Corneal biomechanics and 24-hour continuous intraocular pressure (IOP) monitoring using a contact lens sensor (CLS) in progressive primary open angle glaucoma (POAG): BIOLENS study

Cedric Schweitzer¹, Jeanette Lindell², Rene Goedkoop², Nicolas Georges¹, Florence Malet¹
¹Bordeaux University Hospital, Bordeaux - France
²SENSIMED, Lausanne - Switzerland

**Purpose:** To determine whether parameters associated with corneal biomechanics were associated with the IOP-related pattern recorded with the CLS in patients with progressive POAG.

**Methods:** POAG patients with documented progressive disease were recruited and fitted with the CLS (SENSIMED Triggerfish®, Sensimed, Switzerland) for 24-hour recording of the IOP-related pattern. The CLS measures spontaneous dimensional changes of the eye in the corneoscleral area. Before placing the CLS, patients underwent extensive ophthalmic examination including central corneal thickness (CCT) biomechanical parameters [corneal hysteresis (CH), corneal resistance factor (CRF), corneal compensated IOP (IOPcc), IOP Goldmann (IOPg)] using the Ocular Response Analyzer (ORA, Reichert, xx, USA). CLS amplitude (CLSamp) was calculated as CLSmax – CLSmin. The relationship between CLSamp and corneal parameters was assessed by Pearson correlation. Linear regression of CLSamp on ORA parameters was done while controlling for CCT. The significance level was set to α = 0.05. Further analyses of the data will be conducted.

**Results:** 30 progressing POAG patients participated in the study. Their mean age was 66.25 ± 8.45 year-old and 40% (n=12) were male. No significant correlation between CLSamp and CCT, CH or CRF was observed. Univariate and multivariate analysis showed no relationship between CLSamp and ORA parameters, including when controlling for CCT. Similarly, no statistically significant relationship was obtained between CLSamp and IOPcc or IOPg.

**Conclusion:** CLSamp was not related to any of the corneal biomechanical parameters or CCT. Further investigation of the relationship between CLS-recorded IOP-related patterns and corneal biomechanics is warranted.