

# Relationship Between Daytime Variability of Blood Pressure or Ocular Perfusion Pressure and Glaucomatous Visual Field Progression

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**PURPOSE:** To study daytime or nighttime variability of mean arterial pressure and ocular perfusion pressure in untreated normal-tension glaucoma(NTG) patients and determine whether increased short-term mean arterial pressure and/or ocular perfusion pressure variability are associated with greater risk of visual field (VF) progression.

**DESIGN:** Longitudinal, retrospective, observational study.

**METHODS:** This study enrolled 237 eyes of 237 untreated NTG patients who underwent 24-hour intraocular pressure and ambulatory blood pressure monitoring in the habitual position, and had  $\geq 5$  reliable VF tests during follow-up. Kaplan-Meier analyses were performed to compare outcomes with reference to the level of short-term mean arterial pressure and ocular perfusion pressure standard deviation for VF deterioration. Hazard ratios for the association between clinical factors, including short-term mean arterial pressure and ocular perfusion pressure standard deviation, and VF progression were obtained using Cox proportional hazards models.

**RESULTS:** Over-dipper NTG patients showed significantly larger daytime and nighttime mean arterial pressure and ocular perfusion pressure standard deviation than non-dippers or dippers. Both increased daytime and nighttime mean arterial pressure or ocular perfusion pressure standard deviation were associated with greater VF progression probabilities. Increased daytime mean arterial pressure or ocular perfusion pressure standard deviation was a significant predictor of subsequent VF progression ( $P = .023$  and  $P$

**CONCLUSIONS:** Over-dipper NTG eyes showed significantly higher daytime or nighttime mean arterial pressure and ocular perfusion pressure variabilities than non-dipper and dipper NTG eyes. Increased daytime mean arterial pressure and ocular perfusion pressure standard deviation at baseline were significant predictors of future VF progression in NTG.

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