the success group.

Conclusions: The IOP-related pattern cosinor amplitude was reduced in NTG patients with a successful SLT treatment whereas the non-success group exhibited an increase of cosine amplitude. Higher diurnal and 24-hour CLS pattern variability was observed in non-success patients 1 month post-SLT.